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PREFACE

The reduction of the magnetic material was commenced by *Aksel S. Steen* in July, 1908, and all difficulties in connection with a preliminary study of this extensive work were thus allotted to him. The material was arranged systematically and plans for the reduction were decided on. To get an idea of the scale value of the register instruments he extracted from the curves the necessary measurements and worked out some preliminary values. As soon as this first examination was made, he could, in the beginning of 1909, start a more efficient work and to help him here he engaged two collaborators, each of whom, as will be seen below, was allotted his special tasks, while Steen undertook to reduce the absolute observations. The hour marks (lines) were applied on the photograms with the greatest possible exactness and the necessary ordinates were read and gradually he was able to make a more exact determination of the scale values. As foundation for the determination Steen adopted a method which consists in direct comparison between absolute values of the magnetic elements in question and corresponding readings from the photograms. The reason why he did not make use of the photographic data, produced by the deflection experiments, was that these data were not exact enough to be used, as will be explained below.

The work was steadily continued and Steen had in the spring 1915, when he died quite suddenly, succeeded in reducing most of the absolute observations and based on these data, together with corresponding relative readings from the photograms, he had also been able to get more or less trustworthy scale values for the variometers for declination and horizontal intensity. That already his first result for the scale values was so good is no doubt owing to his extensive experience in similar work in connection with earlier arctic expeditions.

Rendering him our most sincere acknowledgements and gratitude, we deeply deplore that he was not allowed to see this important work finished, especially because we know he took such a great interest in it.

As mentioned above, was Steen in his work assisted by two collaborators. These two were *Cand. Phil. Carl Krafft* and the *Meteorologist Nils Russeltvedt.* Up to 1922 Mr. Krafft devoted all his spare time to the labour connected with the more mechanical work and he has thus read all the hourly ordinates, multiplied these data with the scale values, added corrections for temperature etc., and whatever he was put to do, he always showed the necessary interest and exactitude. The Committee therefore renders him the most sincere acknowledgements and thanks.

Mr. Russeltvedt has planned and executed all the experimental performances and necessary determinations in this connection. Thus the determination of the reduction constant q for the vertical variometer (Lloyd's Balance) is due to him and he has through experiments determined values for the magnetic moment of the magnets belonging to the variometers, besides the temperature coefficients for these and some of the magnets belonging to the absolute instruments.

The first critical examination regarding the constancy of the variometer curves in relation to their base-lines was made by Mr. Russeltvedt and he has also applied the hour lines. In this connection he worked out an extensive paper, an extract of which will be found in the chapter where the timing of the curves has been explained. In this paper has Mr. Russeltvedt given a full account of how the variometers work and how the often occurring defects have to be considered, when the hour lines are to be applied. We may also mention that Russeltvedt has made a preliminary determination of the scale values, when these are to be based directly on the deflection experiments reproduced on the photograms, and beside this he made a preliminary examination of the curves for the vertical intensity in order to get an idea of the exactness with which a reduction could be made. Finally, after Steen's death, Mr. Russeltvedt conducted the work in connection with the final reduction.

It will be understood that, when Steen died, there was still a large amount of work to be done and it was therefore resolved to engage a new collaborator. It so happened, that the *magnetician K. F. Wasserfall* was able to offer his services, and that, unlike those who had till now worked with the Gjøa material, he was able to give his whole time for this purpose and he was therefore immediately engaged.

During the autumn of 1915 Mr. Wasserfall made himself acquainted with the material and started a complete re-examination of what had hitherto been done. Little by little greater exactness was attained and through a series of approximations he succeeded in ascertaining of the nature of what hitherto had hindered a more exact reduction. Thus, by aid of the records from King Point, he was able to prove, that the temperature coefficient of the variometers was so large that it had to be considered in the reduction.

Reduction of the records for vertical intensity proved to be an almost overwhelming work. The relation between this element, horizontal intensity, and observed inclination is of such a nature that the exactness required for these two elements is greater than, from a physical point of view, it is possible to attain, this exactness being much beyond what the instruments used were supposed to render. When, in spite of this, a fairly good result has been obtained, this is chiefly due to the methods Mr. Wasserfall has brought into use in the treatment of the observations for inclination.

The Committee returns him the most sincere thanks for solid and skilful work.

Oslo, June 1932.

Editorial Committee.
Nils Russeltvedt. Aage Graarud.

INTRODUCTION

The first scientist to whom Amundsen mentioned his plans was the late director of the Meteorological Institute in Oslo, *Aksel S. Steen,* who at once became interested. He introduced Amundsen to the late director of Deutsche Seewarte, *Professor Dr. G. von Neumayer.*

Already during his first stay in Hamburg Amundsen got a good start in getting acquainted with the theoretical, as well as the practical, side of magnetic science, as Professor Neumayer undertook personally to conduct his preliminary studies. During the years 1900—1903 Amundsen and his assistant *Wiik* made various trips to Germany, the outfit of magnetic instruments for the expedition was decided upon and as soon the instruments had been provided, they studied the use of them, partly at Wilhelmshafen, conducted by *Dr. Stück* and partly at Potsdam, conducted by *Professor Schmidt* and *Dr. Edler.* To put a final touch upon the practical side of the matter, Steen made, in the summer 1902, a magnetic survey to various parts of Norway with Amundsen as his assistant. The results of this survey are to be found in a paper, «Jordmagnetiske Maalinger i Norge, Sommeren 1902» by Aksel S. Steen.

When Roald Amundsen started his expedition, he brought with him a book in which the written instructions[1] of his tutors had been collected. The instructions have of course been worked out with a particular view to the peculiar meteorological and magnetic conditions of the neighbourhood of the magnetic pole and have therefore special interest.

As to the form in which the instructions appear in this paper the following may be stated: The Instructions, worked out by *Professor Ad. Schmidt and Dr. Edler,* were originally written in the German language and in the form of letters, addressed partly to Steen and partly to Amundsen. The German text was translated to Norwegian by Steen and put into the above mentioned book, which Amundsen brought with him on the Expedition. It being out of question to publish the Instructions *in extenso,* it was decided to make out an extract. The Instructions will therefore in this paper appear in a shortened form and in a somewhat free translation to English.

On the Making of Magnetic Observations in the Neighbourhood of the Magnetic Pole
by Professor Dr. Ad. Schmidt.[2]

General Remarks. — For an approximate calculation we may accept the following values for the magnetic elements at the surface of the globe in the neighbourhood of the magnetic north-pole:

[1] The manuscript of this part was sent to Professor Schmidt, who, on returning it, says that he does not want us to change anything in the text, which he supposes is in agreement with the instructions according to which Amundsen actually worked. He asks us, however, to add å few remarks, which in their proper place will appear as foot notes.

[2] Bei der Beurteilung des folgenden ist zu berücksichtigen, dass es eine Zusammenstellung einzelner, vom einander unabhängiger Auszüge aus zeitlich getrennten Briefen, keineswegs aber eine von vornherein beabsichtigte oder für den Druck bestimmte, einheitlich ausgearbeitete Instruktion darstellt. Dadurch erklären sich neben einer gewissen Formlosigkeit manche Wiederholungen und Auslassungen, letztere auch daraus, dass ja vielfach mündliche Unterweisungen nebenher gingen. Hauptzweck der hier gegebenen Ratschläge war, Fehler zu verhüten, die bei früheren Expeditionen dadurch herbeigeführt wurden,

Vertical Intensity . . $Z = 62\,000\,\gamma$[1]
Inclination . . . . . $I = 90° - 0.5'\,a$, at a distance of a miles[2] from the pole.
Horizontal Intensity . $H = 9\,a\,\gamma$ at a distance of a miles from the pole.

Thus we may, with sufficient accuracy, calculate horizontal intensity by aid of inclination or *vice versa,* since to each minute by which the inclination is less than 90°, corresponds 18 γ, in the horizontal intensity and we have accordingly the following table:

a	10	30	60	120	240
I	89° 55′	89° 45′	89° 30′	89° 00′	88° 00′
H	0.00090	0.00270	0.00540	0.01080	0.02160

The accuracy of the observation of declination, can be estimated as follows: Approximately, up to a distance of 100 miles from the pole, or perhaps more, the declination needle points in the direction of the magnetic pole, provided no local disturbance deflects the needle or no considerable perturbation is just going on. Furthermore it must be remembered that a variation of 1′ in the declination corresponds to $H/3438\gamma$[3], which means about $a/400\,\gamma$ at a distance of a miles from the pole. In other words: At a distance of 400 miles a variation of 1′ in declination corresponds to 1γ. If we want an accuracy of 10γ, we need, at a distance of up to 70 miles from the pole, only to consider whole degrees.

The pole itself is of course perpetually moving about. This movement may, however, be said to be limited to a movement about a fixed geographical point, which represents the mean position of the pole. *To obtain material suitable for fixing the geographical co-ordinates of this point may be said to be the great aim of the Expedition.*

During time of perturbation the pole may vary from the mean position by a distance of at least 50 miles and under certain circumstances the distance may even go up to 100 miles. Thus we may not expect the pole-of-the-moment to be found within a radius of 10 miles from the mean point for more than 50 days out of 100. If it is possible, the basis station ought to be put at a place where the inclination is about 89°, or where the horizontal intensity is about 1000 γ, which corresponds to a distance from the main pole of about 120 miles. In any case the basis station ought not to be placed closer towards the pole than 100 miles.

As soon as the place for the basis station has been chosen, an approximate determination of the mean declination D_m must be secured. No precise value can be expected to be found and is not absolutely necessary, it may, however, be recommended to observe continuously at least during one day. After the astronomical azimuth of the «Mark» has been fixed, the mean value of the observation of that day may be taken as the mean declination of the station. Once accepted, this mean value must be kept as a base-direction, «*Fundamentalrichtung*», for the station, and this direction must not be changed during the whole stay. It is strongly recommended when observing to refer every absolute magnetic observation to said direction and not to the changeable direction of the meridian-of-the-hour. With this arrangement there ought not to occur any misunderstanding later on, when, after the return, the observations are to be finally reduced.

Absolute measurements ought to be taken, as far as this is possible, at times when the variation of the magnetic elements is slight. Especially the absolute observations

dass man die gewohnten Einrichtungen und Verfahren anwandte, ohne die durch Eigenart der polaren Verhältnisse, besonders die geringe Horizontalkraft bedingten Schwierigkeiten, die man hätte vorhersehen müssen, zu berücksichtigen. Ad. Schmidt.

[1] $1\,\gamma = 0.00001$ C. G. S.

[2] One mile = 1.852 Km.

[3] $\dfrac{180 \times 60}{\pi} = 3438.$

of H and I ought to be taken when the declination has a value which is as near as possible to the mean value of the station, or in other words, when the declination needle points more or less in the fundamental direction. At any case an absolute observation ought not to come into consideration for the calculation of the base-line value of the variometer curves, unless the curves show favourable conditions. For special use, however, it may be recommended also to make absolute observations at times when the element in question has a very high or very low value, as the material thus obtained should be of great value for an approximate determination of the scale value of the variometer instruments. It will of course be understood that the observations at high and low stand ought to be taken as near each other in time as possible, at any rate on the same day. In this connection it is to be recommended also to make deflections on the three variometer instruments by aid of the small deflecting magnet.

Among the absolute measurements, observations for declination and horizontal intensity have most interest. Observations for inclination are of interest only when the result has an accuracy of $0'.01$[1], and accordingly such observations must only be taken under especially favourable conditions, which may be said to be absolutely necessary when the galvanometer is to be used. On the other hand, when favourable conditions are present, I may recommend that a large series of inclination observations be made in order to get a mean value of the required accuracy.

Deflection Experiments for Determination of the Scale Values of the Variometer Curves. — As soon as the variometer instruments have been put up and are seen to work satisfactorily, deflection experiments, with the small deflector placed on the bar, have to be made. Through the data obtained, the relation between the scale values of the three instruments can be calculated. Such experiments must of course be repeated now and then, and in any case, if a change has taken place, for instance, if a new thread has been put in.

For approximate calculation of the scale value, it is convenient to make the above mentioned comparison between ordinates of the curve and absolute data, observed at high and low stand of the element in question. Supposing that the scale value of only one of the instruments can be obtained by using the absolute observations, this is sufficient, as in this case the scale value of the two other instruments may be derived from the data obtained by the deflection experiments.

If you succeed in carrying the variometer instruments to the basis station in the same condition in which they were packed at Potsdam, especially if the threads do not break[2], you may, to begin with, make use of the scale values found at Potsdam for the preliminary calculations. These values were:

For the d-curve	$(13.0 + H/2000)\gamma$	pr. mm.
For the h-curve	$12.3\,\gamma$	» »
For the z-curve	$3.2\,\gamma$	» »

[1] Hier muss ein Irrtum vorliegen, der vielleicht durch einen, allerdings sehr bedauerlich zu nennenden Schreibfehler entstanden sein mag. Sächlich wäre 0°.01 oder 0'.1 möglich, besser zutreffend noch, ein zwischen beiden liegender Wert. Ad. Schmidt.

[2] Hier wäre noch die Bedingung zu erwähnen, dass die Variometer in derselben Entfernung vom Registrierapparat aufzustellen sind, wie in Potsdam. Um dies zu erleichtern, war eine Schablone für die Aufstellung angefertigt worden, die den Platz jedes Instruments genau bezeichnete. Eine weitere Voraussetzung ist natürlich die, dass die magnetischen Momente der Nadeln ungeändert geblieben sind.

Die additive Konstante 13.0, gegen welche das Glied H/2 000 wesentlich zurücktritt, rührt von der absichtlich stark gewählten Torsion her. Der Skalenwert ändert sich infolgedessen nur wenig, wenn auch H stark schwankt, und vor allem behält er stets einen brauchbaren, nicht zu kleinen Wert.

Was mit dem D- und H-Variometer gemessen wurde, waren strenggenommen gar nicht die Schwankungen der Deklination und der Horizontalintensität, sondern diejenigen der (theoretisch vorzuziehenden) Feldkomponenten senkrecht zu der festen Mittelrichtung und in dieser Richtung.

Ad. Schmidt.

For a value: $H = 0.01000$ C.G.S. we thus have, $\varepsilon = 13.0 + 1000/2000 = 13.5\,\gamma$. Deflection experiments ought, however, to be made as soon as possible, as this will be of great value later on, if one of the threads should break, which the following example will explain:

As mentioned, lp (unit of the scale) corresponded to $12.3\,\gamma$. Suppose now that the deflector affects the variation magnet of the h-instrument with a mm on the curve for the old thread and b mm for a new thread, you may for the latter simply put $'\varepsilon = 12.3\ a/b$.

For the d-instrument the relation is more or less the same, only that in this case the value of H is of consequence. At the magnetic pole itself, one unit of the scale means 13 γ and if you have $H = 0.02000$ C.G.S., you may put lp = 14, and so an.

Making use of the fact that the inclination gives a good approximation for the value for H, we may suppose I to be the observed value for inclination. Expressing $90° - I$ in minutes, we have approximately: $H = 18\,(90° - I)'\,\gamma$. If for example we put $I = 88°\,47.6'$, we have $90° - I = 72.4'$, which gives $H = 18 \times 72.4\gamma = 1303\,\gamma$, by which we get:

$$\varepsilon_h = (13.0 + 1303/2000)\gamma = 13.7\,\gamma$$

or still better:

$$1\text{p} = 13.0\,(1 + H/2600)\gamma$$

If, therefore, you have to change the thread, the only figure you have to alter in above formula is the factor 13.0, under supposition that the magnet keeps its magnetic moment unaltered.

The main thing is of course to be sure that the instruments are working right, as in any case the final corrections have to be considered after the arrival home, but from what is said above, you will see the importance of taking the first opportunity to make above mentioned observations.

As to the z-variometer, Lloyd's Balance cannot be used without some alterations. A stronger contra-working magnet must be put in, and perhaps you shall have to adjust the side weights. Through these alterations, however, the above given scale value (3.2) will not be much influenced, *but the upper weight must not be touched.* The instrument will probably have to be made less sensitive, which is done by carefully unscrewing the upper weight regulator. In the deflection experiments for the relative measurement of the sensibility of the variometers, the small deflecting magnet has to be fastened so that it will influence the three variation magnets in the same way. Calling the deflections of the d-, h- and z-instrument respectively n_1, n_2 and n_3 and the scale values ε_1, ε_2 and ε_3, we can put: $n_1\varepsilon_1 = n_2\varepsilon_2 = n_3\varepsilon_3$. If there should occur a larger difference between $n_1\varepsilon_1$ and $n_2\varepsilon_2$, this points in the direction that something is wrong, if, however, you get more or less equal values, you may for Lloyd's Balance put:

$$\frac{n_1\varepsilon_1 + n_2\varepsilon_2}{2n_3}$$

It will be of great value later on to know the distance at which the deflecting magnet has been used and this distance must accordingly be carefully noted each time. It should also be of interest to obtain data concerning the time of oscillation for Lloyd's Balance, and, if possible, such observations ought to be made. In this case it must be carefully noted what the observed time means, if it means arc of oscillation from one extreme to the other and back again to the point of starting or only half of this. *The sensibility has the right value, when the time for one oscillation (forwards and backwards) is about 4 seconds.*

Concerning the scale value above given it must be remarked that it may be insufficiently reliable, being taken from a casual observation, as the instrument had to be sent off before more observations could be made. However this may be, the scale value of Lloyd's Balance ought to be something between 10 and 15 γ pr. mm.

When oscillations are to be taken you will have to remove at least the upper damping plates (covers).

Absolute Observations during the Sledge Expeditions. — It is to be mentioned that strict accuracy in observing magnetic elements is absolutely useless, if the geographical position cannot be observed with corresponding exactness. If you want H observed with an accuracy of 10 γ, the astronomical observation needs to be so exact that the geographical co-ordinates can be calculated with an accuracy of one mile, i. e. about 1′ in latitude and 3′ in longitude. It is not, however, of so great consequence if, on account of bad weather, you do not succeed in getting a precise azimuth observation, for instance if only one sun observation near noon has been obtained. Observation of declination including azimuth, with an exactitude of one degree may be said to be satisfactory at a distance of above 60 miles from the pole. On the other hand, the following remarks must be considered: At a station where you can obtain an exact determination of the geographical position, or if the station is so situated that, on the basis of available charts, you can later on retrace the point where the observation was taken, it is worth while to get exact magnetic data. The best way to obtain good magnetic data is to take long series of observations, for instance by observing continuously during several days. The soil about the station ought always to be examined and it must also be recommended to map out the neighbourhood so far that the exact point where the observation was taken can be retraced. At a place where the geographical situation cannot be obtained with necessary exactness, it is, as mentioned, of no use to make any close magnetic investigation. In these cases it is recommended to distribute the stations and take fewer observations at each place. This is also recommended where local disturbance may be expected.

As to time, it is of course most necessary to get this put down with all obtainable accuracy for each single setting during the observation. The time may be noted according to Gr. M. T., or any other convenient standard, provided only that the time can be reliably controlled through comparison.

As to the magnetic observations themselves, declination and deflection ought to be observed. Data for inclination can only give a certain control for H.

Explanation to the Observations taken at Potsdam from 13th to 23rd of April, 1903, and the Reduction of same. By Dr. Edler. — Concerning the horizontal intensity H, the value for sin φ, obtained through observations of deflection with the Zschau magnet No. 10, seems to show satisfactory agreement between the different observations. The temperature co-efficient, calculated from the observations, are more or less acceptable. This is, however, not the case with Dfl. 2, where there is a large difference in the results between measurements at high and low temperature. This points in the direction that the magnetic moment of this last magnet has undergone a change. It is possible that also other magnets have changed in magnetic moment. The rather limited time at disposal made further investigations impossible and the instruments had to be sent off with the results now obtained. I must strongly insist upon the necessity of treating the magnets very carefully. They must, immediately after they have been used, be put back in the part of the box where they belong, and you must be careful not to place them in the wrong direction. Also care must be taken that no others than the observers themselves handle the magnet box.

I should recommend you to make observations of deflection and oscillation with each magnet also in Oslo. The observations taken at Potsdam show, as mentioned, some inexplicable differences between observations taken at high temperature and at low temperature, and the temperature co-efficients calculated from these observations seem partly to be improbable. The reason may be that the suspension of the magnets has not been absolutely free. Against this, however, speaks the fact that corresponding observations of oscillation show a fairly good agreement. Care must always be taken that the magnet is able to oscillate absolutely free, and you must also be careful not to touch the suspension with the stop magnet. Strongly increasing humidity is apt to occasion increased stretching of the cocoonthread, when the magnet is put on, and there is consequently more danger of getting a hampered suspension.

The calculated values of the constant C, pertaining to the formula for H reduced from a combination of deflection and oscillation, have on account of uncertain observations only provisional importance. The calculations may, however, become valuable, if after the return of the Expedition a new series of observations is made. The constant C_a (when deflections alone are used) seems to be much more reliable, while the constant C_s (when oscillations alone are used) is rather uncertain. The values, C, C_a and C_s, for the different magnets, are corrected for induction influence and may be used directly in the reduction of observations taken in the neighbourhood of the magnetic pole. As to reduction of observations taken in Oslo, however, a small correction has to be applied.

The following particulars have to be given for each observation of deflection:

1. Year and date.
2. Time and statement of which chronometer or watch has been used.
3. Number for the magnet used as deflector.
4. Number for the magnet used as deflected needle.
5. Distance between deflected needle and deflector.
6. Number of thread, if thread suspension is used.
7. Mean temperature of the deflector during the observation and number of the thermometer used.

The angle of deflection is obtained from the following four settings and readings:

v_1 Defl. to the left, north end to the left.
v_2 Defl. to he right, north end to the left.
v_3 Defl. to the right, north end to the right.
v_4 Defl. to the left, north end to the right.

Supposing that the magnetic north pole of the earth is situated to the south of the station of observation, the deflector shall for the setting v_1 be put to the west with the north end towards the west and we have:

$$\varphi = \frac{\frac{v_1 + v_2}{2} - \frac{v_3 + v_4}{2}}{2}$$

Before and after the observation the setting of the free needle in the meridian ought to be read as a control, and we have:

$$v = \frac{\frac{v_1 + v_2}{2} + \frac{v_3 + v_4}{2}}{2}$$

If the two sides of the equation do not agree, this points in the direction that something is wrong. In the reduction there has to be made correction for angle differences and for variation of declination during the observation. As to the direction in which these corrections work, it may be remarked that the first is always negative and may be neglected for a place in the neighbourhood of the pole, because the angle φ is always a large one. The correction for variation of declination during the observation is found through ordinate readings on the d-curve, which readings are to be multiplied by the scale value. The correction is negative if an increasing ordinate n tends to increase the readings of the circle of the absolute instrument.

It will always be safest to make absolute measurements at the time of the day when H and D have their mean values, and there is the least possible variation during the observation itself. In this case an insufficient knowledge of the scale value will also be of less consequence.

Correction for temperature influence of the magnetic moment may be extracted from observations taken during high and low temperature. The correction for temperature variation is recommended to be given a logarithmical form, so that a logarithmical correction can be applied directly to log sin φ.

$$\log \sin \varphi_0 = \log \sin \varphi + b_a t$$

For observations taken near the magnetic pole, it will be sufficient to reduce the observations by using logarithms with four decimal figures. Material for determination of a logarithmical temperature coefficient b_a, for each deflector, has to be found through observations at high and low temperature, as mentioned before. This has special interest here, as experience often shows a slight variation of the value of the coefficient at exceptionally low temperature. Material of this kind has to be gathered both for deflection and for oscillation. The best thing is to observe the mean angle at three different mean temperature values. To afford an opportunity of eliminating possible variation of the magnetic moment of the needles, the observations ought to be taken at falling temperature, then at rising temperature and then again at sinking temperature, or *vice versa*, the three series being in immediate connection with each other. If it is possible to observe at a temperature of — 20° C, I should recommend you to use + 10°, — 5° and — 20°. If the mean temperature of the place where the absolute measurements are to be taken is near to or lower than 0, I should recommend you to use zero as standard temperature for the reduction during the whole year. At Potsdam the following values for b_a were obtained:

Defl.	2	0.000110[1]
»	3	116
»	4	333
»	5	169
»	6	105
»	7	97
»	I	41
»	II	20

Corresponding logarithmical temperature coefficients may for oscillations simply be deduced from those calculated for deflections, but it is safer to compute them directly from observations of oscillation, at high and low temperature. As to the temperature readings themselves, you must be careful not to accept a reading before you are sure that the magnet in question has actually had time to get the temperature of the air around it. Furthermore, you must try to keep a more or less constant temperature during the time of observing. Three temperature readings ought to be enough, one at the start, one at the end, and one in the middle.

Passing now to oscillation, the particulars which must be given at each observation correspond partly to those mentioned for deflection, and there is no need

[1] Interpolated value.

to repeat them here. As the needle, at places near the pole, is oscillating very slowly, you ought to note the time for each passage instead of every third. The observed time of one oscillation has to be corrected to give true time, the so-called correction to an infinitely small arc.

$$\text{Corr} = T \tfrac{1}{4} \sin^2 \tfrac{1}{4} \alpha + T \tfrac{5}{64} \sin^4 \tfrac{1}{4} \alpha$$

where α means the arc from one extreme to the other, expressed in degrees. If the value of α is not too large, the last member of the correction may be neglected and we have for the reduced time of oscillation:

$$T_0 = T - T \tfrac{1}{4} \sin^2 \tfrac{1}{4} \alpha = T (1 - \tfrac{1}{4} \sin^2 \tfrac{1}{4} \alpha)$$

which expressed logarithmically corresponds to:

$$\log T_0 = \log T - \frac{0.4343}{4} \sin^2 \tfrac{1}{4} \alpha$$
$$= \log T - 0.1086 \sin^2 \tfrac{1}{4} \alpha$$

If by the arc h we mean the half of one oscillation, expressed in scale units, we shall have to multiply a logarithmical correction by 4. In the oscillation box belonging to "Seemann" one scale unit (1 pars) nearly corresponds to 1°. If $h = 10$ pars we get $\alpha = 20$. The reduction may be made by aid of a graphical curve, where the logarithmical correction is to be taken out directly. Such a curve has been made out for the Expedition.

h	α
1 pars	4.4
2 »	9.0
3 »	13.6
4 »	18.0
5 »	22.6
6 »	27.2
7 »	32.0
8 »	36.6
9 »	41.2
10 »	46.2

As to the scale unit of the box belonging to "Zschau" we have: $\sin \tfrac{1}{2} \alpha = 0.0393\, h$, where h means the turn to one side, expressed in scale units (pars). According to this, the present table, where α means the whole arc of oscillation, may be used. When the value of α is known, we may for correction, also in this case, use the above mentioned graphical curve, where, as mentioned, the logarithmical correction is found. The arc α ought always to be between the limits 10° and 23°. Finally log H is to be found by the formula:

$$\log H = C_s - \log T_o^2 = C_s - 2 \log T_0$$

In observations of oscillation correction has to be made for error on account of the chronometer rate. Also this correction can be performed logarithmically. Supposing the chronometer to be losing at the rate of one second a day, this means for:

The hour	.1/24	seconds
» minute . . .	.1/1440	»
» second . . .	.1/86400	»

The length of one second given by the chronometer has thus the value of 1 + 1/86400 seconds. The corresponding time of one oscillation is: T (1 + 1/86400) or:

$$\log T_0 = \log T + \log (1 + 1/86400)$$
$$= \log T + 0.00000503$$

If, on the other hand, the chronometer is gaining at the same rate, we have:

$$\log T_0 = \log T - 0.00000503$$

In the following table we give the correction, to be added to the 5th decimal of log T, with + if the chronometer is gaining and with — if the chronometer is losing.

Daily rate	0^s	1^s	2^s	3^s	4^s	5^s	6^s	7^s	8^s	9^s
0	0	1	1	2	2	3	3	4	4	5
10	5	6	6	7	7	8	8	9	9	10
20	10	11	11	12	12	13	13	14	14	15
30	15	16	16	17	17	18	18	19	19	20
40	20	21	21	22	22	23	23	24	24	25
50	25	26	26	27	27	28	28	29	29	30
60	30	31	31	32	32	33	33	34	34	35
70	35	36	36	37	37	38	38	39	39	40
80	40	41	41	42	42	43	43	44	44	45
90	45	46	46	47	47	48	48	49	49	50

Passing on to the correction for torsion we have:

$$\text{corr} = \tfrac{1}{2} \log (1 + \theta)$$

This correction may, in the neighbourhood of the magnetic pole, be of considerable magnitude and accordingly the value of same must be determined with the utmost accuracy. As to the reason why such an error appears, it may be remarked that not only is the horizontal force, multiplied by the magnetic moment of the oscillating magnet, decisive for the state of equilibrium, but the force of torsion tends also to keep the magnet in a certain position. Thus we have, when M means the magnetic moment of the magnet and k_1, k_2, k_3, k_4 and C are five constants,

for oscillation $$M\,H\,(1 + \theta) = \frac{k_1}{T^2}$$

for deflection: $$M/H = k_2 \sin \varphi$$

which combined give: $$H^2\,(1 + \theta) = \frac{k_3}{T^2 \sin \varphi}$$

or: $$H = \frac{k_4}{T\sqrt{1 + \theta}\sqrt{\sin \varphi}}$$

and finally: $$\log H = C - [\log T + \tfrac{1}{2} \log (1 + \theta)] - \tfrac{1}{2} \log \sin \varphi.$$

As to the way in which the material is obtained for determination of the value of the force of torsion, I may as an example give the data found at Potsdam, where the torsion head was turned clock-wise 10 times, then back again to the original position, then 10 turns counter-clock-wise and finally back to 0. This gives $10 + 10 = 20$ turns, which is $20 \times 360° = 7200°$, and we have when:

α means Torsion, 7200°,
ψ « Deflected angle, the angle between the two extreme positions,
d « Torsion moment,
D « Directing force, $M\,H$,
θ « Ratio of torsion.
where $M = \tfrac{1}{2}\, e^3\, H \sin \varphi$:

$$D = \tfrac{1}{2}\, e^3\, H^2 \sin \varphi \text{ and } \frac{\psi}{\alpha - \psi} = \frac{d}{D}$$

I may here remark that the observation of ψ is rather inaccurate. As, however, α is very large, we may calculate a mean value for d, by putting $\psi/\alpha = d/D$, by which we get:

$$d = \frac{D\,\psi}{\alpha} = \frac{H^2\, e^3\, \psi \sin \varphi}{2\,\alpha}$$

Now accepting for Potsdam $H = 0.1889$, we get, when e for Zschau and Seemann is respectively 29.80 cm and 28.55 cm, for $\log \frac{H^2 e^3}{2\,a}$: 8.8166 for Zschau and 8.8058 for Seemann, a here reckoned in degrees.

By aid of the angles ψ, observed at Potsdam, I can for d give the following table, where ψ is expressed in degrees and d in C. G. S.:

Magnet	2	3	4	5	6	7	I	II
ψ	2.3	2.5	1.8	2.7	2.0	2.0	3.0	2.0
d	—	—	0.033	0.033	0.040	0.039	0.037	0.037

by which we see that the mean figure for Seemann is 0.0370, and for Zschau we may put: 0.0362. Now $1 + \theta = 1 + \frac{d}{D}$, and we may with sufficiently close approximation put:

$$\log \text{nat}\ (1 + \theta) = \frac{d}{D}$$

from which, going back to Brigg's system, we get:

$$\log (1 + \theta) = 0.434 \frac{d}{D}$$

Substituting the value of $D = \frac{1}{2} e^3 H^2 \sin \varphi$, we get:

$$\tfrac{1}{2} \log (1 + \theta) = \frac{0.434\, d}{e^3 H^2 \sin \varphi} = \frac{0.434\, d}{e^3 H^2} \times \frac{1}{\sin \varphi}$$

The factor $\frac{0.434\, d}{e^3\, H^2}$ is presumed to be calculated separately for Zschau and Seemann.

For the logarithm of this quantity we find respectively: *5.223* and *5.243*. As a final result we get the values of the following table:

Magnet	$\log \sin \varphi$	$\log\ [(\frac{1}{2} \log (1 + \theta)]$
No. 3	9.690	0.00003
» 4	.456	.00006
» 5	.274	.00009
» 6	.484	.00009
» 7	.475	.00006
» I	.289	.00009
» II	.456	.00006

As we see, the corrections found at Potsdam are so small that it will not be necessary to consider the slight alterations of H and M. In the neighbourhood of the pole, where H is small compared with H of Potsdam, the influence will, however, be of much more consequence. It is therefore to be recommended, for each set of oscillations, to make out a determination for θ through the formula:

$$\theta = \frac{\psi}{a - \psi}$$

As much as 10 turns of the torsion head will probably not be required to give a reliable value at a place so near the pole.

The value of the logarithmical temperature coefficient b_s, determined from observations of oscillation made at Potsdam with the magnets before mentioned, is to be found in the table below. We have the formula:

$$\log T_0 = \log T - b_s t$$

where T, the time required for one oscillation, is supposed already to be corrected for all errors except that of the temperature influence.

Magnet	b_s
2	0.000050[1]
3	050
4	160
5	077
6	045
7	041
I	013
II	001

Finally I give the following table for the constants C_a, C_s and C for the same magnets. The table will be seen to contain two sets of values in case that a standard temperature of 10° C should be more convenient than 0°.

Magnet	t = 0° C			t = 10° C		
	C_a	C_s	C	C_a	C_s	C
2	—	—	9.61910	—	—	9.61900
3	8.96705	0.31699	.64202	8.96589	0.31803	.64196
4	.73519	.34013	.53766	.73186	.34334	.53760
5	.55169	.32771	.43970	.55000	.32928	.43964
6	.76040	.02820	.39430	.76535	.02913	.39424
7	.75225	.03807	.39516	.75128	.03892	.39510
I	.56529	.53377	.54953	.56488	.53406	.54947
II	.73185	.37015	.55100	.73183	.37005	.55094

The combined formula for determination of H is:

$$H = \frac{c}{T\sqrt{\sin \varphi}} \cdot [1 + \beta' t - 3/2\, \beta t' + \tfrac{1}{2}\, \alpha\, (t - t')]$$

As to the deflections made with the deflector at other distances than those used at Potsdam, I may remark:

Calling the distance used at Potsdam e_o and the larger distance you shall have to use at places near the pole e_n, furthermore calling the constants respectively C_{a_o} and C_{a_n}, we may with sufficiently close approximation put:

$$C_{a_n} = C_{a_o} + \log \left(\frac{e_o}{e_n}\right)^3$$

The table above is given for the distance 29.80 cm. and 28.55 cm. respectively for the magnets belonging to Zschau and Seemann. If the strong magnets are to be used at a place near the pole, the angle will be too large, but can be reduced by turning the

[1]) Uncertain.

deflector over a certain angle in relation to the direction of the bar. The Zschau instrument has an arrangement for this eventuality, where the angle through which the magnet has been turned can be read off exactly by aid of a scale and a pointer. This angle must of course be read and noted on the observation.

As to the torsion of the thread in observation of declination it is to be feared that this will influence the measurements to a certain degree, even if every precaution has been taken. As to the way in which the error can be determined, I may propose that the measurements be made with two magnets of different strength. To procure a suitably weak magnet you may make use of the torsion weight and fix to this a piece of magnetized steel thread. The combined weight must be exactly that of the cylinder magnet. Or you may even use the weakest of the two cylinder magnets, which may be made weaker by aid of a strong bar magnet. To start with you make a measurement with the strongest magnet, mark up and mark down, then the torsion head has to be turned clock-wise 90° or 180°, whereon some readings have to be taken. Now turn the torsion head back again and give the thread a counter-clock-wise torsion of the above mentioned magnitude, followed by a similar set of readings. Finally you turn the head back to the original position and take a new set of readings, mark up and mark down. A reading of the "Mark" must of course be added at the beginning and at the end. If exactly the same process has been employed with the weak magnet, you will observe that the torsion of the thread will make itself known in a different way in the two cases. Calling the difference of the readings in the two cases x, we have for the correction:

$$\text{corr} = \frac{\alpha}{\beta - \alpha} \cdot x$$

where the deflection angles of the strong and the weak magnet are respectively α and β. As to the sign + or —, this will simply emerge from the readings themselves.

As to the temperature coefficient of the variation instruments I may mention, that the provisional arrangement during the experiment for determination of the coefficient of the h-instrument at Potsdam consisted in putting some non-magnetic stones round about the instrument and isolating the whole by aid of a cylindrically shaped piece of cardboard, in front of which a hole had been cut to allow the rays to pass. During the experiment it is recommended to control the variation of the horizontal force by aid of an absolute instrument, so arranged with a deflected magnet that the variation can be read directly during the time the experiment is going on. Suppose the value of the temperature coefficient of the h-instrument was found to be — 6.0, this means that a rise in the temperature of 1.0° C produces a decrease in the measured ordinate n, corresponding to: $\delta n \, \varepsilon_h = 6.0 \, \gamma$, where ε_h means the scale value of the h-curve. In this connection I must recommend you, in the reduction, to refer this to a standard temperature and to a mean stand of the instrument, as this is very convenient when the scale value and the temperature coefficient is uncertain.

As to Lloyd's Balance, this instrument ought to be compensated according to the method already imparted to Wiik and the temperature coefficient may in this way be determined to an infinitely small value.

Some Final Remarks *by Aksel S. Steen.*

Inclination. — As the needle of the Fox-Circle is also intended to serve for measurement of the total intensity, *the polarity must never be reversed.* When used as an inclination needle, the magnet has an index error, the value of which can be determined if sufficient material is available. I must recommend you to collect such material by observing at two places, where the true value of the inclination is known and where the difference of the angle of inclination is the largest possible. The way of observing is ordinarily the same as by the usual inclinatorium. Besides the direct observation of inclination, the instrument is accommodated to relative observation of inclination by aid of deflection. The deflectors N and S shall be screwed on and the zero point of the deflector alhidade has to be adjusted, first to $(I—30)^\circ$ and then to $(I + 30)^\circ$, where I means the inclination angle of the free needle. In the last setting the alhidade has to be conducted through 90°, while in the first the needle is deflected through 90°. The set of observations ought to consist of at least 10 readings of both ends of the needle. When observing with the Fox-Circle, it is as a rule sufficient to use the needle in the position «mark out», but now and then observations with the needle in both positions ought to be taken. In this case you must observe so that the position «mark in» comes between two observations with «mark out», or *vice versa.*

Total Intensity. — In connection with observations of inclination relative measurements for determination of total intensity ought to be taken. For this purpose both the two deflectors N and S are to be screwed on and the zero point of the alhidade set on the reading found by observation of inclination. The needle, which during the screwing on of the deflectors has to be kept arrested in a position corresponding to an angle considerably less than I, may now be left free and at least 10 readings are to be taken at both ends of the needle, first with the needle deflected within the one quadrant and, when the needle by aid of the turner has been conducted past the vertical, a corresponding set of readings are to be taken in the second position.

Very careful observations of temperature during the experiments are absolutely necessary, and I must in this connection recommend you to collect a large material, taken at one and the same place, at temperatures which differ as much as possible. Such observations serve as material for determination of the constants necessary for the reduction. I do not think the Fox-Circle is suitable at a place too near the pole, but at the basis station observation of total intensity ought to be made as often as possible. This place will of course be the best for collecting of the mentioned material for determination of the reduction constants, as here the value of the magnetic elements are always known. The instrument is of course always to be put up in correspondence with the base-line direction. On your way home, along the north coast of America, as the value of the inclination is gradually decreasing, observations with the Fox-Circle may be of value as a control for the determinations of intensity.

General Rules to be followed in a Magnetic Survey. — Name of the station, year, month, day and time of the day (a.m. or p.m.) have always to be noted and in this connection also the number of the watch and thermometer employed. As watch for observation of declination, deflection, inclination, as well as total intensity, you may use a good pocket watch, which has been compared with the standard chronometer before and after the observation. For observation of oscillation you ought to use a chronometer which has also been properly compared. The thermometers ought now and then to be compared with the standard, the correction of which is known. This comparison has special interest in case of very low temperature readings. Examination of the point of zero by aid of melting snow ought also to be made. As to "Remarks", everything which may be thought to influence the results, ought to be noted down, for instance, how the needle is behaving, if moving uniformly or abruptly, steadily in one direction etc. If a lamp has to be employed during the observation, this must of course be noted, and everything containing steel or iron must be kept at a sufficient distance. If, for instance, weapons should be required in the neighbourhood of the station, various sets of observations have to be made with such object put in the place where it is required and with same at a sufficient distance. The two sets must of course be taken in immediate connection with each other, in order to be able to determine the influence of the object in question. It must be remembered that the disturbing influence of an object of steel or iron acts on the needle with a force which is inversely proportional to the square of the distance or even to the third power of the distance. All magnets used for determination of the intensity have to be handled with the utmost care, in order to keep the magnetic moment of the magnets as constant as possible. You must thus be careful, that the magnets do not receive any shocks and that they are not exposed to too strong and rapid alterations of temperature and that the needles are not brought under the influence of other magnets.

The Time of Oscillation and the Angle of Deflection for the Various Magnets. — The following table contains approximate values for T_0 and φ_0 respectively calculated according to the two formulae:

$$\log H = C_a - \log \sin \varphi_0$$
$$\log H = C_s - 2 \log T_0$$

whereby the two constants C_a and C_s are given values corresponding to 10° C.

τ	H	Z 3		Z 4		Z 5		Z 6		Z 7		S I		S II	
		T_0	φ_0	T_0	φ_0	T_0	φ_0	T_0	φ_0	T_0	φ_0	T_0	φ_0	T_0	φ_0
°	C. G. S.	s	°	s	°	s	°	s	°	s	°	s	°	s	°
75.2	0.16000	3.6	36	3.7	20	3.7	13	2.6	21	2.6	20	4.6	13	3.8	20
76.1	0.15000	3.7	38	3.8	21	3.8	14	2.7	22	2.7	22	4.7	14	3.9	21
77.1	0.14000	3.9	42	4.0	22	3.9	15	2.8	24	2.8	23	4.9	15	4.1	22
78.0	0.13000	4.0	45	4.1	24	4.0	16	2.9	26	2.9	25	5.1	17	4.2	24
78.9	0.12000	4.2	50	4.3	27	4.2	17	3.0	28	3.0	28	5.3	18	4.4	26
79.8	0.11000	4.4	57	4.5	30	4.4	19	3.1	31	3.1	31	5.6	20	4.6	30
80.7	0.10000	4.6	68	4.7	33	4.6	21	3.3	35	3.3	34	5.9	22	4.8	33
81.7	0.09000	4.8	—	4.9	37	4.9	23	3.5	40	3.5	39	6.2	24	5.1	37
82.6	0.08000	5.1	—	5.2	42	5.2	27	3.7	46	3.7	45	6.5	28	5.4	42
83.5	0.07000	5.5	—	5.6	50	5.6	31	4.0	55	4.0	53	7.0	32	5.8	50
84.4	0.06000	5.9	—	6.1	64	6.0	37	4.3	73	4.3	69	7.6	38	6.3	64
85.4	0.05000	6.5	—	6.7	—	6.6	45	4.7	—	4.7	—	8.3	47	6.9	—
86.3	0.04000	7.2	—	7.4	—	7.3	63	5.2	—	5.2	—	9.2	66	7.7	—
87.2	0.03000	8.2	—	8.5	—	8.4	—	6.0	—	6.2	—	10.7	—	8.9	—
88.1	0.02000	10.2	—	10.5	—	10.3	—	7.3	—	7.4	—	13.1	—	10.8	—
89.1	0.01000	14.4	—	14.9	—	14.6	—	10.3	—	10.5	—	18.5	—	15.3	—
89°16′	0.00800	16.1	—	16.6	—	16.3	—	11.6	—	11.7	—	20.7	—	17.1	—
89 27	0.00600	18.6	—	19.2	—	18.9	—	13.4	—	13.5	—	23.9	—	19.8	—
89 38	0.00400	22.8	—	23.5	—	23.1	—	16.4	—	16.5	—	29.2	—	24.2	—
89 49	0.00200	32.2	—	33.2	—	32.7	—	23.1	—	23.4	—	41.4	—	34.2	—
89 55′	0.00100	45.6	—	47.0	—	46.2	—	32.7	—	33.1	—	58.5	—	48.4	—

Everywhere along the west coast of Greenland there will be opportunities of making observations for determination of horizontal intensity both through deflection and oscillation. The same must be the case if you take up your winter quarters in Lancaster Strait. The Zschau deflector No. 5 and the Seemann deflector No. I will be convenient magnets. Coming closer up towards the pole, deflections cannot be taken by using such short deflection distances as those for which the reduction constants have been made out. As to the constants in this case, I may refer to the formula given by Dr. Edler, by which the constants required can be calculated approximately.

It is to be recommended, as far as this is possible, to make observations at one and the same place with as many of the magnets as time allows, deflections as well as oscillations. I suppose you ought to use the magnetometer Seemann as standard instrument at the basis station and Zschau for fieldwork. In the neighbourhood of the pole the Zschau is especially suitable on account of the arrangement this instrument has, for instance, the additional bar, by aid of which convenient angles of deflection can be had, even at small values of H. I should think Defl. 6 and Defl. 7 are very suiatble magnets in this case.

Quick-run-records. — In a letter, dated 13th of May, 1903, Dr. Ad. Schmidt advised Amundsen to secure quik-run records for the following term days, saying: «The international term observations will be continued also this year, as the English South Polar ship «Discovery» will still continue her observations».

Term days in Gr. M. T.		
Date		Hour
Oct.	1	4— 5 p.m.
»	15	5— 6 p.m.
Nov.	1	6— 7 p.m.
»	15	7— 8 p.m.
Dec.	1	8— 9 p.m.
»	15	9—10 p.m.

Magnetic Instruments.

For the various magnetic measurements the Expedition was provided with the following instruments:

A. Theodolite Zschau, No. 289, referred to as Z.
B. Theodolite Seemann, » 219, » » » S.
C. Inclinatorium Dover, » 154, » » » Dover.
D. The Fox-circle, » 21, » » » Fox.
E. Earth-Inductor, Toepfer, . . . , » » » E. I.
F. The variometer instruments, Eschenhagen, referred to as the d-, h- and z-variometer.

To this we may add five chronometers, referred to as A, B, C, D and E, besides two small pocket chronometers, No. 7 and No. 8, and finally six thermometers designated I, II, 4, 5, 6 and 898.

Theodolite Zschau, No. 289.

This instrument was designed in 1893 by the late director of Deutsche Seewarte in Hamburg, Professor Dr. G. von Neumayer, and was manufactured under his special supervision by *E. A. Zschau*, the mechanician of Deutsche Seewarte. It was constructed in view of the First Expedition with the Fram, conducted by *Fridtjof Nansen*, and later on used during the Second Expedition with the Fram, conducted by *Otto Sverdrup*. The magnetometer was especially accommodated to the conditions expected in arctic regions and may be said to be a combination of the Neumayer Declinatorium and a Fox Apparatus[1] and could thus serve for observations of declination, deflection, oscillation, inclination and total intensity.

As to the main part of the instrument, we may mention, that to the horizontal circle, provided with a box level, a telescope connected with an alhidade was fixed excentrically. The telescope was adapted for setting on the "Mark", and the readings of the horizontal circle could be read with an exactitude of half a minute. The magnet box was loose and could be fixed on the instrument when needed.

For observation of declination the instrument was provided with a double magnet with a mirror fixed between two needles, which was supported by aid of a pin. This magnet, usually referred to as P, was so made that it could be put in two positions, «screw up» and «screw down». For further information we may refer to «Terrestrial Magnetism» by Aksel S. Steen[2]. As the double magnet supported on a pin had proved

[1]) Handbuch der Nautischen Instrumente, Zweite Auflage, Berlin 1890, page 272 and The Norwegian Polar Expedition, 1893—1896, Results Vol. II, Memoir VII. (Fram I).

[2]) «The Norwegian North Polar Expedition 1893—1896, Scientific Results», edited by Fridtjof Nansen, Vol. II, Memoir VII. (Fram I).

to be very little reliable, the magnet box was for use during the Gjøa Expedition provided with a tube, in which the magnet could be suspended by a cocoonfibre. The old arrangement could, however, still be used, and we see that Wiik has observed with the double magnet on pin at Godhavn on the 27th of July 1903, the magnet here being referred to as D_m. As suspended needle a new cylinder magnet was made, here referred to as C_I. This magnet was hollow, and the north end of it was covered with a mirror. Besides the above-mentioned, there was also an extra magnet for suspension, referred to as A_m, which was used some few times, at Godhavn for instance. To control the torsion of the thread, the tube was provided with a torsion head with a pointer, moving over a scale. A non-magnetic weight, the lower part of which carried an edged cross bar, could be turned over a scale fixed to the bottom of the magnet box. The unit of the scale in the box has been given by Dr. Edler (see page 14).

For observation of deflection, whereby the force of the horizontal intensity can be determined, there was originally a small magnet, which was made only to be put in one position. This magnet has previously been referred to as L. During Amundsen's expedition the before-mentioned cylinder magnet C_I was used as deflected magnet, and as deflectors served originally two magnets, previously referred to as V and VI, the lengths of which were respectively 99.0 mm. and 98.0 mm. Besides these two, Amundsen had 10 new magnets made, and the Expedition thus carried 12 deflectors with them for this instrument. The whole of them were at Potsdam marked with consecutive numbers from 2 to 13, whereby the two old «Fram magnets» V and VI have got new signs, respectively 5 and 4. Some of these new deflectors were made so that they had a very small magnetic moment and were thus especially intended for use in the immediate neighbourhood of the magnetic pole. The original set of bars, belonging to the instrument, carried two index marks *e* and *E*, corresponding respectively to the distances 29.84 cm. and 39.64 cm. according to measurements made in Hamburg in 1893. During the Second Fram Expedition, a new set of bars had to be made, as the old set proved to be too short. We may refer to "Terrestrial Magnetism" by Aksel S. Steen[1]. Also this new set of bars was provided with the index mark *e* and *E*. The exact measurements of the new bars were undertaken by Professor Sem Sæland and made in the physical laboratory of the University of Oslo the 23rd of September 1909. Both sets of bars were so made that they could be screwed compactly to the outside border of the horizontal circle of the instrument, having the shape shown by the sketch in Fig. 1.

Fig. 1. The additional bar for the Zschau Instrument.

Looking at the sketch, it will be understood, that the curved border, indicated by *K*, rested against the circle of the instrument. Now calling the radius of the outside border of the circle x, and the distance from this border, K, to the index marks, e' and E' respectively, we can for the whole distance put:

$$e = (x + e') \text{ and } E = (x + E')$$

for both the old and the new set of bars, introducing the signs:

k_e . . .	short	bars,	short	distance.
k_E . . .	»	»	long	»
l_e . . .	long	»	short	»
l_E . .	»	»	long	»

[1]) «Report of the Second Norwegian Arctic Expedition in the Fram 1898—1903», published by «Videnskapsselskapet i Kristiania» 1907. No. 6, (Fram II).

by which the total distance $(x + e')$ and $(x + E')$ is meant, we can as final results for Sælands measurements, made at a temperature of $+ 16.3°$ C, reduced to $0°$ C, give the following values actually used in this work:

$$k_e = 29.80 \text{ cm.} \quad l_e = 47.34 \text{ cm.}$$
$$k_E = 39.62 \text{ cm.} \quad l_E = 62.09 \text{ cm.}$$

For observations of oscillation any of the deflectors 2—13 can be used. From the instrumental point of view only the thread and the scale, over which the oscillating magnet is moving, is of consequence. The Zschau has, as far as can be seen, only been used for oscillation during the stay at Godhavn. At Gjøahavn no observation of this kind was made, and at King Point the magnet box of the Seemann was used in observation of oscillation even when the Zschau deflectors were employed.

For observation of inclination the Zschau was, as mentioned page 21, combined with a Fox Circle. The magnet box and the telescope of the magnetometer must in this case be removed and a vertical circle, Fox Circle No. 21, has to be fixed to the alhidade of the horizontal circle. Thus mounted, the instrument may be used as inclinatorium. The Fox Circle No. 21 was the only instrument for observation of inclination which the two expeditions «Fram I» and «Fram II» possessed. The needles originally belonging to the instrument were designated as B and B^I. For use during Amundsen's expedition the Fox Circle was provided with two new needles, made by the firm "Dover" in London.

For observation of total intensity the Zschau could be used when it was connected with the Fox Circle No. 21. These observations are relative, and for deflecting purposes of this kind the instrument was provided with two cylindrical magnets, which can be screwed into the alhidade on the back of the circle. The two deflectors, designated as N and S, may be used separately as well as in combination. Both methods have been practised, and in case only one of the deflectors was used, the angle of inclination has been deduced, while in the other case, when both deflectors were screwed on, the value of the total intensity has been extracted from the observation.

Theodolite Seemann, No. 219.

The instrument was made in 1902, specially for Amundsen's expedition with the Gjøa. Also this magnetometer was designed by Professor von Neumayer and manufactured by the mechanician of Deutsche Seewarte, *C. Seemann.* The instrument was constructed exactly as the Zschau and could therefore in every respect replace it, when the Zschau was being used for fieldwork[1]. As to the description we may refer to what has already been said concerning the Zschau, but shall add the following:

For observation of declination there was originally a pin arrangement with a double magnet by aid of which the declination data from the survey in Norway had been collected. Afterwards it was resolved also to reconstruct the Seemann in the same way as has been described concerning the Zschau. After the change a new cylinder magnet was made to serve as suspended magnet, being similar to the one made for Zschau and designated as C_{II}. To control the torsion of the thread the arrangement was the same as mentioned for Zschau, excepting the division of the scale at the bottom of the magnet box, where one pars, according to Dr. Edler, nearly corresponded to 1°.

For observation of deflection, intended for deducing the value of H, there was originally a small needle, the north end of which was provided with a vertical mirror. This magnet, designed for pin arrangement, was after the change of the instrument replaced by the cylinder magnet C_{II}, mentioned when speaking of declination. The two deflectors made for the Seemann, designated as I and II, were prismatic bar magnets edged towards

[1] «Jordmagnetiske Maalinger i Norge, Sommeren 1902» by Aksel S. Steen. Archiv for Mathematik og Naturvidenskab. Bd. XXVI, No. 7, Kristiania, 1904.

the ends, and had a length of respectively 99.0 mm. and 99.5 mm. The deflection bars were to be fixed to the alhidade of the horizontal circle, where a hole had been made so that the bars could be screwed on. The bars carried two index marks e and E and the distance between these marks and the centre of the magnet box had been measured during Amundsen's stay at Potsdam in 1903. For use at Gjøahavn the deflection bars of the Seemann proved to be too short. This eventuality had, however, been foreseen and the Expedition was therefore by Dr. Edler provided with special material, from which Wiik, during the first months of the stay at Gjøahavn, prepared some additional pieces, so made that they could be screwed into the holes in the horizontal circle instead of the short bars. The other end of the additional pieces contained a hole, into which the original bars could be screwed, when long bars were to be used. It will, from what has been said, be understood that the deflector distance l_e and l_E, also here introducing the signs used for the Zschau, can be got simply by putting:

$$l_e = (k_e + c) \text{ and } l_E = (k_E + c)$$

if by c we mean the length of the additional pieces. From the so called Instrument Journal, a diary kept by Wiik during the stay at Gjøahavn (which in the List, page 15 of Part I, has got No. 31) we see that the additional pieces has been carefully measured by Wiik, and he states here that the length of these, reduced to 0° C, is 22.53 cm. According to Edler's and Wiik's measurements we can as final values, actually used in this paper, for the four deflection distances, reduced to 0° C, give:

$$k_e = 28.55 \text{ cm.} \quad l_e = 51.08 \text{ cm.}$$
$$k_E = 38.82 \text{ »} \quad l_E = 61.35 \text{ »}$$

For observation of oscillation the two above-mentioned bar magnets I and II were used during the stay at King Point. The scale fixed to the bottom of the magnet box was made of ivory and the unit of division was, as mentioned, practically 1°.

For observation of inclination the Seemann was accommodated in the same way as the Zschau. In "Jordmagnetiske Maalinger i Norge, Sommeren 1902" we read as follows: "An inclinatorium of the same form as a Fox Circle could be fixed to the horizontal circle of the instrument. To this Fox Circle belonged two needles, designated as A and B, of which, however, only the last was usable. The observations were carried out in the same manner as with "Dover Circle", by reversing and remagnetizing of the needles, but the accuracy of the result could not by far be compared to that of the Dover». The Fox Circle mentioned was not used during the Expedition.

Inclinatorium Dover No. 154.

The Dover inclinatorium was manufactured by the firm *Dover* in London and, as it was of the ordinary and well-known pattern, no special desription is needed. Dover No. 154 with two needles, designated as I and II, had been purchased by Amundsen for the Gjøa Expedition and was used by Steen during the before-mentioned survey in Norway in the summer 1902. The two needles, according to the report of the survey, agreed well. No observations seem to have been taken at Potsdam in 1903 with this instrument.

The Fox Circle No. 21.

Concerning this instrument we refer to what has already been said above in connection with Zschau No. 289, with which instrument the Fox Circle could be combined.

The Earth Inductor Toepfer[1].

The instrument consisted of an inductor (Schulze) and a galvanometer of the well-known pattern, manufactured by Otto Toepfer at Potsdam, and does not, therefore, need any special description. It was purchased by Amundsen in 1902 and controlled at Potsdam Observatory in April 1903 with good results. The Inductor was certainly meant to be the chief instrument for measurements of inclination during the stay at the basis station. This delicate instrument proved, however, to be of little use during the stay at Gjøahavn. The conditions under which they had to work were not such that the instrument could be expected to give good results. Thus we see from Wiik's diary that dust and even sand blew into the absolute observatory with the result that the instrument was partly ruined. The Inductor was therefore only used some few times at Gjøahavn.

Control Oservations of the Constants of the Magnetic Instruments.

General Remarks. — As the special circumstances made it necessary to deduce the value of H from deflections (oscillations) alone, the value of the magnetic moment of the deflectors must be known. In consequence of this the following control observations have been made with the Zschau, as it originally was:

At Hamburg . . . .June 1893,
» Wilhelmshafen . .April 1897,
» Wilhelmshafen . .April 1898,
» Potsdam . . . . .December 1902,

and after having been reconstructed and provided with new deflectors etc.:

At Potsdam . . . . .April 1903,
» Sitka . . . . . .Sep.—Oct. 1906,
» Sitka . . . . . .February 1907,
» Potsdam . . . . .August 1907.

As to the results of the measurements in 1893—1902 we refer to the above-mentioned publications from the First[2] and Second[3] Fram Expeditions and the results of the measurements in 1903—1907 will be found in the following tables. For the calculations of the constants the following formulae are used:

$$C_a = \log H + \log \sin \varphi_0$$
$$C_s = \log H + 2 \log T_0$$
$$\log \sin \varphi_0 = \log \sin \varphi + b_a.t.10^{-5}$$
$$\log T_0 = \log T - b_s.t.10^{-5}$$
$$b_a = \frac{\log \sin \varphi_1 - \log \sin \varphi_2}{t_1 - t_2}$$
$$b_s = \frac{\log T_1 - \log T_2}{t_1 - t_2}$$

where t_1 and t_2 stand for high and low temperature readings.

Before the Seemann magnetometer had been sent to Norway, there to be used for the before-mentioned survey made by Steen, Amundsen had taken it to Wilhelmshafen, where he and Dr. Stück, at that time assistent at the observatory, made a series of control measurements (deflections as well as oscillations) during the days from 24th to 29th of June 1902. By aid of the data collected Dr. Stück was able to calculate preli-

[1]) Ergebnisse der Magnetischen Beobachtungen in Potsdam, 1901, von Ad. Schmidt.
[2]) The Norwegian North Polar Expedition 1893—1896. (Fram I).
[3]) Report of the Second Norwegian Arctic Expedition in the Fram, 1898—1902. (Fram II).

minary values for the magnetic moment of the two deflectors I and II. Beside the control observations made at Wilhelmshafen in 1902, we have only some few measurements taken at Potsdam during the days from 13th to 23rd of April 1903 in connection with similar observations for Zschau, as, by a piece of bad luck, the Seemann magnetometer, with the magnets belonging to it, was lost in the sea during the disembarkation at Nome in September 1906.

Control Observations taken at Potsdam Observatory in April 1903. — The constants extracted from the observations taken at Potsdam in April 1903 were, as mentioned, worked out by Dr. Edler, and the values found for the temperature coefficient for the various deflectors have already been given on page 13 for b_a, and page 17 for b_s. This last page contains also a table giving the values found for the constants C_a and C_s, besides values for C, belonging to the combined formula.

Control Observations taken at Sitka Observatory Sep.—Oct. 1906 and Feb. 1907. — The superintendent of the Sitka Observatory, Mr. J. W. Perkin, has given the following statement concerning the observations: "Comparisons between Captain Amundsen's instruments and those of the observatory were made principally by means of simultaneous observations, but some additional observations for horizontal intensity with the Zschau No. 289 were also made. In the case of the simultaneous observations, one instrument was mounted on the regular pier in the absolute observatory, while the other was in another building, designated auxiliary observatory, the observations with each instrument being about equally divided between the two places, so that the difference between the two observatories could be obtained from the observations. The observatory values refer to the pier in the absolute observatory where the absolute observations were made regularly. In obtaining them corrections have been applied to reduce to the standard instruments of the Cheltenham Magnetic Observatory.

It will be noticed that the difference between the circles No. 154 and No. 25 was not the same in February 1907, as it was in September and October 1906. Probably greater weight should be given to the February observations, as adopted correction to the dip circle No. 25 depends on comparison with the Schulze Earth Inductor No. 2 made in April 1907. However, the results of the dip observations with No. 25 have never been entirely satisfactory, and the lack of agreement of the 1906 and 1907 comparisons may be due simply to error in observations.

The observations with Captain Amundsen's instrument are transmitted just as they were received from the observers, without attempting a complete computation, as it will probably be more satisfactory for you to compute them in connection with other observations with the same instruments".

With regard to his observations Dr. Edmonds states: "The comparison observations were taken in the same way that Captain Amundsen observed. I did not make any check distance measurements, as I suppose that these are better known at the Norwegian observatory. The deflection thermometer was hung from the cylinder. The oscillation thermometer lay flat in the inside of the box. The upper support of the oscillation magnet is very small in diameter and almost impossible to get torsion observations from. Captain Amundsen was not in habit of so doing".

From the following observations it will be seen that they were always made at two deflection distances. These two distances were those we are accustomed to designate as k_e and k_E. The observations of deflection made at Potsdam in August 1907 were also made at these two distances and we may therefore expect to get a reliable value for the reduction constant P for the magnets belonging to Zschau.

The observatory values for H, I and D stated in the following tables refer, as said above, to the main pier in the abolute observatory. Part of the observations with Amundsen's instruments were made in the auxiliary observatory and to get these observations reduced to the value of the absolute observatory the following corrections are required:

Declination . . . . . 0.5′
Dip . . . . + 2.4′
Horizontal Intensity . — 28 γ

Declination.

Observatory				Zschau No. 289.				
Year	Date	L. M. T.	No. 25	Aux. O.	Red.	Abs. O.	Corr.	Obs
		h. m.	° ′	° ′	′	° ′	′	
1906	Sep. 21	8 39	30 11.3 E	30 10.4	+ 0.5	30 10.9	+ 0.4	A.
»	» 21	8 59	30 8.0 »	30 7.9	0.5	30 8.4	— 0.4	»
»	» 22	9 54	29 56.8 »	29 58.1	0.5	29 58.6	— 1.8	»
»	» 22	10 18	30 3.1 »	30 4.8	0.5	30 5.3	— 2.2	»
»	» 23	11 54	30 2.5 »	—	—	30 0.4	+ 2.1	»
»	» 23	12 8	30 1.9 »	—	—	29 59.9	+ 2.0	»
»	» 24	10 2	30 1.9 »	—	—	30 3.7	— 1.8	»
»	» 24	10 16	30 0.2 »	—	—	29 59.8	+ 0.4	»
»	» 24	14 25	30 1.7 »	—	—	30 3.2	— 1.5	»
»	» 24	14 40	30 0.9 »	—	—	30 0.8	+ 0.1	»
»	» 24	16 44	29 57.4 »	—	—	29 59.1	— 1.7	»
»	» 24	16 56	29 58.6 »	—	—	30 0.7	— 2.1	»
»	Oct. 2	13 42	30 0.9	—	—	30 4.5	— 3.6	S.
»	» 2	14 11	29 59.3 »	—	—	30 1.3	— 2.0	»
1907	Feb. 11	16 5	29 59.8 »	—	—	30 4.8	— 5.0	E.
»	» 16	15 6	30 6.0 »	—	—	30 7.8	— 1.8	»
»	» 16	15 23	30 6.1 »	—	—	30 8.4	— 2.3	»
»	» 16	15 40	30 6.1 »	—	—	30 8.7	— 2.6	»
»	» 19	9 51	30 4.0 »	—	—	30 6.2	— 2.2	»
»	» 19	10 12	30 4.0 »	—	—	30 6.8	— 2.8	»
»	» 19	10 33	30 2.9 »	—	—	30 5.7	— 2.8	»

The constants extracted from each single observation will be found in the following tables. For the constant C_a values are given for the two bar distances k_e and k_E for the Zschau magnets 2, 3, 4, 5, 6, 7, 8 and 9, and the constant C_s for the same magnets, except 8 and 9. Under the heading t the mean temperature during the observation in question has been stated, whereby the temperature coefficients b_a and b_s can be had. The initials of the three observers Amundsen, Edmonds and Sowers, A, E and S, are found under the heading Obs. The two above-mentioned stations are indicated by Aux. and Abs. and finally the suspended magnet is indicated in the last column.

Sitka, Zschau, L. M. T.

Year	Date	Hour	Defl. 2		t	Obs.	St.	S.M.
			k_e	k_E				
		h. m.			°			
1906	Sep. 21	11 25	8.94686	8.56516	11.8	A	Aux	I
»	» 21	13 41	.94755	.56694	12.9	»	»	»
»	» 24	10 38	.94867	*.56862*	12.1	»	Abs	»
»	Oct. 5	8 51	.94797	.56645	10.4	S	Aux	»
»	» 16	8 43	.94815	*.56465*	10.2	E	Abs	»
»	» 17	9 5	.94882	*.56865*	8.5	»	»	»
»	» 19	9 16	.94887	*.56815*	8.4	S	Aux	»
»	» 20	8 48	.94739	.56510	8.1	»	»	»
»	» 25	9 12	.94718	.56519	8.0	»	Abs	»
1907	Feb. 14	10 52	.94888	.56534	7.8	E	»	»
»	» 15	15 5	.94872	.56772	7.6	»	»	»
»	» 18	10 57	.94987	.56889	—0.4	»	»	»

Sitka, Zschau, L. M. T.

Year	Date	Hour	Defl. 3		t	Obs.	St.	S. M
			k_e	k_E				
		h. m.			°			
1906	Sep. 21	15 10	*8.95087*	8.57040	14.5	A	Aux	I
»	» 24	11 33	.95329	.57238	12.4	»	Abs.	»
»	Oct. 5	10 24	*.95164*	.57070	11.1	»	Aux.	»
»	» 16	10 2	.95333	.57240	10.4	E	Abs.	»
»	» 17	10 9	.95365	.57227	9.7	»	»	»
»	» 19	10 14	.95269	.57166	9.6	S	Aux.	»
»	» 20	10 22	.95241	.56937	8.8	»	»	»
»	» 25	10 20	.95235	.57330	8.7	»	Abs.	»
1907	Feb. 14	14 26	.95398	.57264	8.6	E	»	»
»	» 15	16 0	.95351	.57265	7.5	»	»	»
»	» 18	11 33	.95475	.57364	2.0	»	»	»

Year	Date	Hour	Defl. 4		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Sep. 21	15 39	8.73055	8.34953	15.5	A	Aux.	I
»	» 24	11 52	.73174	.35011	12.8	»	Abs.	»
»	Oct. 5	10 55	*.73093*	.34929	11.4	S	Aux.	»
»	» 16	10 27	.73294	.35206	10.8	E	Abs.	»
»	» 17	10 26	.73225	.35074	10.8	»	»	»
»	» 19	10 44	.73330	.35145	10.4	S	Aux.	»
»	» 20	10 48	.73355	.35312	9.2	»	»	
»	» 25	10 40	.73254	.34981	9.0	»	Abs.	»
1907	Feb. 14	15 6	.73340	.35241	8.4	E	»	»
»	» 15	16 23	.73240	*.35044*	8.1	»	»	»
»	» 18	13 45	.73428	.35367	4.6	»	»	»

Year	Date	Hour	Defl. 5		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Sep. 21	16 24	8.54884	8.16858	15.5	A	Aux.	I
»	» 24	14 57	.55030	.17071	13.6	»	Abs.	»
»	Oct. 5	12 0	.55134	.17201	11.7	S	Aux.	»
»	» 16	11 38	.55106	.17005	11.5	E	Abs.	»
»	» 17	11 37	.54923	.16840	11.4	»	»	»
»	» 19	11 37	.55233	.17082	9.4	S	Aux.	»
»	» 20	11 35	.55082	.17293	9.7	»	»	»
»	» 25	11 31	.55125	.16921	9.3	»	Abs.	»
1907	Feb. 15	10 11	.55117	.16890	8.6	E	»	»
»	» 18	14 38	.55272	.17230	5.4	»	»	»

Year	Date	Hour	Defl. 6		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Sep. 22	10 31	8.75100	8.36912	13.5	A	Aux.	I
»	» 24	15 47	.75188	.36965	13.0	»	Abs.	»
»	Oct. 5	13 26	.74909	.36800	12.3	S	Aux.	»
»	» 16	13 10	.75091	.36965	12.0	E	Abs.	»
»	» 17	13 14	.75033	.36887	11.4	»	»	»
»	» 19	12 2	.75264	.37077	11.0	S	Aux.	»
»	» 20	11 54	.75144	.37012	9.8	»	»	»
»	» 25	12 58	.74935	.36779	9.5	»	»	»
1907	Feb. 15	11 0	.74954	.36865	8.8	E	Abs.	»
»	» 18	15 3	.75172	.37062	5.4	»	»	»

Sitka, Zschau, L. M. T.

Year	Date	Hour	Defl. 7		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Sep. 22	11 48	8.73316	8.35225	14.4	A	Aux.	I
»	» 24	16 12	.73519	.35387	13.6	»	Abs.	»
»	Oct. 5	14 42	.73434	.35254	13.6	S	Aux.	»
»	» 16	15 4	.73519	.35363	13.0	E	Abs.	»
»	» 17	14 2	.73450	.35247	12.9	»	»	»
»	» 19	13 53	.73327	.35147	11.5	S	Aux.	»
»	» 20	13 31	.73476	.35324	9.9	»	»	»
»	» 25	13 58	.73395	*.35119*	9.7	»	Abs.	»
1907	Feb. 15	11 28	*.73246*	.38343	9.1	E	»	».
»	» 18	15 49	.73505	.35366	5.0	»	»	»

Year	Date	Hour	Defl. 8		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Oct. 5	15 17	8.16989	7.79270	15.5	A	Aux.	I
»	» 16	14 23	.17171	.79256	15.5	E	Abs.	»
»	» 17	14 23	.17060	.79035	12.6	»	»	»
»	» 19	14 21	.17135	.79167	12.3	S	Aux.	»
»	» 20	13 52	*.16688*	.79144	9.5	»	»	»
»	» 25	14 20	*.16826*	*.78856*	9.2	»	Abs.	»
1907	Feb. 15	13 52	.17252	.79275	9.0	E	»	»
»	» 18	16 14	.17258	.79402	5.0	»	»	»

Year	Date	Hour	Defl. 9		t	Obs.	St.	S. M.
			k_e	k_E				
		h. m.			°			
1906	Oct. 5	15 40	7.89088	7.51155	15.5	A	Aux.	I
»	» 16	14 56	.89069	*.51786*	13.3	E	Abs.	»
»	» 17	15 1	.88920	.51313	12.6	»	»	»
»	» 19	15 2	.88844	.51569	12.1	S	Aux.	»
»	» 20	14 29	.88979	.51244	10.0	»	»	»
»	» 25	15 2	*.88409*	*.51740*	9.8	»	Abs.	»
1907	Feb. 15	14 28	.89032	*.50696*	9.6	E	»	»
»	» 18	16 50	*.88819*	.51169	4.8	»	»	»

Year	Date	Hour	C_s	t	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 21	14 12	*0.27957*	13.2	1131	A	Aux.	Defl. 2.
»	» 24	11 2	.28989	11.8	557	»	Abs.	
»	Oct. 5	9 38	.29036	9.8	1131	S	Aux.	
»	» 16	9 12	.29240	9.2	557	E	Abs.	
»	» 17	9 26	.28833	8.5	557	»	»	
»	» 19	9 35	.29025	7.7	1131	»	Aux.	
»	» 20	9 6	.28777	7.1	1131	»	»	
»	» 25	9 38	.28919	7.0	1131	»	Abs.	
1907	Feb. 14	11 22	.29098	6.3	557	»	»	
»	» 15	15 30	.28977	6.1	557	»	»	
»	» 18	10 57	*.29086*	− 1.7	557	»	»	

Sitka, Zschau, L. M. T.

Year	Date	Hour	C_s	*t*	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 21	14 45	0.32875	13.9	1131	A	Aux.	Defl. 3.
»	» 24	11 17	.33008	11.8	557	»	Abs.	
»	Oct. 5	9 59	.33044	10.0	1131	S	Aux.	
»	» 16	9 35	.33106	9.6	557	E	Abs.	
»	» 17	9 45	*.32768*	8.6	557	»	»	
»	» 19	9 52	.32961	8.0	557	»	Aux.	
»	» 20	9 24	.32819	7.4	1131	»	»	
»	» 25	9 57	.32708	7.4	1131	S	Abs.	
1907	Feb. 14	11 36	.33117	6.8	1131	E	»	
»	» 14	14 2	.32727	6.8	1131	»	»	
»	» 15	15 42	.33012	5.9	1131	»	»	
»	» 18	11 10	*.32975*	— 1.0	1131	»	»	

Year	Date	Hour	C_s	*t*	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 21	15 57	0.34268	15.3	1131			Defl. 4.
»	» 24	12 6	.34476	13.1	557			
»	Oct. 5	11 22	.34399	10.8	1131			
»	» 16	10 45	.34227	10.2	557			
»	» 17	10 46	.33949	9.1	557			
»	» 19	12 2	*.34566*	9.0	1131			
»	» 20	11 4	.34075	8.5	1131			
»	» 25	10 55	.33920	7.6	557			
1907	Feb. 14	15 30	.34093	7.3	557			
»	» 15	16 42	.33920	6.9	557			
»	» 18	14 8	.34077	0.7	557			

Year	Date	Hour	C_s	*t*	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 21	16 17	0.32738	14.9	1131	A	Aux.	Defl. 5.
»	» 24	15 17	*.33022*	13.2	557	»	Abs.	
»	Oct. 5	11 44	.32528	12.4	1131	S	Aux.	
»	» 16	11 15	.32711	12.1	557	E	Abs.	
»	» 16	14 40	.32399	11.0	557	»	»	
»	» 17	11 19	.32529	11.0	557	»	»	
»	» 17	14 40	.32510	9.6	557	»	»	
»	» 19	11 15	.32669	9.2	1131	»	»	
»	» 19	14 41	.32561	8.4	1131	»	Aux.	
»	» 20	11 18	.32454	8.2	1131	»	»	
»	» 20	14 12	.32576	8.2	1131	»	»	
»	» 25	11 12	.32591	8.1	557	S	Abs.	
»	» 25	14 43	.32607	8.0	557	»	»	
1907	Feb. 14	14 40	.32344	7.9	557	E	»	
»	» 15	10 30	.32459	7.9	557	»	»	
»	» 15	14 10	.32588	7.0	527	»	»	
»	» 18	14 16	.32535	3.1	557	»	»	
»	» 18	16 30	.32468	3.1	557	»	»	

Sitka, Zschau, L. M. T.

Year	Date	Hour	C_s	t	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 22	11 14	0.03677	13.0	1131	E	Abs.	Defl. 6.
»	» 24	15 32	*3445*	11.7	557	A	»	
»	Oct. 5	13 54	3878	11.2	1151	S	Aux.	
»	» 16	13 30	3563	11.0	557	E	Abs.	
»	» 17	13 30	*4180*	10.2	557	»	»	
»	» 19	12 18	3725	9.9	1131	»	Aux.	
»	» 20	12 8	3710	8.3	1131	»	»	
»	» 25	13 15	3572	8.1	557	»	Abs.	
1907	Feb. 15	10 49	3531	7.1	557	»	»	
»	» 18	15 20	3643	3.3	557	»	»	

Year	Date	Hour	C_s	t	Chron.	Obs.	St.	M.
		h. m.		°				
1906	Sep. 22	11 31	0.05265	13.2	1131	A	Aux.	Defl. 7.
»	» 24	16 27	5026	12.0	557	»	Abs.	
»	Oct. 5	14 12	*5443*	11.7	1131	S	Aux.	
»	» 5	16 0	5080	11.5	1131	»	»	
»	» 16	13 42	5272	11.1	557	E	Abs.	
»	» 17	13 42	4969	10.5	557	»	»	
»	» 19	13 33	5194	10.2	1131	»	»	
»	» 20	13 11	5240	8.5	1131	»	Aux.	
»	» 25	13 40	5025	7.9	557	»	Abs.	
1907	Feb. 15	11 46	5143	7.1	557	»	»	
»	» 18	15 27	5201	3.9	557	»	»	

Excluding the results above in italics, the following constants have been extracted, where the constants C_a and C_s will be seen to be given for the two temperatures 0° C and 10° C. As the temperature during the observations was more or less about 10° C, the values given for this temperature ought to be more reliable than those given for the temperature 0°, because these last values will to a certain degree depend on the correctness of the temperature coefficients.

In some cases are the results rather dubious (cf. for instance Defl. 9, where especially the value for C_a at distance k_E is uncertain).

Defl.	At 10° C.			At 0° C.			b_a	b_s
	C_a		C_s	C_a		C_s		
	k_e	k_E		k_e	k_E			
No 2	8.94808	8.56600	0.29080	8.95063	8.56815	—	25.5	—
» 3	8 95293	8.57188	0.32910	8.95615	8.57510	—	32.3	—
» 4 (VI)	8.73260	8.35160	0.34220	8.73566	8.35466	0.33940	30.6	14.0
» 5 (V)	8 55120	8.17110	0.32590	8.55440	8.17430	0.32276	32.0	15.7
» 6	8.75140	8.36968	0.03700	8.75470	8.37298	0 03410	33.0	14.5
» 7	8.73475	8.35358	0.05150	8.73830	8.35713	—	35.5	—
» 8	8.17184	7.79240	—	8.17507	7.79563	—	32.3	—
» 9	7.89050	7.51450	—	7.89430	7.51830	—	38.0	—

In the following table we give the result for simultaneous observations taken as comparisons between the Dip Circle No. 154 belonging to Amundsen and No. 25 belonging to Sitka Observatory.

Comparison of Dip Circles 154 and 25.
Simultaneous Observations.

Date 1906	No. 25. Pier	Needles Nos. 4 & 8	Reduced to Absolute Obs'y	Pier	No. 154. Needle No. 1	No. 154. Needle No. 2	Reduced to Abs. Obs'y No. 1	Reduced to Abs. Obs'y No. 2	Correction No. 1	Correction No. 2
		° ′	° ′		′	′	′	′	′	′
Sept.	22 Abs.		74 43.3	Aux.	38.72	39.75	41.15	42.18	+ 2.2	+ 1.1
»	22 Aux.	74 43.80	46.2	Abs.			42.04	42.62	+ 4.2	+ 3.6
»	23 Abs.		42.2	Aux.	38.93	38.97	41.36	41.40	+ 0.8	+ 0.8
»	23 Aux.	38.78	41.2	Abs.			42.12	42.53	— 0.9	— 1.3
»	24 Aux.	39.04	41.5	Abs.			41.78	41.46	— 0.3	0.0
»	24 Abs.		44.6	Aux.	39.78	39.50	42.21	41.93	+ 2.4	+ 2.7
»	24 Abs.		42.2	Aux.	38.93	39.34	41.36	41.77	+ 0.8	+ 0.4
»	24 Aux.	38.86	41.3	Abs.			40.12	39.88	+ 1.2	+ 1.4
»	25 Abs.		41.5	Aux.	38.31	37.97	40.74	40.40	+ 0.8	+ 1.1
»	25 Aux.	40.47	42.9	Abs.			40.66	41.28	+ 2.2	+ 1.6
Oct.	1 Abs.		42.9	Aux.	37.84	38.72	40.27	41.15	+ 2.6	+ 1.8
»	3 Aux.	39.86	42.3	Abs.			41.13	40.50	+ 1.2	+ 1.8
»	12 Abs.		42.9	Aux.	38.10	38.10	40.53	40.53	+ 2.4	+ 2.4
»	12 Aux.	41.92	44.4	Abs.			40.56	40.34	+ 3.8	+ 4.1
1907										
Feb.	5 North	44.0	44.0	Main			39.08	40.04	+ 4.9	+ 4.0
»	5 Main		37.0	North	42.01	39.78	42.01	39.78	— 5.0	— 2.8
»	20 Main		39.6	East	40.24	46.20	40.24	46.20	— 0.6	— 6.6
»	21 East	37.6	37.6	Main			39.36	44.40	— 1.8	— 6.8
»	21 Main		40.4	East	37.94	45.96	37.94	45.96	+ 2.5	— 5.6
»	21 East	41.6	41.6	Main			39.52	40.12	+ 2.1	+ 1.5
»	22 Main		40.6	East	41.56	42.20	41.56	42.20	— 1.0	— 1.6
»	22 East	40.2	40.2	Main			41.56	42.00	— 1.4	— 1.8

In addition to the above series of Dip observations with Dover No. 154 there have also been taken some few observations with the Fox Circle No. 21, needle A, partly with free needle and partly under use of the deflectors N and S. In case of deflections for indirect determination of the angle of inclination there has been observed two times with Defl. N and two times with Defl. S, but as on both occasions no full observation had been carried through, we cannot make out the value for the correction and these deflections have therefore been left out.

The observatory values for horizontal and vertical intensity during the time of observation are stated to be those given in the table below and based on these values we calculated values for inclination and total intensity, which are seen to be added.

Year	Date	H	Z	F	I
1906	Oct. 2	0.15516	0.56800	0.58883	74° 43.3′

Observations with Fox Circle No. 21, Needle A free, Observer Sowers.

Year	Date	L.M.T.	I	△
		h. m.	° ′	′
1906	Oct. 2	14 50	74 50.6	— 7.5
»	» 8	14 24	46.6	— 3.8

On the 8th of October 1906, at 15 h 26 m, both deflectors, N and S, were employed and the following angles were obtained, cp. pag. 51:

$$I_W \begin{cases} a & 44^\circ\,35.6' \text{ directly} \\ b & 16^\circ\,22.5' \text{ passed the vertical} \end{cases}$$

$$I_E \begin{cases} c & 46^\circ\;\;7.5' \text{ directly} \\ d & 16^\circ\,42.5' \text{ passed the vertical} \end{cases}$$

$$\psi = 90^\circ - \frac{a + b + c + d}{4} = 59^\circ\,33.0'$$

From this we get for the constant $R = F \sin \psi = 0.50766$ for the tempreature 11.2° C.

Control Observations taken at Potsdam Observatory in August 1907. — The absolute values for D, H and Z for Potsdam during the time of comparison have been calculated from data for variation given in each special case in combination with the constants and formulae given below:

$$D = D_0 + \omega\,(d - 40) \qquad H = H_0 + \varepsilon_h\,(h - 70) \qquad Z = Z_0 + \varepsilon_z\,(z - 110)$$
$$\omega = -0.522 \qquad \varepsilon_h = 3.09 \qquad \varepsilon_z = 3.5$$

Year	Date	D_0	H_0	Z_0
		° ′		
1907	Aug. 1	9 20.7 W	0.18862	0.43004
»	» 2	20.7	862	004
»	» 3	20.7	862	004
»	» 4	20.8	863	004
»	» 5	20.9	863	004
»	» 6	20.9	863	004
»	» 7	21.0	864	004
»	» 8	21.0	864	004
»	» 9	21.0	—	004

The values for H_0 and Z_0 refer to the temperature 21° C, but as the temperature coefficient is small and the temperature changes but slightly no correction is necessary.

Declination.

Year	Date	L.M.T.	Zschau No. 289	Potsdam	Corr.
		h. m.	° ′	° ′	′
1907	Aug. 3	10 45	9 23.4W	9 24.7W	+ 1.3

Potsdam 1907, L. M. T.

Date	Hour	C_a k_e	C_a k_E	t	Defl.	S. M.	Obs.
	h. m.			°			
Aug. 4	10 45	9.94195	8.56239	15.0	2	I	A
» 4	13 36	8.94084	8.56686	15.4	3	»	»
» 6	16 49	8.72728	8.34728	23.0	4	»	»
» 6	17 47	8.54485	—	23.0	5	»	»
» 7	10 12	8.74712	8.36645	20.8	6	»	»
» 7	11 10	8.73064	8.35139	21.0	7	»	»
» 7	16 48	8.16784	—	21.1	8	»	»
» 7	17 40	7.88570	—	21.0	9	»	»
» 8	9 28	8.94218	—	18.6	2	»	»
» 8	10 22	8.94727	—	18.9	3	»	»
» 8	11 16	8.72874	—	19.1	4	»	»
» 8	12 2	8.54818	—	19.5	5	»	»
» 8	16 10	8.74806	—	19.1	6	»	»
» 8	16 53	8.73097	—	19.0	7	»	»
» 8	17 34	8.16996	—	19.0	8	»	»
» 8	18 20	7.88688	—	19.0	9	»	»

Date	Hour	C_s	t	Defl.	Obs.
	h. m.		°		
Aug. 4	12 44	0.29603	14.8	2	A
» 4	12 7	.33495	15.5	3	»
» 6	17 28	.34722	23.0	4	»
» 6	18 35	.32898	23.3	5	»
» 7	10 42	.04141	20.8	6	»
» 7	11 40	.05626	21.2	7	»
» 8	9 52	.29678	18.7	2	»
» 8	10 47	.33548	19.0	3	»
» 8	11 37	*.37690*	19.2	4	»
» 8	12 32	.32880	19.3	5	»
» 8	16 30	.03972	19.0	6	»
» 8	17 14	.05595	19.0	7	»

Extracts from these tables will be found in tables XIX and XXI.

Inclination at Potsdam in 1907. Observer Roald Amundsen.

Date	L. M. T.	Dover 154 Needle 2	Dover 154 Needle 1	Fox 21 Needle A	Potsdam value	Corr.
	h. m.	° ′	° ′	° ′	° ′	′
Aug. 2	12 24	66 17.3	—	—	66 19.3	+ 2.0
» 2	13 12	—	66 17.5	—	18.1	+ 0.6
» 3	11 50	—	—	66 37.5	19.2	— 18.3

Abstract from the Journal for the Absolute Instruments. (List No. 31 and No. 55.)

Gjøahavn. — "As soon as it was decided that Gjøahavn on *King William's Land* was to be the basis station, the Seemann magnetometer was taken on shore and used for the determination of the base-line direction. When the absolute house was built, the tripod, on which most of the absolute observations were taken, was placed near the southern wall and it was never moved during the stay. It has been referred to as the "*fixed tripod*". In the base-line direction, four metres towards the north, stood another tripod on which the earth inductor was placed and one meter and a half further towards the north stood the galvanometer. The instruments were at once put in place and we made protecting boxes to cover them up with, for the eventuality that the snow hut might tumble down and in so doing injure the instruments, if they were uncovered. One day I found one of the binding screws of the earth inductor broken. This was evidently due to carelessness with the protecting box, which had most probably been moved by somebody who did not know to handle the instruments. The inductor was repaired and as the temperature in the observatory had proved to be too low to allow of observation, the inductor together with the galvanometer was stored for the winter.

On December the 5th 1903 the axis of the needle B, belonging to the Fox Circle, was broken. Attempts were made to make a pair of new axes, which at first worked fairly well, but shortly afterwards broke again owing to the fact that we did not possess hardened metal. In January 1904, we built a snow hut to be used for the observations of inclination. This hut was used till June, when the Dover was again taken to the absolute house.

The Zschau was used as station instrument during the winter 1903—04. As this instrument was intended to be used for field work, it was necessary to collect material for determination of the constants of the magnets. As expected, the original deflector bars of the Seemann could not be used as they were and additional pieces were therefore made from some non-magnetic metal procured at Potsdam for this eventuality. On January the 17th the Zschau fell down from the tripod. A close examination showed that the instrument was undamaged, except for the thread being broken. A new thread was put in and made torsionless by aid of the weight. This thread has been referred to as P_2. The Zschau was on this occasion also cleaned and in the meantime the Seemann was used as station instrument.

During the term days — November 15th, December 1st and 15th — there was registered with quick-run on the variometers and absolute observations were taken during the same hours at the absolute observatory. On December the 19th and 20th there were made simultaneous observations of declination with both instruments and shortly afterwards Zschau and Dover were packed for use during a sledge expedition. From above mentioned date the Seemenn was used as station instrument, but as the sledge expedition only lasted some few days the Zschau was again unpacked and used for a series of observations, in which most of the magnets were employed. On the 1st of April the Zschau was repacked and now again the Seemann was put on the fixed tripod as station instrument.

After the return from the expedition to Boothia Felix there was taken a large series of observations, 30th and 31st of May. Most of the deflectors were used on this occasion. On June the 5th a new expedition departed to the Hovgaard Island, there to make a survey in combination with magnetic observations. As magnetic observatory they used a snow hut (Iglu), which Amundsen got the Eskimos to build. On the 7th, when Amundsen was observing in this hut, it tumbled down. Neither Amundsen nor the instrument was injured, but the thread broke and a new one had to be put into the tube. This thread has been referred to as S_1. The magnetic work at this station was finished on the 10th. After having taken some observations at another station in the neighbourhood, the expedition returned to Gjøahavn, where they arrived on the 14th, again to leave for new field work the next day. This time they observed in the neighbourhood of the base station. Only at one of the stations, Ach-liech-tu, they took observation of inclination.

When the expedition returned to Gjøahavn in July the thread of the Zschau was found on examination to have a considerable torsion. It is probable that this thread had never been torsionless, it was put into the tube on the 7th of June after the accident in the snow hut and was in the customary way stretched by the weight and left so till all torsion was supposed to have been removed. In some way or other, however, the weight must have been hampered and did not swing freely. Being defective, the observations have not been entered into the Journal, but as the results may still have some value the original observations have been preserved except for the three stations 7, 8 and 9, called respectively *Prof. Schmidts Høi*, *Søndagshøiden* and *Svanehøiden.* As to the results from these stations, they have been disregarded, on account of the disturbing effect caused by a small box containing tools. This box belongs to the instrument box of the Zschau and during the observation at said stations it was placed on the ground, between the legs of the tripod, to serve as stand for the chronometer. As, among other things, this box contained two small reserve magnets a possible disturbing influence of the box was tested after the return to Gjøahavn and contrary to expectation it was found to have disturbing influence, and the observations from above mentioned stations have therefore no value. During the first days of August a new series or observations was taken at the above-mentioned stations.

In the last days of July the earth inductor with the galvanometer was once more placed in the absolute observatory and proved now to work fairly well. Simultaneous observations with the inductor, in combination with deflections, were taken on the 29th of July, but experience has proved that a tent is not a satisfactory observatory for such a delicate instrument. Almost constantly the wind filled the air of the tent with dust and fine sand, which gathered on the glass bearings of the revolving coil and finally threatened completely to ruin the instrument. It was of course constantly cleaned, but could not be brought to work satisfactorily, and on the 21st of December 1904, the earth inductor and the galvanometer was packed up and stored. The tripod, on which the inductor had stood, was from now on occupied by the Dover Inclinatorium.

Observations taken with the Zschau during the last days of July have been entered in Journal No. 6, instead of Journals No. 2 and No. 3. At the beginning of September the Seemann was removed and the Zschau put on the fixed tripod, in order again to examine the magnets. These observations have been entered in the ordinary station journal. After the examination of the magnets the Zschau was packed and taken on board the ship, where it was kept for some months. In January 1905, there was built a snow-hut at the same place where the preceding winter the snow-hut for the inclinatorium had stood. The distance between the snow-hut and the absolute observatory was about 87 metres and about 50 metres towards the west there was built a hut to be used as store house for instruments not in use. The Zschau, which had in the meantime stood on board the Gjøa, was on January the 10th brought to the snow-hut and an observation of deflection was taken the 12th. Some days later, the 25th, Deflector 5 was found to have been put into the iron magnet box the wrong way. When in the beginning of September the Zschau was packed and taken on board the ship, the instrument was in the customary way examined and everything was found in order. It is therefore most probable that somebody has been meddling with the box after it had been examined. About the same time, when the instrument was moved from the ship to the hut, several other things were also carried on shore and some of the Eskimos assisted. It is not improbable that one of them was curious about the box, opened it to have a look at what was within, and then turned the magnet. At any rate, the magnet had been turned either during the winter, or when it was carried from the ship, or even during the 14 days, between the 10th and the 25th, when the thing was found out. The Eskimos, 70—80 of them, had their huts about 100 metres away from the hut with the spare instruments.

On February the 7th Zschau was taken to the absolute observatory to replace the Seemann, which was packed up with the intention of using it for some control measurements at the field stations in the neighbourhood. There were taken observations with the Seemann only at two stations, whereupon the instrument was again mounted on the fixed tripod. During the first days of April the Seemann was used for observation at the control stations, "Iglu I" and "Iglu II" and after having been used here some fourteen days it was brought back to the fixed tripod.

The earth inductor, the galvanometer and some other instruments had already been packed in a large wooden case and stored on board and on the 5th of July 1905, the Dover was cleaned and packed in the same case. Finally the two magnetometers, Seemann and Zschau were cleaned and packed, and on the 13th also these instruments were carried on board and placed in the aftcabin.

Various attempts have been made to make observations of oscillations, but without success".

What has been stated above is a more or less direct translation from Wiik's diary, which was kept all the time during the stay at Gjøahavn. For the station at King Point, however, there has not been kept any special diary for the magnetic instruments, and what is stated below concerning this station has been collected from casual notes.

King Point. — The base-line direction of the station at King Point was determined from a long series of observations taken on the 22nd of September 1905. The house building was, as mentioned, finished on the 2nd of October, but we know very little about how the houses were placed. Nothing is said about where they put the tripod on which the absolute observations were taken. It is, however, probable that they have arranged themselves more or less as they did at Gjøahavn and we may thus suppose that a tent or a snow-hut was built about 75 metres from the varation house, in the base-line direction. The base-line direction was SW and we may take it for granted that the absolute house was put at the south-western side of the variation house, as from a photograph we can see that this house was placed at the extreme point of the selected building place with the consequence that the absolute house could not be put between the variation house and the sea.

Wiik began ordinary magnetic observations on the 19th of October 1905. These observations were continued regularly until March the 23rd 1906. For declination, as well as for intensity observations, only the Seemann was employed and both deflections and oscillations were observed. For observation of inclination Wiik used the Dover and he observed regularly from October 19th 1905 till March 14th 1906. During the whole time, October 1905 — March 1906, the variation instruments worked, but after Wiik's death we have not any register records.

As mentioned, Wiik did not observe with the Zschau magnets at King Point, and Amundsen resolved therefore to make a series of intensity observations with the Zschau. This series was started on May the 5th and terminated on June the 30th. Deflections were made with both the Seemann and the Zschau, while for the oscillations Amundsen used the oscillation box of the Seemann also when observing with the Zschau magnets. Regarding the observations for oscillation Amundsen has made some remarks, which have been entered in a note book called "Remarks to Observations of Oscillations". In the Main List this book has been given the number 55.

Between June the 12th and the 16th Amundsen made some observations of inclination with the Dover, as well as with the Fox Circle, and finally he took three observations for total intensity.

For temperature readings during the magnetic observations there was attached to the Zschau a toluol thermometer and this thermometer was marked II. The thermometer belonging to the Seemann was marked I. Which thermometer was employed when the Dover was used we do not know, nor do we know if they had a special thermometer for the Fox Circle, but it is probable that the Zschau thermometer was used in observation of total intensity.

Register Journal.

Gjøahavn. — As mentioned the variation house at Gjøahavn was built exactly at the place where the observation for the base-line direction was taken on the 19th and 20th of September 1903. The geographical co-ordinates of this point were according to the table of No. 1, Part I, page 9:

$$\varphi = 68° \, 37' \, 10'' \text{ N and } \gamma = 95° \, 53' \, 25'' \text{ W}$$

Everything with respect to the house itself has already been stated in the Introduction and we shall here only give some particulars concerning the variation instruments and the treatment of same during the stay at Gjøahavn. These particulars have been taken from the so-called Register Journal, No. 32 in the Main List, in which Wiik has entered everything he thought to be of interest for the later discussion of the records. The following is a short extract from this book:

When the variation magnets were unpacked, the *d*- and *h*-needles appeared to have become slightly rusty, but it was not difficult to remove the rust. The threads put into the tubes at Potsdam and used there proved still to be unbroken. The Lloyd's Balance was in good condition, but it had to be rebalanced and this was done by aid of the vertical magnet under the Balance, nothing else being touched.

The instruments were mounted during the last days of October 1903, and after having taken some records to see how the instruments behaved, the continuous registering could begin on the 1st of November 1903. Already on the 2nd there was made a deflection experiment and the system according to which the experiment was made, now as well as later, was as follows:

d		*h*		*z*		*d*		*d*
Defl.	N-end	Defl.	N-end	Defl.	N-end	Def.	N-end	Tors.
W	W	N	N	W	up	E	E	− 20
W	E	N	S	W	down	E	W	+ 20
E	W	S	N	E	up	W	E	− 20
E	E	S	S	E	down	W	W	+ 20

As it proved to be advisable to change the deflector distance, this was done on January the 19th 1904 (see Table A page 38). The data given refer to measurements on the bar, from the centre of the deflector to the end of the bar which is put into a hole in the muff on the magnet box.

Change of paper was regularly made at midday, 12 o'clock L.M.T., and marks for control of the shrinkage of the paper were made by aid of a piece of wood provided with two brass pegs, placed at a distance of 17.77 cm. from each other. The marks were of course put on before the papers were applied to the drum.

On the 23rd of December 1903, the registrator was slightly displaced during some repairing of the door of the lamp-house. The displacement of the registrator was not noticed till the next day, the 24th, when it was replaced. The low temperature in the variation house during the winter was very troublesome, the lamp-house very often became iced, the slit would occasionally be blocked up and drops of water would extinguish the lamp. It seems that also the photographic paper was influenced by these unfavourable conditions, the paper being apt to get black when developed. The same day the registrator was replaced, the 24th, Lloyd's Balance was readjusted.

During the night between the 6th and 7th of April 1904, the register clock stopped, it was put to work at midday the 7th, but stopped again during the night. The clock was taken out and oiled, but by an unfortunate mistake there was applied ordinary paint-oil, with the result that the clock refused to work. On examination the mistake was found out and the clock was now thoroughly cleaned with petrol. During this work the regulator of the clock was accidentally touched and from now on the clock got another rate, the value of which can be determined from the data collected during the following days.

When the photogram, marked April 23rd, was developed, it showed that the distance between the base-line of the *d*- and *z*-curve had diminished. On the 27th the old relation was more or less restored. As the first experiment with the deflector did not seem to be very satisfactory, a new experiment was made on November the 28th 1903.

During the winter rime had gathered on the walls and roof of the variation house and in June it begun to melt. Where the rime was visible, it was not difficult to remove, but unfortunately rime also collected between the wood and the tarboard and when this rime melted it produced a high degree of moisture with the consequence that the lenses and the mirrors of the instruments had to be dried several times a day. On June the 30th we had to stop the register for four hours, during which time the doors of the house were kept open to get it thoroughly aired, and this seems to have helped a good deal. During the airing the instruments were touched, but no attempts were made to readjust them, as the moisture was still troublesome.

On July the 1st 1904 the light point of the temperature curve was moved downwards. Material for determination of the base-line value was collected during some days before and after the change took place. The temperature coefficient of the *z*-curve seems to be very large. On August the 12th 1904 the Lloyd's Balance was taken out to be cleaned, but this did not seem to help. On the 28th it entirely refused to work and as none of the variometers seemed to work satisfactorily, they were carried into the open air on the 30th to get them thoroughly dried. Before the *d*- and *h*-variometers were carried out the magnets were fastened and the covers closed. The Lloyd's Balance was taken out of the magnet house and cleaned with alder pith. When in the afternoon the instruments were remounted, the mirrors of the *d*-

Table A.

No.	Year	on	off	r	p
1	1903	Nov. 2	Nov. 3	14.1	20
2	»	» 29	» 30	14.1	15
3	»	Dec. 20	Dec. 21	14.1	15
4	1904	Jan. 19	Jan. 20	16.2	15
5	»	Feb. 21	Feb. 22	16.2	15
6	»	Mar. 20	Mar. 21	16.2	15
7	»	Apr. 20	Apr. 21	16.2	—
8	»	» 28	» 29	16.2	15
9	»	Sep. 13	Sep. 14	16.2	20
10	»	» 30	Oct. 1	16.2	20
11	1905	Feb. 2	Feb. 3	16.2	20
12	»	May 10	May 11	16.2	—
13	»	» 28	» 29	16.2	20

and *h*-variometers proved to have changed angle, but these instruments were now in good condition, the Lloyd's Balance, however, still refused to work. In vain it was examined several times, till at last it was put under the microscope, whereupon we found a small rusty spot at the end of one of the pivots. The rust was carefully removed by aid of polishing paper and the pivots cleaned with alder pith. On the 8th of September the Balance was remounted and seemed to work well, but proved to be too sensitive. It was therefore readjusted on the 10th, the nut of the upper regulator being screwed downwards. The same day the *h*-variometer was provided with a new mirror, as the old one proved to be nearly ruined by moisture. During this work the aluminium frame of the mirror got somewhat twisted, with the consequence that the relation between the base-line and the curve was changed.

Table B.

Year	Date	on	off
		h. m.	h. m.
1903	Nov. 15	18 30	20 30
»	Dec. 1	19 20	21 30
»	» 15	20 30	22 30

Table C.

Year	Date
1904	Jul. 28
»	Aug. 2
»	» 3
»	» 17
»	Oct. 7
»	» 17
»	» 27
»	» 31
1905	Mar. 2

On this same day, the 10th, the temperature curve also changed. After having been adjusted, Lloyd's Balance was found to have been made too little sensitive and during the following days tests were made. Deflections were taken on the 13th, but the *z*-variometer could not be got to work satisfactorily. On the 18th the Balance was again put under the microscope, whereupon we could see that the rusty spot had again appeared. The pivot was carefully polished etc. and the 19th the Balance was remounted, and seemed now to work well. On the 30th deflections were taken and now we noticed that the spot distances were much smaller than they had been before. The moisture had in the meantime gradually grown less troublesome and, as we did not want to touch the instruments more than necessary, no attempt was made to change the sensibility.

On October the 17th the temperature curve was again moved farther down on the photogram. The photogram of December the 28th shows a jump, but the reason for this is unknown. During the first half of 1905 the instruments were left alone as much as possible. On the 1st of June 1905 the last record was taken with the variometers at Gjøahavn, and after having been carefully cleaned the instruments were packed. On the whole the magnets of the variometers seem to have kept well and the old threads, also used at Potsdam, are still unbroken.

The dates when deflections for determination of the scale values of the variometers were taken at Gjøahavn, are put together in Table A. The dates, given under the two columns "on" and "off", will be understood to refer to the dates when the papers on which the reproduction of the deflection experiments are to be found were applied to and removed from the drum. In column *r* the deflector distance is given in cm., where for

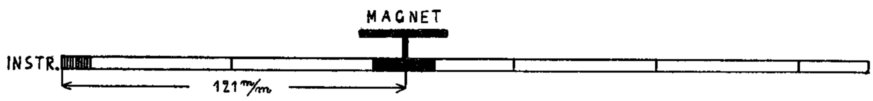


Fig. 2. The deflection bar of the variometer with the deflector.

instance 16.2 cm. corresponds to the fourth ring of the bar (cf. Fig. 2). The figures in column *p* refer to the division of the torsion head of the variometers, where the unit corresponds to circa 3′. The two tables B and C give the dates and the hours at which there was used quick-run on the registers at Gjøahavn. These dates are given separately in two tables, Table B referring to the pre-arranged term-days mentioned in the Instruction, while in Table C the dates refer to quick-run records made for various other reasons.

The Register Journal contains also a fourth table, which gives the dates when changes were purposely made in the relation between base-line and curve of the four elements registered, but as there occur various accidental changes, unknown to the observer, this incomplete table has been omitted here.

King Point. — The observation for the base-line direction at King Point was made by Wiik in the afternoon of 22nd of September 1905. The Seemann magnetometer was used for this purpose as well as for the absolute observations for determination of the base-line value of the variometers. Exactly at the place where the tripod had stood during the observations for the base-line direction, the foundation for the variometers was dug into the ground. The geographical co-ordinates of the variation house are not known, as the co-ordinates stated for King Point most probably refer to the Gjøa, where she lay in her winter quarters. These co-ordinates were:

$$\varphi = 69° 7' N, \lambda = 138° 8' W$$

The variometer house was, as mentioned, built already on the 2nd of October 1905, but the registering was not started till the 17th of the same month. The variation house and the living-house has already been described in the Introduction and we shall here only give a short extract of the statements Wiik has entered in the Register Journal for King Point, which in the Main List is entered as No. 56.

The variometers were mounted during the two days, the 14th and 15th of October, and stood exactly in the same way as they had stood at Gjøahavn, and as the instruments and the registrator were fixed to the before-mentioned frame, the relation between the instruments was here, as at Gjøahavn, exactly the same as it had been at Potsdam in 1903, when the variometers were tried there. The Potsdam threads were still unbroken.

The first deflection experiment was made on October the 18th 1905, and the system used on this occasion, as well as on later experiments, was the same as used at Gjøahavn (cf. the table on page 37). However, in the torsion experiments at King Point 25 units were used when turning the torsion head of the *d*-variometer, while at Gjøahavn there were used 20 units. Paper has at King Point, as at Gjøahavn, been changed at 12 o'clock midday L.M.T. and the papers have, before being applied to the drum, been provided with marks for control of shrinkage. The distance between the brass pegs in the wood used for this purpose is for King Point stated to be 17.95 cm. while at Gjøahavn the distance was given as 17.77 cm., but as nothing is said to the contrary, we may perhaps suppose that the same wood has been used unaltered at both stations and that two measurements have been taken, with a disagreement of 1.8 mm. How it is with this we do not know, as the wood has been lost and therefore cannot be controlled by measurement. We have used the first given measurement 17.77 cm. During the interval from October 18th to November 6th daily readings of the temperature have been made and noted on the back of the records, together with a statement of the correction for the thermometer employed. The time to which the readings refer is stated to be just before the papers were removed from the drum. The duration of the hour-marks is two minutes, one minute before and one minute after the hour noted on the back of the records.

In the records for October 28th and November 3rd the time of the removal of the paper has been noted, for determination of the march of the register clock. Deflection experiments have been made at King Point at the dates given in Table D, where the days when quick-run records have been made have also been entered. During the time of quick-run, in the record for February 15th 1906, there was taken an absolute observation of declination. The temperature curve was

Table D.

Year	quick-run Date	Deflection Date
1905	— —	Oct. 18
»	Nov. 6	— —
»	» 13	— —
»	» 15	— —
»	— —	Nov. 25
1906	Feb. 15	— —
»	» 28	— —
»	— —	Mar. 2

changed on the 6th of November 1905, and readings of temperature were taken every day until February the 1st 1906. A table for both known and unknown changes in the relation between the curves and their base-lines has been inserted in the chapter where the determination of the base-line values for the variometers is treated.

On the Reduction of Absolute Magnetic Observations.

General Remarks.

At the head of the magnetic observations there has always been made a statement as to which instrument had been used, besides a sign indicating the magnet, the thread and thermometer employed. For the three observers, Amundsen, Wiik and Hansen the letters A, W and H have respectively been put. As mentioned, the Zschau, as well as the Seemann, was so arranged that there was an opportunity of making observations with the magnet supported on a pin. In case such observations were made, the word "pin" has been added after the sign used to indicate the magnet employed. Usually, however, suspension by aid of a cocoon fibre has been used and the sign for the thread has then been added. The tubes of both instruments were, when used for control measurements at Potsdam, provided with new threads and these threads were still intact when the instruments were unpacked for use at the base station at *Gjøahavn*. The original thread of the *Zschau*, designated by P_1, was, as mentioned, broken in an accident with the instrument in January 1904, (cf. page 34). The old thread was replaced by one designated by P_2, which broke in June 1904, (cf. page 35). The thread now put into the tube of the Zschau was designated by S_1. It seems that this thread, S_1, has remained intact for the rest of the time. Regarding the thread which was put into the tube of the Seemann at Potsdam in 1903 nothing is stated, but as the thread of this instrument has the whole time been designated by P_1, we may perhaps conclude, that it has remained unbroken as long as the Expedition lasted.

Special Remarks on Declination.

General. — The azimuth determinations necessary for the calculation of the absolute observations of declination have been worked out by *Professor Geelmuyden*, assisted by *Mr. Alexander*. The observed data for azimuth for the two base stations *Gjøahavn* and *King Point*, as well as for the stations at *Godhavn* and *Beechey Island*, had been put into a special book for astronomical data, No. 91 in the Main List, and the copies of these data have already been given in the astronomical part, Part I pp. 21—27, where final data for the azimuth of the "Mark" in question are stated. At the field stations, however, the original data for azimuth of the "Mark" were put into the books, where also the magnetic data are entered, and the azimuth observations of these stations have therefore been copied in connection with corresponding data for declination. Final data for the azimuth of the "Mark" have in these cases been calculated by *Mr. Alexander*.

Method of Observation. — When the declinometer had been duly levelled a sight at the "Mark" was taken with subsequent readings of both verniers of the horizontal circle. For both instruments these readings could be made with an accuracy of half a minute. The settings of the magnet in the meridian have usually been read from four to eight times with the needle placed in both positions. The before-mentioned terms "Screw up" and "Screw down" have in this work always been designated by "Above" and "Below". For each setting the time directly indicated by the watch employed was noted and at the close of the observation another sight at the "Mark" was taken. Corrections to L.M.T. or Gr.M.T. are computed by means of the results of the astronomical observation and the rate of the chronometers and watches.

Method of Calculation. — Designating the mean settings in the magnetic meridian by δ, the mean readings of the "Mark" by M, and azimuth of the "Mark" by a, we have for the reduction — a here reckoned from N:

$$D = M - (\delta + a)^{1} \tag{1}$$

whereby the resulting sign is decisive for whether we get east or west declination. Formula (1) is directly applicable only if the thread can be considered torsionless. *Dr. Edler*, in the Introduction page 18, draws attention to a possible torsional effect in observation of declination and recommends a method for testing the torsion of the thread in connection with observations taken at the base station. No such special observations can, however, be seen to have been made. The observer has tried carefully to remove all torsion by letting the weight hang on to the thread, after having got the pointer of the weight to coincide with the zero mark of the scale at the bottom of the magnet box. Finding the pointer above the same mark so and so many hours afterwards, the observer has accepted this fact as a guarantee for torsionless thread as long as the instrument was not too much disturbed. However, they had very often to move the instrument from the tripod on which they took the absolute observations and even if they did not do this, the thread had almost always torsional effect, as will later on be shown.

Fortunately there is available material to test the torsion of the thread and even, to a certain degree, actually to ascertain the value of the effect with sufficient accuracy, at any rate where it is a question of observations used for base-line calculations of the variometer curves. This has been made possible by Dr. Edler's advice concerning observations of deflection, (cf. Instructions, page 12). Here the observer has been instructed to take two or three settings with "free" needle in the meridian, in connection with sights at the "Mark". As this advice has always been followed, we have in the data for deflection an excellent material for determination of the value of the torsional effect, provided the instrument has not been moved from the tripod in the time between the observation of declination and deflection. As in the following pages observations of deflection have been treated separately, we do not need to enter into details in this place. Referring to page 12 we have:

$$\frac{v_E + v_W}{2} = v' \tag{2}$$

where v' represents the true direction of the meridian, in case the thread is free from torsion. If now we let v represent the mean reading, when no deflector influences the suspended needle, we may put:

$$v' = v + \triangle \tag{3}$$

where $\triangle$ is equal to zero, if the thread should happen to be torsionless, or, in case the thread is affected by torsion, we have a relative value for the effect in the expression:

$$\triangle = (v' - v)$$

According to Lamont[2], we have for the angle of torsion the formula:

$$\varrho = (v - v' + x)\, B \tag{4}$$

where the original values v, v_1, v_2, etc. are supposed to be duly corrected for all errors — except that due to variation in H — by determination of final value for φ. The quantity x,

[1] Cp. footnote p. 54.
[2] Dr. J. Lamont: Handbuch des Erdmagnetismus, Berlin 1891, § 91.

expressed in degrees, gives the correction for change in intensity during the observation and we have:

$$x = \frac{tg\ \varphi_0}{H_m\ tg\ 1'} \times \frac{\triangle H}{60} \tag{5}$$

where φ_0 is the corrected angle of deflection and H_m the mean horizontal force. The quantity $\triangle H$, expressed in γ, is extracted from the variation curves by putting:

$$\triangle \mathrm{H} = \frac{h_E - h_W}{2}\ \varepsilon_h \tag{6}$$

where ε_h is the scale value of the h-curve and h_E and h_W are two ordinate means, the time of which agrees with the corresponding quantities of formula (2). Finally we have for the factor B:

$$B = \frac{\cos \varphi_0}{2 \sin^2 \varphi_0/2} \tag{7}$$

This formula gives for an observed angle of deflection of 60° the value 1.00 for B, the consequence of which is that deflection data showing an angle of about 60° are those best suited as material for the determinations in question. The angle ϱ is again a function of H and we have:

$$\theta' = tg\ \varrho \times H \tag{8}$$

by which we have a comparable quantity, θ', expressed in γ.

Special Remarks on Horizontal Intensity.

General Remarks. — At a place in the neighbourhood of the magnetic pole observation of oscillation is difficult to make, on account of the small value of the horizontal force component — the magnet stopping to oscillate long before the presupposed series of data could be obtained (cp. the instuctions). It may, however, in this connection be remarked, that observations consisting of *even some few oscillations might have been of interest*, because one might have worked out a theory by aid of which such fragmentic observations could have led to a valuable control of the magnetic moment of the magnet in question. The material at hand, however, brings with it that the value of H must be derived from observations of deflections alone.

Deflection. — The reading on the horizontal circle was taken when the deflector had been brought to stand at right angles to the suspended needle. The system according to which observations were made has been described by Wiik in Journal No. 3 in the Main List. Calling the readings v, v_1, v_2 etc., we have:

v_1	. . . .	deflected	to	the	E,	north	end	to	the	E
v_2	. . . .	»	»	»	W,	»	»	»	»	E
v_3	. . . .	»	»	»	W,	»	»	»	»	W
v_4	. . . .	»	»	»	E,	»	»	»	»	W

and before and after this series there has, as before mentioned, always been taken a reading of the meridian with free needle, v, followed by a new series of deflections, this time in the order, v_4, v_3, v_2, v_1, and finally a reading with free needle, v, the "Mark" being read at the beginning and at the close of the deflection series. The temperature has usually been read in correspondence with the circle readings v_1, v_2, etc.

The readings on the horizontal circle cannot, however, be used directly, they shall have to be corrected for change in declination during the observation. Having variation records, we find the correction for change in declination:

(9)
$$c = (d + x)\ \omega$$

where d is the ordinate of the d-curve, measured in mm. and ω the scale value of this curve, expressed in minutes per mm. while the additional figure x depends on the momentary relation between the curve and the base-line, by which d is corrected so that c may roughly be an expression for the declination of the moment. Later on we shall see that the stand of the d-variometer is very changeable, the consequence of which should be an equally changeable value for x. However, the use we make of the correction c only demands a rough value for d, so that for Gjøahavn, we are on the safe side in putting the constant value: $x = -20$ mm. for the whole time before the 1st of August 1904, and after this date we may use: $x = -35$ mm. As to the sign of the correction c, minus has to be used, if increasing figures on the horizontal circle of the magnetometer correspond to increasing numerical value of the d-ordinate, while the sign plus must be used, if the relation is the opposite.

For the material at hand we have: $(v_1 + c_1)$, $(v_2 + c_2)$, etc. and if for the deflection to the east and west we put:

$$\frac{(v_1 + c_1) + (v_2 + c_2)}{2} = v_E \text{ and } \frac{(v_3 + c_3) + (v_4 + c_4)}{2} = v_W$$

we get the mean angle of deflection by the formula:

(10)
$$\varphi = \frac{v_E - v_W}{2}$$

This quantity has, however, to be corrected for inequality in deflection, which has been done by putting:

(11)
$$\delta = -A\ (\triangle^2_E + \triangle^2_W),$$

where $\triangle_E = (v_1 + c_1) - (v_2 + c_2)$ and $\triangle_W = (v_3 + c_3) - (v_4 + c_4)$, while A is to be calculated by the formula:

(12)
$$A = \frac{60 \sin 1^\circ}{2}\ ({}^1/_8\ tg\ \varphi + {}^1/_6 \operatorname{cotg} \varphi),$$

by which we get δ expressed in minutes. This quantity is always to be applied with the sign minus. Besides the two above mentioned corrections, we shall still have to correct for the influence of temperature according to the formula:

(13)
$$M_0 = M_t\ (1 + at),$$

where t is the mean temperature during the observation and M_t and M_0 the moment of the magnet, respectively at the temperatures t° and 0°.

Experience shows, as we know, that a is not always absolutely constant, but slightly changeable with t. In the Instruction Dr. Edler has therefore warned the observer to be aware of this, especially as in this expedition one might expect observations to be taken at very unfavourable temperature conditions. The material of the Expedition does not contain any special series of observations designed for close determination of the temperature influence on the magnetic moment, but from the material at hand we have in each special case tried to get data for determination according to the formula:

(14)
$$a = \mu + \lambda t,$$

but this has only been possible for some of the deflectors.

The temperature effect on the metal of the instrument has been considered in the usual way by putting:

$$\sin \varphi' = \frac{\sin \varphi}{1 - (3\beta + \alpha)\, t} \tag{15}$$

where β is the coefficient of dilatation for brass.

To make the final formula for reduction as short and simple as possible we have collected all the constants in a single expression by putting:

$$K = \frac{2\, M}{r^3\, (1 + P/r^2 + \text{etc.})} \tag{16}$$

and get as final formula for reduction of the observations for deflection:

$$H = \frac{K}{\sin \varphi_0} \tag{17}$$

If finally we introduce $\log K = C_a$, we arrive at the logarithmical formula given in the Introduction by Professor Schmidt:

$$\log H = C_a - \log \sin \varphi_0, \tag{18}$$

where the index mark of φ means that this quantity is corrected for errors emerging from what has been said above. The correction for temperature has been applied logarithmically, as recommended by Dr. Edler, We have then:

$$\log \sin \varphi_0 = \log \sin (\varphi - \delta) + b_a\, t. 10^{-5} \tag{19}$$

where the logarithmical temperature coefficient theoretically emerges from formula:

$$b_a = \log \frac{1}{1 - (3\beta + \alpha),} = 0{,}434\ (3\ \beta + \alpha) \tag{20}$$

but is usually found directly by comparison between corresponding readings of temperature and log sin φ. From formula (16) we see that C_a is a function of the bar distance r and as four distances have been used, at least for some of the deflectors, we have often to deal with four corresponding values for C_a for each deflector. Between these values for C_a we get a good control by calculating the value for the magnetic moment M, which can be done if we know the value of the expression $(1 + P/r^2 + \text{etc.})$ or with sufficient accuracy for the shortened expression $(1 + P/r^2)$. As to the determination of the constant P we refer to page 47, but may finally remark that control between the four values of C_a may be made simply by aid of Dr. Edler's formula:

$$C_1 = C_2 + \log \left(\frac{r_1}{r_2}\right)^3. \tag{21}$$

Oscillation. — Any of the deflectors may, as mentioned, be used for oscillation, provided the value of the magnetic moment of the needle is suitable for observation at the place in question and the value of H is sufficiently large to allow observation. As has already been said, several attempts were made to make observations of oscillation at Gjøahavn, but with negative result, while at King Point we have regular observations of oscillation.

The magnet employed is as we know oscillating above a scale fixed to the bottom of the magnet box, and it is to the zero point of this scale that we refer the passage of the needle. The suspension ought to be torsionless with the magnet pointing at the zero mark of the scale and by one turn of oscillation we are to understand the movement of the magnet from the point of equilibrium out to one side of the scale and back again to this point.

The Method of Observation. — Having caused the magnet to oscillate through an arc of between 20° and 30° to each side of the zero point of the scale, the time of every third passage has been recorded until the arrival of the 60th, then the time of the 0th passage is subtracted from that of the 60th, by which the time of the 100th passage was precalculated. The magnet was in the usual way allowed to oscillate unobserved until the 100th transit was expected, whereon the actual time was noted down and every third passage again observed until the arrival of the 160th transit. Subtracting in succession the times of the 0th from the 100th, the 3rd from the 103rd, etc. they got a series of numbers, each giving the time of 100 vibrations. If the 0ht transit is a righthand passage, this is also the case with the 6th, 12th . . . . . or any even numbered transit.

Method of Determination. — Having taken out the mentioned differences, expressed in minutes, we convert the mean in seconds and thus obtain the time of a single oscillation through division by 100. Immediately before and after each series of oscillations the magnitude of the amplitude on each side of the zero point of the scale has been noted and the temperature was read by a thermometer placed with its bulb in the magnet box.

The following corrections must be applied to the time, T, of one oscillation:

a. Calling the noted value of the amplitude at the beginning, at the middle and at the end of the observation respectively u_1, u_2, u_3, we can for the whole arc, east extreme to west extreme, put:

$$u = \frac{u_1 + u_3}{2} + u_2 \tag{22}$$

and have as true time for infinitely small arcs:

$$T' = T\,(1 - {}^1\!/_4 \sin^2 u/4) \tag{23}$$

and expressing the correction logarithmically we have:

$$\log\,(1 - {}^1\!/_4 \sin^2 u/4) = \xi \tag{24}$$

b. If we let s denote the daily chronometer rate in seconds with the sign + for gaining, and — for losing, we get the true time of one vibration if we put:

$$T' = T\left(1 - \frac{s}{86400}\right) \tag{25}$$

and for the logarithmical correction:

$$\log\left(1 - \frac{s}{86400}\right) = \triangle_s \tag{26}$$

c. On account of the torsional effect correction ought to be made and we get true time of one vibration by putting:

$$T' = T\sqrt{1 + \theta}, \tag{27}$$

where the ratio of torsion θ, according to Dr. Edler, page 15 in the Instruction, is got by:

$$\theta = \frac{\psi}{\alpha - \psi}, \tag{28}$$

where the angle of deflection ψ has to be observed on each occasion by special torsion experiment, where a certain torsion α, expressed in degrees, has to be forced into the suspension thread by turning the torsion head of the tube. However, neither Amundsen nor Wiik took any special observation of torsion, but we may use the same data as in declination. As logarithmical correction we have thus:

(29) $$\tfrac{1}{2} \log (1 + \theta) = \tau$$

d. For the temperature correction we have:

(30) $$T'^2 = \frac{T^2}{1 + (2\beta' + \alpha) t}$$

where β' is the dilatation coefficient for steel and α the temperature coefficient of the magnet in question. For the logarithmical temperature coefficient we have:

(31) $$b_s = \tfrac{1}{2} \log \frac{1}{1 + (2\beta' + \alpha)}$$

As at King Point there have been taken both deflection and oscillation observations, we might, for this station, derive the value of H by the usual combination formula, where:

(32) $$MH = \frac{\pi^2 J}{T^2}$$

derived from the observation of oscillation and:

(33) $$\frac{M}{H} = \tfrac{1}{2} r^3 \sin \varphi \frac{1}{1 + P/r^2 + \text{etc.}}$$

derived from the observation of deflection, where we do not need to know the value of the magnetic moment of the magnet employed. This method of calculation has not, however, been used, because in many cases deflections and oscillations are taken in such manner, that the time interval between them is too large. For instance, deflections have been taken one day and oscillations the next. We have therefore also for oscillations derived the value of H directly by the logarithmical formula:

(34) $$\log H = C_s - 2 \log T_o,$$

where:

$$\log T_o = \log T - (b_s t + \xi - \triangle_s - \tau)\, 10^{-5}$$

On Determination of the two Constants P and J. — If we wish to study the observation material more closely we shall have to determine the values of the two constants P and J, the first being a constant depending upon the distribution of magnetism in the deflector in question and the second the moment of inertia of this magnet with the suspension arrangement. As the values of these two constants are not necessary for the reduction of the material, the observers have not taken any special observation for their determination. As however, the constant P usually varies with the time, it might be of interest to study this variation and we shall later on examine the data for P for the various deflectors. Not possessing special material for determination, we shall have to make use of the material at hand. For the constant P we have:

(35) $$P = \frac{e^2 E^2 (B - 1)}{E^2 - e^2}$$

where:

$$B = \frac{e^3}{E^3} A \quad \text{and} \quad A = \frac{\sin \varphi_e}{\sin \varphi_E}$$

From these formulae we see, that determination of the constant P is possible if we have a sufficiently large material of deflections, in which the observations have been made with the deflector at two distances of the bar at the same time as the value of H is known. At Sitka observations were taken with the deflectors at two distances, while the value of H is known from the observatory records. For some of the deflectors there is furthermore such material also for Potsdam, which might serve as an excellent control. However, to get an idea of the variation of the constant P with time, we shall also try to get some determinations from the material collected at Gjøahavn and at King Point, where also observations have been taken with the deflector at two distances of the bar, but on different occasions and even at different places, where the value of H varies considerably. Therefore, we shall have to use an average figure obtained from a large series of observations and attempt to reduce the data to a mean value.

Calling the value of the horizontal intensity H_e and H_E, respectively for the two distances, where the observed angles are φ_e and φ_E, we can, if we put $H_e = H_E$, write:

(36) $$\log \sin \varphi_e - \log \sin \varphi_E = C_{ae} - C_{aE},$$

and: $$\log A = C_{ae} - C_{aE}$$

As long as by C_{ae} and C_{aE} we mean values corresponding to the same moment, we obtain the correct value of A.

If now the value of P is known, we find the value for the magnetic moment M from:

(37) $$M = \tfrac{1}{2} K r^3 (1 - P/r^2)$$

and finally the moment of inertia:

(38) $$J = \frac{K'M}{\pi^2}$$

The details of the method used to procure acceptable values for C_{ae} and C_{aE}, will be given later on by examples.

Special Remarks on Inclination.

From the account of the instrumental equipment we see that the angle of inclination could be measured by aid of the three different instruments:

a. The Earth Inductor, Toepfer,
b. Inclinatorium, Dover No. 154,
c. The Fox Circle No. 21.

a. *The Earth Inductor combined with the Galvanometer* was used according to the well-known method of *Schering,* consisting in giving the axis of the rotating coil such a position that no current was induced as an effect of the earths magnetic field, the non-effect of the continuously rapidly rotating coil being ascertained by means of a sensitive galvanometer. The horizontal axis of the inclination frame was placed at right angles to the base-line direction (mean meridian), and the full observation included two sets of readings on the vertical circle, fixed to the inclination frame. During the first readings, the division of the vertical circle shall face the west, during the second it shall face the east. At the beginning of the set, consisting of four readings with both microscopes, the coil rotating clock-wise and counter-clock-wise, +, —, +, —, the observer had to ascertain the nadir point through readings with the right and left microscopes, mark A of the coil facing the east and the west. Calling the nadir point n and the inclination readings i, we have:

$$I_E = i - (n + 90°) \quad \text{and} \quad I_W = (n - 90°) - i$$

and (39) $$I = \frac{I_E + I_W}{2}$$

At each setting of the inclination frame, the time was read off and recorded.

b. *The Dover Dip Circle, No. 154,* had two needles, I and II, and with a few exceptions a whole series of settings and readings were made with both needles on each occasion. The angle of inclination I was found as a mean of four mean circle readings:

(40) $$I = \frac{a + b + c + d}{4}$$

The meaning of each mean circle reading was, according to Wiik:

a . . . . mark A out and up
b . . . . » » in and up
c . . . . » » out and down
d . . . . » » in and down

where each of these mean circle readings consists of three settings and readings with the two microscopes, designated by "above" and "below", circle facing the west and circle facing the east. This makes $(3 \times 2 + 3 \times 2) = 12$ readings for each of the mentioned four positions of the needle, a, b, c, d, where the end of the needle, marked A, was made south pole in the 24 readings, belonging to the means a and b, and north pole in the remainding 24 readings, belonging to the means c and d.

Time and temperature were read off and recorded at the end of each series of six circle readings, that is to say, 8 times during an observation with each needle.

c. *The Fox Dip Circle No. 21* had also two needles designated by A and B. The angle of inclination I appears here as a mean of only two mean circle readings plus a constant. We put for the calculation:

(41) $$I_1 = \frac{a + b}{2}, \; I_1 - I = \triangle$$

where the meaning of the two mean circle readings is:

a . . . . mark out and up
b . . . . mark in and up.

Each mean circle reading is composed of three settings and readings with the two microscopes, here designated by "S-end" and "N-end", circle facing the west and circle facing the east. For reasons mentioned before and explained below, the needles belonging to the Fox Circle were permanent magnets and were thus not intended for reversion of polarity.

As most probably the centre of gravity of such needles does not coincide with the point of rotation, we do not get the true angle of inclination in an observation made according to the above system, but will have to add a correction, the so-called index error of the needle, $\triangle$ in formula (41). Calling the distance between the two above-mentioned points r, the weight of the needle p, and the angle, formed by the line between the two mentioned points and the magnetic axis of the needle a, we have according to Liznar,[1] when F is the total magnetic force of the earth and m is the magnetic moment of the needle, the following condition for equilibrium:

(42) $$F\,m \sin (I' - I) = F\,m \sin \triangle = p\,r \cos (I' \pm a)$$

[1]) J. Liznar: Anleitung zur Messung und Berechnung der Elemente des Erdmagnetismus. Wien, 1883 (page 44.)

If here we put $\triangle = \triangle \sin 1'$ and combine the constants into one:

$$P = \frac{p.r}{m. \sin 1'} \tag{43}$$

we have for the index error of the magnet:

$$\triangle = \frac{P}{F} \cos (I' \pm a) \tag{44}$$

From this equation we see that $\triangle$ is a function of F, which means that a value for the index error $\triangle$, found at one place, cannot be applied for calculation of the observations taken at another place. Computing $\triangle$ from comparisons between observations with the Fox Circle and with the Earth Inductor at *Potsdam* and *Sitka*, we can calculate the two constants of the equation (44), P and a, provided that the magnetic moment of the needle, m, has remained constant during the time between the two observations. Then the index error $\triangle$ may be determined for any other place where the value of the magnetic force is known.

Deflection Observations with the Fox Circle. — Besides ordinary observation of inclination, using free needle, the Fox Circle was, as we know, arranged for observation with deflected needle. One of the two deflectors designated N and S, was screwed on to the alhidade on the back of the vertical circle of the instrument, while one of the small permanent magnets, A or B, was used as deflected needle. The alhidade was adjusted with its zero point at the division of the limb answering to $(I' — 30)$, where I' stands for the angle of inclination previously obtained with the free needle in the same position of the instrument, "circle W" and "circle E". When the north and south ends of the deflected needle had been sighted and read, usually ten times, the alhidade and the deflector were moved across to the position $(I' + 30)$, whereupon corresponding sights and readings of the needle, now deflected to the other side, were made. In this way we get the four mean readings a, b, c, d, where:

Circle	W,	adjustment	$(I' — 30)$	a
»	W,	»	$(I' + 30)$	b
»	E,	»	$(I' — 30)$	c
»	E,	»	$(I' + 30)$	d

The angle of inclination is obtained by putting:

$$I_W = 90° — \frac{a + b}{2} \text{ and } I_E = 90° — \frac{c + d}{2} \tag{45}$$

and finally:

$$I = \frac{I_W + I_E}{2} + \triangle, \tag{46}$$

$\triangle$ being the index error of the deflected needle.

In both methods of observing, time and temperature were read and recorded four to eight times. When observing in the field, the meridian was determined in the usual manner by making some settings in the magnetic prime vertical with readings of the north and south ends of the needle, "circle W" and "circle E", "mark in" and "mark out". At the base station, however, the position of the instrument was referred to the base-line direction. If the true declination differs from the mean meridian, used during the observation of inclination, we shall have to introduce a correction to the angle of inclination, determined by the formulae (39), (40), (41) and (46). Calling this new final result for the angle of inclination, I_e, we have:

$$\text{tg}\, I_e = \text{tg}\, I \,.\, \cos \triangle D, \tag{47}$$

where $\triangle D$ is the difference between true and used direction of the meridian.

Special Remarks on Total Intensity.

As mentioned, it is also possible to make deflections with the inclination needle of the Fox Circle according to a method by which the value of the total intensity may be determined. For this purpose both the before mentioned deflectors N and S were screwed on to the back of the vertical circle. The alhidade was set with its zero mark exactly at the division of the limb, indicated by the mean of the inclination readings, obtained immediately before with the same position of the instrument, "circle W" or "circle E". A series of readings of both ends of the needle was then taken, first with the needle deflected in the one quadrant and next a corresponding series with the needle deflected past the vertical. According to the tabulation given below, we get as usually the means a, b, c, d, with corresponding readings on the watch and the thermometer:

Circle W, setting I_W				Circle E, setting I_E			
Needle deflected				Needle deflected			
Directly		Past the meridian		Directly		Past the meridian	
N-end	S-end	N-end	S-end	N-end	S-end	N-end	S-end
a		b		c		d	

whereby the mean angle of deflection results from:

$$\psi = 90^\circ - \frac{a + b + c + d}{4} \tag{48}$$

and finally for the total intensity:

$$F = \frac{R\,(1 + \beta t)}{\sin \psi} \tag{49}$$

where R is a constant, depending upon the magnetic moment of both deflectors and the needle employed, β the temperature coefficient and t the mean temperature observed during the deflection. The two constants R and β may be determined from observations taken under the greatest possible difference in temperature at a place where the value of the total intensity is known.

The Magnetic Stations at Godhavn and Beechey Island.

Godhavn in Greenland.

General Remarks. — Soon after the Gjøa, at 1 o'clock on the 25th of July 1903, had dropped her anchor off Godhavn, Lieutenant Hansen went ashore and began to take astronomical observations, while Wiik made preparations for occupying a magnetic station. The magnetic observations were entered in a book, which in the Main List in the Introduction is marked No. 1. In the beginning of the book Wiik gives the following account:

"The observations at Godhavn were taken during the 27th and the 31st of July 1903. The station was put at a distance of 45 metres from the Oil Refinery. A flagpole, standing on the hill above the "town" at a distance of about one kilometre from the station, was used as "Mark". The observer did not carry anything made of iron on him, and a box, containing instruments, was during the observation placed at a distance of about 20 metres from the tripod, in direction of the magnetic meridian. Large swarms of gnats made the work very troublesome, and the rather limited time rendered it impossible to make arrangements to prevent the sun from, now and then, shining directly on the instrument, with the result that the temperature readings are very high and uneven. Especially is this the case in the deflections, where one arm of the bar stood in the open part of the tent, exposed directly to the sun, while the other arm was under cover. The short set of bars were used at Godhavn. The Seemann magnet I was tried for oscillations, but oscillated too slowly and stopped long before the observation could be carried through".

According to the final results of professor Geelmuyden's calculations we have for azimuth of "Mark":

$$a = 13° \, 36' \, 53{,}9'' \text{ *)}$$

and for the geographical co-ordinates of the station:

$$\varphi = 69° \, 14' \, 29'' \, \text{N} \text{ and } \lambda = 53° \, 24' \, 10'' \, \text{W}$$

Details regarding the observations are to be found in Tables I to VI, pages 210—212. In this place we shall only make the following remarks:

Declination. — Following the Instructions Wiik made observations with each of the magnets mentioned below. The Zschau, with thread suspension, was used for the observation 28th of July, and we have reason to suspect that the lower value for declination obtained that day is due to torsion of the thread. The examination of the torsion of the thread of the Zschau, which instrument was used as standard during the first months of the stay at Gjøahavn, shows that the thread was largely affected by torsion, which tended to decrease the readings of westerly declination (cf. page 60). This makes it probable that the low readings of declination for the 28th of July are due to torsion. Considering this, we may put the mean declination at Godhavn at:

$$D = 62° \, 30' \, \text{W}$$

Deflection. — Wiik has observed with the Zschau, using the deflectors 2, 3, 4, 5, 6 and 7 and with the Seemann, using the deflectors I and II. He has used short deflector bars with the deflectors put at the mark for long distance, corresponding to k_E, according to our designation **). The values used for the moment constant C_a have been taken from Table XXVII, page 73, and the temperature coefficient b_a from Table XXI, page 67.

Oscillation. — Also here Wiik employed the magnets mentioned above with the exception that he has not been able to get any result when using the Seemann deflector I, for reasons mentioned above. The values used for the moment constant C_s and the temperature coefficient b_s have been taken from Tables XXVII and XXIX, pp. 73 and 74.

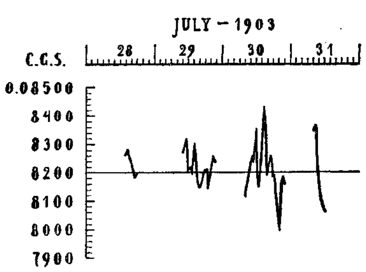


Fig. 3. Graph showing the variation of horizontal intensity at Godhavn during the time the observations were being taken.

Horizontal Intensity. — The mean value for the horizontal intensity at Godhavn, extracted from Table IV, page 211, may be put at:

$$H = 0.08210 \text{ C.G.S.}$$

To get an idea of the homogeneity of the different values for H, obtained with use of the various magnets both for deflection and oscillation, we have in Fig. 3 plotted the values of Table IV graphically in relation to

*) Cp. footnote p. 54. **) Cp. p. 22.

time. From this curve the result appears to be satisfactory and for instance the maximum value at about 3 p. m. on the 30th of July seems natural.

Inclination. — While Wiik made observations of declination and horizontal intensity, Amundsen observed inclination. Amundsen states that the soil of the place where the observations were taken was firm gneissic rock. The instrument stood at a distance of 37 metres from Wiik's station, in direction true SW. According to page 79 we have found that no correction needs be applied to the angle of inclination observed with the needles I and II, belonging to Dover No. 154, while the angel obtained with the needles A and B, belonging to the Fox Circle No. 21, have to be corrected with a quantity which is a function of the total intensity at the place in question (cf. page 49). For Godhavn we may put this correction at — 5.0° (cf. page 85). Giving double weight to the results obtained by measurements with the two Dover needles, we may for Godhavn put the *Mean Inclination* at:

$$I = 81^\circ\,44'$$

The three observations of which the series at Godhavn consists will be found in Table V, page 212.

Total Intensity. — In combination with observations of inclination with the Fox Circle Amundsen took two observations of total intensity by aid of the two deflectors N and S. One observation was taken with needle A and one with needle B. As to the theory and reduction we refer to page 51. The values of the constants R and β are taken from pp. 97—98. Taking the mean of the two values obtained with needle A and needle B as mean value for total intensity at Godhavn, we get:

$$F = 0.57915 \text{ C.G.S.}$$

Details will be found in Table VI page 212.

As to the exactitude of the values given above we are entitled to accept H and D as comparatively satisfactory, while I and especially F are encumbered with errors of considerable magnitude. As the cause of these errors in I and F are discussed later on, we shall in this place only refer to p. p. 97—100.

Beechey Island.

General Remarks. — The Gjøa anchored, as mentioned, in Erebus Bay in the evening of the 22nd of August 1903. The 23rd appeared with mist, but nevertheless Wiik began at once to make preparations for a magnetic survey. No astronomical observations were obtained on Beechey Island and they had therefore to measure some angles, and orient themselves by aid of a chart made out by *Commander Pullet* in 1854, and published by the *British Admiralty*. The magnetic observations taken on Beechey Island were entered in the Main Journal No. 1, according to the Main List, where we find the following account:

"During the days the Gjøa was lying in Erebus Bay the sky was overcast, which made astronomical observations, as well as determination of azimuth of "Mark", impossible. By aid of the observed angles to the below mentioned points and Commander Pullet's chart the station may, however, be fixed geographically. According to the chart we have:

Rieley	towards true	S 39° 0′ E	from tripod	
Southern point of Beechey	» »	S 22° 22′ E	»	»
Northern » » »	» »	N 80° 50′ W	»	»

The instrument read:

Rieley	from tripod	. . . . .	296° 19′
Southern point of Beechey	» »	. . . . .	313° 7′
Northern » » »	» »	. . . . .	74° 30′

The tripod was placed in a dried-out river bed, about 25 metres from the coast, and about 2 metres above sea level. In the direction of Rieley and the northern point of Beechey two small stone figures, consisting of three or four large stones, were erected. They stood at a distance of about 10 metres, one at each side of the point where the tripod was placed. The tripod itself was marked by aid of a large piece of board driven nto the ground, so that one foot of it was visible above. The place can easily be traced by aid of the graves of *Franklin, Bellot* and *Balcher*, where *Mac Clintock*, on behalf of *Lady Franklin*, has placed a monument, lying at a distance of between 200 and 300 metres off, the direction from the graves being S 48° E."

According to what has been stated above, we may for the azimuth of "Mark" put:

$$a = 39°\ 3',0$$ [1]

and for the geographical co-ordinates of the station:

$$\varphi = 74°42'50''\ \mathrm{N} \quad \text{and} \quad \lambda = 91°\ 54'\ 15''\ \mathrm{W}$$

Declination. — Three observations of declination were taken at Beechey Island. The observations will be found in Table VII, page 212 where the necessary details are stated. Taking the mean of the three observations we get:

$$D = 128°\ 28'.5\ \mathrm{W}$$

Inclination. — At the station on Beechey Island two observations were taken with the Dover No. 154 and one with the Fox Circle No. 21. The two first observations will be found in Table VIII, page 212, while the last observation taken with Fox needle B, has been left out, as we do not possess the necessary material to determine the index error of this needle for this station. No special observation was made for determination of the direction of the meridian, but the instrument was oriented according to the direction found just beforehand at the observation of declination. The value for the inclination at the station on Beechey Island may be put at:

$$I = 88°\ 20'$$

Total Intensity. — One observation was taken for total intensity at Beechey Island. The two deflectors N and S were used in combination with the needle B. The observations are to be found in Table IX, page 212. The values of the constants R and β are taken from pp. 97–98, and concerning the theory for the reduction we refer to pp. 98—99. As to the correctness of the value obtained for total intensity we may remark that the accuracy can not be considered very great, as the material on which the value of the two constants R and β has been based is very small. The value may be put at:

$$F = 0.58975\ \mathrm{C.G.S.}$$

[1] There seems to be some inconsequence in the designation of the direction of the azimuth. Here the calculator (Steen) seems to have reckoned from S towards E, in formula 1, page 42, however, a is reckoned positive from N towards E — in accordance with f. i. Liznar (cp. footnote p. 49). As it is not convenient to make any alteration in the figures left by Steen, we have let it pass, as there can be no doubt as to the correctness of the resulting data for D.

Summary.

In Table X we have tabulated the values for the magnetic elements of the two stations Godhavn and Beechey Island. The table is divided into two parts, the first part containing the values obtained through observations, while under the heading "Adopted" we give values corrected according to what has been stated above. As to horizontal intensity for the station at Beechey Island, we may remark that there had been taken one single deflection, but owing to the manner in which this observation was taken, we have made no use of it. The value for H, given under the heading "Adopted", has been obtained through calculation according to the formula:

$$H = \frac{F}{\cos I}$$

where for F and I the observed value has been used. The value of the vertical intensity may be derived from either of the two formulae:

$$Z = H.tg\, I \text{ or } Z = \sqrt{F^2 - H^2}$$

Table X.

Element	Observed		Adopted	
	Godhavn	Beechey Island	Godhavn	Beechey Island
D	62°11.2′	128°28.4′	62°30′ W	128°28′ W
H	0.08210	—	0.08210	0.01550
Z	—	—	0.57210	0.59190
F	0.57915	0.58975	0.57795	0.59210
I	81°43.0′	88°20.0′	81°50′	88°30′

THE MAGNETIC STATION AT GJØAHAVN.

Declination.

The Base-Line Direction. — On the 21st of September 1903, Wiik took observations with the Seemann from $14^h\ 27^m$ to $17^h\ 57^m$ and again from $20^h\ 22^m$ to $20^h\ 47^m$. The observations were entered in Journal No. 1, and the value for declination, derived from these observations, forms the foundation for the base-line direction at Gjøahavn. The observation was taken at the place on the hill where later on the foundation for the variometer was placed. The astronomical observation was made by Lieutenant Hansen and the angle between true north and the magnetic meridian was found to be:

$$D = 1^\circ\ 31'\ \text{E},$$

while for the geographical co-ordinates of the spot they got:

$$\varphi = 68^\circ\ 37'\ 38''\ \text{N} \text{ and } \lambda = 95^\circ\ 54'\ 51''\ \text{W}$$

The above given value for the base-line direction, 1°31′ E, is, according to later observations, very misleading. Thus the mean value for declination at Gjøahavn for the last months of 1903 is about 9° W. The unsatisfactory result of the first observation is partly due to the fact that the magnetic elements were very abnormal during the time when Wiik was taking observations, partly to torsion of the suspension thread, which most probably is responsible for an error of at least one degree towards the east.

Absolute Observations of Declination. — As mentioned before, a snow-hut served as magnetic observatory, where the tripod on which all the absolute observations were taken was placed near the southern wall. This snow-hut was during the summer replaced by a tent, whereby, however, every care was taken to protect the "fixed tripod" from being moved. Instruments and magnet, not in use, were kept in a snow-hut lying to the west of the observatory, (cf. page 35), and Wiik states that arms and iron tools were never carried by the observer and adds that they wore soft fur shoes when taking observations.

During the 19 months the magnetic station at Gjøahavn was in use, there were taken about 365 absolute measurements for declination. These observations were entered into small note books, marked I, II, III, IV and V, in the Main List numbered from 20 to 24. The original observations are copied into one of the large books, Journal No. 2, according to the Main List. Beside the above mentioned 365 observations of declination, there were also taken about 35 other observations of declination, which are entered into the three small note books, 38, 39 and 40, but these observations may be considered more as control observations and shall not be considered here.

Time was noted according to that shown by the watch or chronometer employed and corresponding time, in Gr. M. T., has been calculated by means of tables, which are based on the results of astronomical observations and comparisons with the standard chronometer. Amundsen states that the chronometers and watches, after having been used in the observations, were carried on board the Gjøa, there to be compared with the standard chronometer A, Kutter No. 24, which stood on a shelf in the aft cabin of the ship, where it was well protected against rapid changes of temperature.

Reduction. — According to a table, containing the geographical co-ordinates of the most important points at the station at Gjøahavn (Part I, p. 9), we have as co-ordinates for the absolute observatory:

$$\varphi = 68° \; 37' \; 14'' \, N, \; \lambda = 95° \; 53' \; 25'' \, W$$

As "Mark" served two flag-poles erected on the top of the roof of the variation house, some 75 metres towards the south. The azimuth of this mark is:

$$a = S \; 0° \; 45.4' \, W$$

The reduction of the observations for declination is made according to the formula:

$$D = M - (\delta + a) + \varrho \, ^{*)}$$

where δ means the mean setting in the meridian, M the mean reading of the "Mark", a the above-given azimuth of the "Mark", and ϱ the correction for torsion of the suspension thread.

In the chapter "*On the Reduction of Absolute Magnetic Observations*" it has already been mentioned that it is necessary to correct for torsion of the thread, when observations of declination are taken at a station where the directive force is so small as at Gjøahavn, (cf. page 18 in the Instructions).

On pages 42 and 43 we had for the angle of torsion the formula (4):

$$\varrho = (v - v' + x). \, B,$$

where the value of the variable x is found by formula (5) and the factor B by formula (7). Instead of calculating the value for B on each separate occasion, we can simply take the value from Table XI, where corresponding values for B are given for every 5th degree of φ_0 between 20° and 80°.

TABLE XI.

φ_0	B
20	15.58
25	9.67
30	6.46
35	4.53
40	3.27
45	2.41
50	1.80
55	1.34
60	1.00
65	0.73
70	0.52
75	0.35
80	0.21

However, the angular figure ϱ is no convenient quantity for our purpose, as it is a function of the directive force. Introducing the ratio of torsion, θ', which quantity has the advantage of being comparable, we have:

$$\theta' = H \, tg \, \varrho$$

where we express θ in γ, and the value of this quantity has been calculated by aid of the deflection material mentioned.

As by all deflection observations there has been made sights with "free needle", we ought, at least theoretically, to be able to use the whole material. However, there is one obstacle. From Table XI we see that by making φ_0 equal to 60°, we get the value 1.00 for B, while already with φ_0 equal to 40°, we have $B = 3.27$, which makes the determined value for θ' much less exact. The consequence of this is that for the Zschau we shall principally make use of the observations taken with Deflector 4 and Deflector 8 and for the Seemann we shall use observations taken with Deflector II. Only in some few cases, where more favourable data are wanting, we have also made use of observations with smaller angles for φ_0. Besides this, it is clear that observations taken under stormy magnetic conditions are to be excluded as far as is possible.

In Table XII we give the complete list of available material from which graphical curves for the torsion effect on the thread of the Seemann have been plotted. A similar list for the material used for a graphical curve for the torsional effect of the thread of the Zschau is to be found on page 194 in connection with the discussion of the field

*) Cp. footnote p. 54.

observations. As, however, the Zschau was used as station instrument for some short intervals during the last months of 1903 and in the beginning of 1904, we may in this place state that the value for the ratio of torsion during the period November the 1st 1903 to January the 18th 1904, was: $\theta' = 51\gamma$ E. In Table XII we have given the angular effect ϱ, emerging from the selected deflections, reduced by aid of formula (4). Under the heading H the corresponding value for the horizontal force is given and from these two quantities data for θ' have been calculated and entered under the heading θ'. The letter E means that the torsion of the thread tends to decrease the angle of westerly declination, while the increase of this angle is designated by the letter W.

Table XII.

Year	Date	ϱ	H	θ'	Year	Date	ϱ	H	θ'
		° ′	C. G. S.	γ			° ′	C. G. S.	γ
1904	Jan. 19	1 25 E 0 29 »	0.00753 753	19 6	1904	Jul. 4	1 14 E 1 10 »	0.00682 756	15 15
»	Mar. 8	1 23 E 1 47 »	0.00741 759	18 24	»	» 9	5 18 E 3 33 »	0.00662 631	61 41
»	» 12	0 57 E 0 25 »	0.00745 743	12 5	»	» 21	1 51 E 1 33 »	0.00806 789	26 26
»	» 15	1 47 E 1 50 »	0.00764 758	24 24	»	» 22	2 36 E 2 17 »	0.00706 710	32 28
1904	Apr. 14	1 26 E 0 1 »	0.00775 764	19 0	1904	Aug. 5	0 21 E 0 19 »	0.00682 689	4 4
»	» 20	1 7 E 1 5 »	0.00741 758	14 14	»	» 8	0 11 E 0 52 »	0.00758 770	2 12
»	May 4	1 47 E 0 53 »	0.00679 692	21 11	»	» 9	1 32 E 1 0 »	0.00804 789	22 14
»	» 11	2 12 E 1 1 »	0.00789 812	30 14	»	» 12	0 43 E 0 57 »	0.00774 752	10 12
»	» 19	2 37 E 1 4 »	0.00675 711	31 13	»	» 18	1 9 E 0 35 »	0.00689 687	14 7
»	» 26	1 8 E 1 24 »	0.00725 738	14 18	»	» 19	0 9 E 0 32 »	0.00772 762	2 7
»	Jun. 8	1 38 E 1 21 »	0.00712 733	20 17	»	» 25	0 13 E 0 18 »	0.00681 682	3 4
»	» 11	1 27 E 1 0 »	0.00758 765	19 13	»	» 26	1 50 E 0 35 »	0.00683 684	22 7
»	» 13	1 22 E 0 57 »	0.00718 721	17 12	1904	Sep. 9	0 44 E 0 42 »	0.00829 844	11 10
»	» 20	2 15 E 1 20 »	0.00766 774	30 18	»	» 10	0 8 E 0 12 »	0.00746 759	2 3
»	» 22	0 39 E 1 5 »	0.00692 703	8 13	»	» 12	0 8 E 1 3 »	0.00750 766	2 14
»	» 25	0 0 E 1 43 »	0.00740 740	0 22	»	» 13	0 7 E 0 20 »	0.00763 757	2 4
»	Jul. 2	0 42 E 1 56 »	0.00829 815	10 28	»	» 15	0 7 E 0 2 »	0.00751 756	2 0

Table XII, (continued).

Year	Date	ϱ	H	θ'	Year	Date	ϱ	H	θ'
		° ′	C. G. S.	γ			° ′	C. G. S.	γ
1904	Sept, 19	0 34 E 0 45 »	0.00771 774	8 10	1904	Nov. 30	0 40 E 1 18 »	0.00690 691	8 16
»	» 20	0 9 E 0 3 »	0.00696 714	2 1	»	Dec. 2	0 31 E 1 17 »	0.00767 743	7 17
»	» 22	0 10 E 0 26 »	0.00697 702	2 5	»	» 6	1 10 E 0 10 W	0.00789 755	16 2
»	» 27	0 56 E 0 14 »	0.00740 740	12 3	»	» 7	0 25 E 0 15 »	0.00766 769	6 3
»	» 28	0 1 E 0 15 »	0.00774 776	7 3	»	» 10	0 44 W 0 16 »	0.00714 723	9 3
»	» 30	0 3 E 0 13 W	0.00751 766	1 3	»	» 12	0 24 E 1 47 »	0.00754 754	5 23
»	Oct. 1	0 1 W 0 32 »	0.00768 734	0 7	»	» 14	0 4 W 0 12 E	0.00682 664	1 2
»	» 4	0 7 W 0 11 E	0.00754 763	2 2	»	» 21	1 10 E 0 27 »	0.00738 749	15 6
»	» 5	0 59 E 0 7 »	0.00784 776	13 2	»	» 23	0 32 E 1 1 »	0.00745 744	7 13
»	» 11	0 32 E 0 20 »	0.00743 736	7 4	»	» 28	1 7 W 0 9 »	0.00757 741	15 2
»	» 12	0 45 E 0 17 »	0.00752 750	10 4	1905	Jan. 3	0 23 E 0 33 »	0.00754 752	5 7
»	» 14	0 3 W 0 47 »	0.00741 733	1 10	»	» 4	0 56 E 0 18 »	0.00669 691	11 4
»	» 19	0 34 E 1 5 »	0.00703 693	7 13	»	» 9	0 53 E 0 30 W	0.00751 752	12 7
»	» 20	0 43 E 0 5 »	0.00714 711	9 1	»	» 11	0 54 W 0 17 »	0.00761 761	12 4
»	» 27	0 8 E 1 14 »	0.00743 753	2 16	»	» 19	0 47 E 1 2 »	0.00691 706	9 13
»	Nov. 3	0 20 E 0 46 »	0.00743 750	4 10	1905	Feb. 16	1 32 W 2 25 »	0.00684 648	18 27
»	» 10	1 11 E 0 55 »	0.00747 749	15 12	»	» 21	1 2 W 3 7 »	0.00740 771	13 42
»	» 16	0 35 E 0 48 »	0.00762 772	8 11	1905	May 4	0 38 E 0 26 »	0.00711 743	8 6
»	» 18	0 41 E 0 19 W	0.00762 754	9 4	»	» 24	0 18 E 1 30 »	0.00755 757	4 20
»	» 23	0 19 E 0 34 »	0.00741 740	4 7	»	» 25	1 22 E 0 16 »	0.00787 693	19 3
»	» 25	0 24 E 0 55 »	0.00709 688	5 11					

On the basis of the data for θ' given in Table XII we have drawn the curve for the torsional effect of the thread of the Seemann.

Regarding the way in which the curve in Fig. 4 was plotted we may make the following remarks:

To start with the data for θ', given in Table XII, were plotted. As long as the instrument was stationary there ought not to be any abrupt change in the twist of the thread, if care is taken when the weight was interchanged with the magnet, except a suspended cocoon fibre is apt to stretch when the humidity of the air increases which occurrance may give rise to a gradually changing torsional effect. On studying the distri-

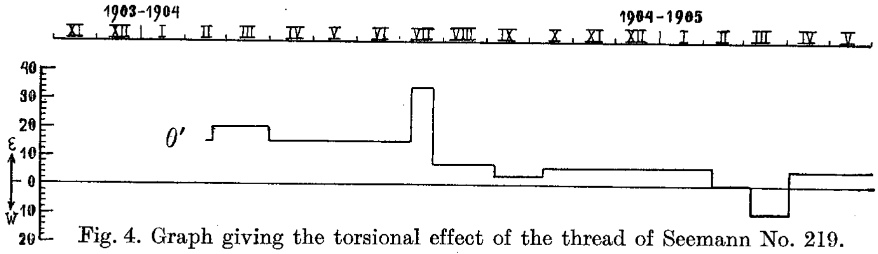


Fig. 4. Graph giving the torsional effect of the thread of Seemann No. 219.

bution of the points, we could not find anything pointing decidedly in this direction and have therefore kept a constant value for θ' within each period of abrupt change.

Such abrupt changes can have occurred when the Seemann was exchanged for the Zschau and we have to decide on fixed dates for change from one value for θ' to another. The data for θ', in Table XII, indicate, at least in some cases, that abrupt changes have taken place. A glance at the data for July the 4th and the 9th 1904 will give a good idea of this, but the exact point of time cannot be had from Table XII. In three cases, April the 1st, July the 25th 1904 and February the 7th 1905, we have notes, given by Wiik in the before-mentioned Journal, stating the day when the Seemann was

Table XIII.

From	To	θ'
1904, Jan. 15	1904, Feb. 21	15 E
» Feb. 21	» Apr. 1	20 »
» Apr. 1	» Jul. 8	15 »
» Jul. 8	» Jul. 25	34 »
» Jul. 25	» Sep. 6	7 »
» Sep. 6	» Oct. 11	3 »
» Oct. 11	1905, Feb. 7	6 »
1905, Feb. 7	» Mar. 6	0 »
» Mar. 6	» Apr. 2	10 W
» Apr. 2	» Jun. 1	5 E

Table XIV.

Instr.	Magnet.	Observer W	Observer A	Observer H	Sum
Z	I	17	46	—	63
Z	II	—	3	—	3
Z	A	1	—	—	1
S	I	—	2	—	2
S	II	114	207	8	329
Total Sum		132	258	8	398
Excluded Obs.		36	15	6	57
Ordinary Obs.		96	243	2	341

removed or mounted on the "fixed tripod". In these cases therefore the reason for change in the value for θ' is clear. To fix the days when the rest of the abrupt changes took place, we have made use of the variation curve for declination. There was little reason to suspect a change in the value foı θ' ,as long as we got more or less constant values for the base-line, determined for the d-curve by aid of the absolute observations. If, on the other hand, we got a sudden jump in the base-line values, which could not be explained by a corresponding jump in the relation between the base-line and the curve of the records themselves, there was reason to hold a change in the value for θ' responsible for the jump. The days when the changes in the value for θ' took place, fixed in the way explained above, are tabulated in Table XIII. As to the values for θ' when the Zschau was used, the changes are of course placed in the same way as explained for the Seemann and concerning the dates for change in the values for θ', we have already referred to p. 194. Table CLXV.

Summary. — As it may have a certain interest to see how the observations are divided between the two instruments and magnets and how many observations were taken by the three observers *Amundsen*, *Wiik* and *Hansen*, we have made out Table XIV.

The total sum of the observations of declination actually taken on the "fixed tripod" is, as we see, 398. Of these Amundsen (A), Wiik (W) and Hansen (H) took respectively 65 pct., 33 pct. and 2 pct. Observations taken respectively with the Seemann (S) and the Zschau (Z) amount to 83 pct. and 17 pct. For various reasons some of the observations are not satisfactory, and have therefore had to be excluded from the material used for determination of the base-line values for the d-curve. From Table XIV we see that the excluded observations amount to 57, or 14 per cent. In Table XV, pages 213—216, we give the absolute data for declination, taken on the "fixed tripod" and actually used for reduction of the d-curve. The data are put into the table in chronological order from 11th of November 1903 to 30th of May 1905.

The values for θ' are taken from the graphic curve in Fig. 4, p. 60. The corresponding value for ϱ is calculated by the formula:

$$tg\,\varrho = \frac{\theta'}{H},$$

where the value for the horizontal intensity H is determined by reduction from the h-curve according to formula (18) page 45.

In Table XVI we give monthly means for D. These means have very different weights, as the are taken directly as arithmetical means from Table XV, where the number of data for each month differs considerably, as seen from Table XVII, where the number of observations for each month is tabulated.

Table XVI.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean
	° '	° '	° '	° '	° '	° '	° '	° '	° '	° '	° '	° '	° '
1903	—	—	—	—	—	—	—	—	—	—	7 56	7 23	—
1904	8 2	9 42	7 32	4 25	6 45	5 57	3 26	4 1	4 7	3 29	5 31	6 56	5 49.4
1905	6 36	5 43	2 24	6 47	—	—	—	—	—	—	—	—	—

Table XVII.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Sum
1903	—	—	—	—	—	—	—	—	—	—	5	17	22
1904	12	14	14	8	14	14	21	26	24	26	25	41	239
1905	41	8	10	4	16	—	—	—	—	—	—	—	79
Sum	53	22	24	12	30	14	21	26	24	26	30	58	340

The total number of absolute declination observations, suitable for use for determination of the base-line values of the d-curve, is, as mentioned before, 340, which means about 18 observations per month. The highest number of observations taken in one month is 41, in December 1904 and in January 1905. The lowest number of observations taken in one month is 4, in April 1905. The mean declination for 1904 is, as we see, 5° 49.4′ W. The highest observed value was D equal to 18° 16′ W, which occurred at 0^h 15^m a.m. Gr. M. T., on the 6th of January 1905. The lowest observed value was D equal to 7°43′ E, which occurred at 4^h 1^m p.m. Gr. M. T. the 3rd of August 1904. The difference between the extremes to the west and to the east is thus 25° 59′. For comparison we refer to Table CXXVIII, p. 168, where corresponding figures are given for data extracted by aid of the d-curve.

Horizontal Intensity.

General Remarks. — During the stay at Gjøahavn there were made about 350 absolute observations for horizontal intensity. As there was made no observations of oscillation, the above mentioned observations were deflections. About 100 of these observations may, however, be considered control observations, intended to serve as material for determination of the constants of some of the deflectors, while the rest, more than 250 observations, are usable for determination of base-line values for the *h*-curve. The last mentioned 250 observations were all of them taken in the absolute house, on the "fixed tripod", and were entered in small note books, Nos. 16—19 in the Main List in the Introduction, and later copied in Journal No. 3. In the beginning of this Journal has Wiik made a statement, which has partly already been recorded in the abstract from the *"Journal for the Absolute Instruments"*, pages 34—36, and may therefore be omitted here. The following remarks may, however, be of interest: "From the beginning of November 1903 till the middle of March 1904 Zschau No. 289 was used as station instrument at Gjøahavn and after this date Seemann No. 219, which was, however, replaced by the Zschau for some short intervals now and then. To measure the temperature during the observations thermometer I was generally used for the Seemann and II for the Zschau, but occasionally also other thermometers were employed. The temperature noted on the observations always refers to the direct reading on the thermometer employed, and the thermometers were compared with the standard thermometer No. 932 almost every month, and, besides this, a test for the zero point by aid of melting snow, was usually added. The temperature in the absolute observatory was during the winter frequently down to — 35° C, and it may be remarked that the observations made by Amundsen were all taken by lamp light".

The Thermometers. — In Table XVIII we give the corrections of the thermometers in question. All the thermometers, except II, seem to have kept a constant correction. As to thermometer II, a toluol one, it had, according to tests in melting snow made in November and December 1903, a correction of + 1.4°, the figure given in Table XVIII. A later examination, in April 1905, gives a correction of 0.0°. Regarding this test we may refer a note written by Wiik in the note book, No. 14 in the Main List: "Thermometer II, belonging to the Zschau, has always had a correction of — 1.35°. In April the 24th 1905 a test was made in melting snow and on this occasion there was found a small drop of toluol at the top of the tube. A violent slinging of the thermometer brought the drop down and a new test for the zero point, by aid of melting snow, showed a correction of 0.0°". To the above statement we may remark that, as the correction, after they had removed the drop in the tube, was found to be 0.0°, the correction before this occurrence had of course been + 1.35°, or nearly what has been entered in Table XVIII and not — 1.35°, as Wiik states. In accordance with what has been said above we must for the time before April the 24th 1905 use the correction + 1.4° for thermometer II and 0.0° after this date.

Table XVIII.

No.	Corr.
	°
898	— 0.4
I	0.0
II	+ 1.4
4	0.0
5	+ 0.3
6	0.0

The Standard Magnet. — We have, as already seen, controling data for the constants of several of the magnets in 1903, as well as in 1907. These data show that the time factor has affected very differently the values for the magnetic moment. As was to be expected, the old magnets have kept a fairly constant value for M, while the new ones have undergone a considerable change. For these new magnets it is not sufficient merely to know the value for M in 1903 and in 1907, if we are to have reliable values in the time between these two years. We shall at least have to know the value of M at one point between the two, and the only way to obtain a third point is to make use of the material collected during the Expedition. As to the two deflectors, I and II, belonging to the Seemann, the question of obtaining sufficient points for test by aid of data collected during the Expedition is still more important, as these magnets could not be tested in 1907 — they were, as we remember, lost in the sea in September 1906.

Calculating according to the formula $B_h = H - \varepsilon_h h$, where B_h means the base-line value for the h-curve, this value can be determined as soon as the value of H is known for a certain number of points, where h can be measured on the curve. If one or more of the deflectors, with which we have observations at Gjøahavn, has maintained a more or less constant Magnetic moment between 1903 and 1907, we may through absolute observations with this magnet be able to calculate a preliminary base-line value for the h-curve. This done, the value of H for any point within this interval is known and consequently observations with any of the magnets we wish to examine may serve as material for the required tests of their constants, provided observations have been taken with them during the said period.

The first thing we shall have to decide about is: which of the magnets ought to be selected as standard for a preliminary determination of B_h. Concerning this question we are reminded of the two old "Fram" magnets. Referring to page 22, we see that these magnets were designated as VI and V and that in 1903 they were marked with the figures 4 and 5 respectively. These two magnets were in 1903 about 10 years old and the tests in 1903 and in 1907 show that during this period they had maintained fairly constant values for M. Concerning the constancy of the magnetic moment of Defl. 5, we may, however, recall an occurrence in January 1905. Referring to page 36, we see that the magnet had for a while been lying the wrong way in the box and that most probably somebody, who had nothing to do with the instruments, had handled the magnet. However this may be, the control observations made in 1907 do not seem to indicate any abnormal change of the magnetic moment. To get a general view of the result of the control material from Potsdam and Sitka we have in Table XIX tabulated

Table XIX.

Defl.	Station	Year	Month	At 10° C.			At 0° C.			b_a	b_s
				C_a		C_s	C_a		C_s		
				k_e	k_E		k_e	k_E			
4	Potsdam	1903	Apr.	**8.73186**	*8.36077*	**0.34334**	8.73519	8.*36410*	0.34013	33.3	16.0
»	Sitka	1906	Dec.	**8.73260**	**8.35160**	**0.34220**	8.73566	8.35466	0.33940	30.6	14.0
»	Potsdam	1907	Aug.	8.73196	8.35161	0.34306	8.73502	8.35494	0.33986	—	—
5	Potsdam	1903	Apr.	**8.55000**	*8.17891*	**0.32928**	8.55169	*8.18060*	0.32771	16.9	7.7
»	Sitka	1906	Dec.	**8.55120**	**8.17110**	**0.32590**	8.55440	8.17430	0.32276	32.0	15.7
»	Potsdam	1907	Aug.	8.54840	*8.17950*	0.32715	8.55059	*8.17950*	0.32561	—	—

the mean figures for the constants of the old "Fram" magnets, Defl. 4 and Defl. 5, C_a, for the distances k_e and k_E, and C_s, and the temperature coefficients b_a and b_s. The values for C_a and C_s are in the table given for the two temperatures 0° C and 10° C. As 0° has been chosen as standard temperature for the reduction of the records of the Expedition, the constants corresponding to this temperature are those we shall later on make use of, but before we have decided on final values for the magnet we are to choose as standard, it will be safer to start with the values corresponding to 10° C, because this temperature agrees much better with the mean temperature at which observations were actually taken at the control stations. At Sitka, for instance, the values for C_a and C_s at 10 degrees are more or less those which have been extracted from the angles of deflection actually observed, while values corresponding to 0° depend on the correctness of the temperature coefficients b_a and b_s. The control observations made at Potsdam in 1903 were made at temperatures between 18° and 8° C, and consequently also in this case values corresponding to 10° are more reliable. Finally may be remarked that the observations made at Potsdam in 1907 correspond to a temperature of about 20°, which makes the constants given for both 10° and 0° dubious as long as the correctness of the temperature coefficients are uncertain.

At Potsdam in 1903 only the distance k_e was adopted for the observations, but we can for comparison calculate corresponding values for the distance k_E by aid of Dr. Edler's formula (cf. page 17):

$$C_{a_E} = C_{a_e} + \log \left(\frac{e}{E}\right)^3$$

where $k_e = 29.80$ cm. and $k_E = 39.62$ cm. Reduced in this way we get the values printed in italics. As to the values for b_a and b_s for 1903 we may, referring to page 13, remark that Dr. Edler advises against putting too much faith in their correctness. In the observations made at Potsdam in 1907 there is no opportunity of controlling the values for b_a and b_s, as this material is very limited. On the other hand the material collected at Sitka is very extensive and we ought therefore to be able to extract reliable constants from this series. As to the material for control of b_a for the two "Fram" magnets we give in Fig. 5 a graph, where the values calculated for C_a for Defl. 4 at various temperatures, between 15°.5 and 4°.6, for the distance k_e are plotted. From this graph we see that the inclined line indicating the mean relation cannot be said to be indisputable. Supposing, however, we disregard the value $C_a = 8.73093$ at the temperature 11.4° we may perhaps be entitled to put the line as we have done and should thus get $b_a = 30.6$, which value agrees fairly well with the value $b_a = 33.3$, found by Edler in 1903. Another circumstance, also indicating that the value of the temperature coefficient of Defl. 4 cannot be very far from the two values stated in Table XIX, (p. 63), is the fact that the values we get for C_a in 1907 (Potsdam) agree very well with those found in 1903. These values are, as mentioned, reduced, from values found for a temperature of 20°, by aid of $b_a = 33.3$.

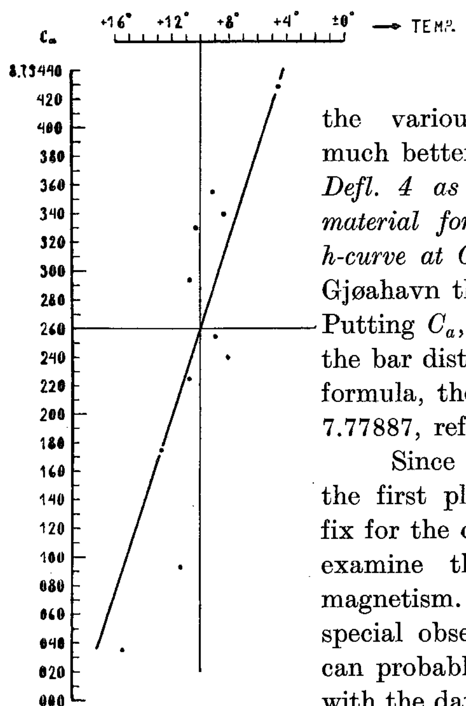


Fig. 5. Graph showing the relation between temperature readings and corresponding values for C_a. Defl. 4, distance k_e.

A glance at Table XIX will show that the various values for the constants of Defl. 4 agree much better than those of Defl. 5 and *we have therefore chosen Defl. 4 as standard magnet when it is a question of collecting material for calculation of a preliminary base-line value for the h-curve at Gjøahavn.* There is, however, still one obstacle. At Gjøahavn the observations were made with a bar distance l_E. Putting C_a, for Defl. 4, equal to the mean of the three values at the bar distance k_e we get 8.73529 and, calculating with the above formula, the corresponding value for l_E (equal to 62. 09 cm.) is: 7.77887, referring to the temperature 0° C.

Since the entire reduction of the h-curve for Gjøahavn in the first place shall be dependent on the value we are going to fix for the constant C_a for Defl. 4, we shall go a step further and examine the constant P, depending on the distribution of magnetism. The Expedition has not furnished us with any special observations for determination of this constant, but we can probably get a more or less reliable value if we calculate with the data we can extract from the material available. Referring to page 47, formula (35), we see that in the first place we must try to get a reliable value for the constant $A = \sin \varphi_e : \sin \varphi_E$, where the Sitka values (Table XIX), for the distances k_e and

k_E, give log $A = 0.38100$ for Defl. 4. After some further investigations we have finally decided on the value: log $A = 0.38080$. For the practical calculation of the constant P we have, however, not made use of the formula 35, but have here, as well as on later occasions, consequently used formula:

$$P = \frac{E^2 e^2 (B - 1)}{BE^2 - e^2} \qquad (35\,a)$$

Referring to *Stewart and Haldane Gee*[1] we see, that the formulae 33 and 37 are different forms of the formula for deflection. By neglecting higher powers of P/r^2, and further members of the complete formula (in formula 33 expressed by etc.), we get formula 35, while formula 35 a is an exact solution if the form 37 is accepted. As we have for the calculation made consequent use of the form 37, it follows that formula 35 a will give the most correct result. Thus we get:

$$\log P = 1.64285$$

With this value for P and with $C_a = 8.73562$, for the distance k_e, we can now determine the magnetic moment of Defl. 4. Calculating according to formula (37), page 48, (log $K = C_a$), we get:

$$M = 684.20 \text{ C.G.S.}$$

Concerning the data given above we may remark that we did not arrive at just these values on the first calculation, nor do they coincide with the final. These final data are, together with final data for the rest of the deflectors, assembled in Table XXVII, page 73. With the values accepted for M and P we can now calculate corresponding values for C_a for whichever bar distance we may choose, and we have thus as final data for the bar distance corresponding to l_E and as temperature coefficient used:

$$C_a = 7.76220 \text{ and } b_a = 0.000296$$

Deflections, reduced with these constants, are then used for the preliminary determination of the base-line value for the h-curve registered at Gjøahavn. The final value for b_a does not agree with what is given in Table XIX (p. 63). However, the value 29.6 seems to be the most reasonable value, as this corresponds to $\alpha = 0.000625$, which Steen has used when reducing the magnetic data for the Second Fram Expedition[2], where Defl. 4 was used under the mark VI, and finally this value also agrees well with a test made in June 1917 by Russeltvedt, in which he found α equal to 0.000633. The available material for Defl. 4 observed at Gjøahavn is represented in Table XX.

Table XX.

Year	Date	$\sin \varphi$	t	b_a	τ	C_a	H	h	ε_h	B_h
		log	°		corr.		C. G. S.	mm		
1903	Nov. 23	9.91294	− 18.9	29.6	− 559	7.76220	0.00716	*21.5*	12.0	0.00458
»	» 24	.88705	− 20.5	29.6	− 605	.76220	761	*25.8*	12.0	451
»	Dec. 1	.93155	− 16.4	29.6	− 484	.76220	685	19.2	12.0	455
»	» 11	.89975	− 27.5	29.6	− 811	.76220	742	22.4	12.0	473
1904	Jan. 5	.89580	− 35.6	29.6	− 1061	.76220	753	23.6	12.0	470
»	Mar. 17	.88757	− 28.9	29.6	− 853	.76220	764	23.7	12.0	480

[1]) Balfour Stewart and Haldane Gee: Lessons in Elementary Practical Physics. London 1007. Vol. II, p. p. 303 and 304.

[2]) Aksel S. Steen: Terrestrial Magnetism. Report of the Second Norwegian Arctic Expedition in the «Fram», 1898—1902. No. 6.

The calculations are made according to the formulae:

$$\log H = C_a - \log \sin \varphi_o,$$

where

$$\log \sin \varphi_o = \log \sin \varphi + t.b_a$$

$$= \log \sin \varphi + \tau$$

and

$$B_h = H - \varepsilon_h h$$

The two first data for h in Table XX are put in italics, indicating that correction for displacement of the base-line of the photogram has been applied, (cf. Fig. 26 p. 143). With the values obtained for B_h in Table XX the curve given in Fig. 6 has been drawn, representing preliminary base-line values for the h-curve at Gjøahavn from November the 1st 1903 to April the 1st 1904, from which date the curve seems to continue in a straight, horizontal line.

By aid of this preliminary curve for B_h we can get preliminary values for H for any point of time where we possess data for h and can thus work out preliminary values for C_a for any of the deflectors with which control observations have been taken at Gjøahavn. The necessary preliminary values for the temperature coefficients, for the deflectors 2, 3, 4, 5, 6, 7, I and II, are given in the Instructions page 13, and for the control of these data we may, for deflector 2, 3, 4, 5 and 6, make use of the data for b_a given in the table page 31, founded on the Sitka observations. As to the rest of the deflectors, 8, 9, 10, 11, 12 and 13, we are entirely dependent on what we can make out of the material collected during the Expedition. Dr. Edler, in the Instructions, states that the data for b_a cannot be considered final and he recommends the Expedition to make further investigations, but this recommendation has not been followed. The lack of special observations is unfortunate, because the general material does not suffice for any indisputable settlement of the question, at least for some of the magnets.

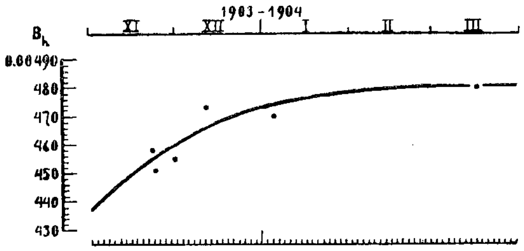


Fig. 6. Preliminary base-line value for the h-curve at Gjøahavn.

A consequence of what has been said above is that there will be no opportunity for any detailed investigation regarding the temperature coefficients of the Zschau magnets, and we shall only try to get out the most probable values for a in the formula (13), page 44: $M_o = M_t\ (1 + at)$, without trying to go into details according to formula (14). However, the accuracy of the reduction of the variometer curves at Gjøahavn, is almost entirely dependent on the exactitude with which we are able to determine the constants of the two Seemann deflectors I and II; but the determination of the constants for the two Seemann magnets seemed at first rather a hopeless task.

The Seemann Theodolite was, as we remember, lost in 1906 together with the magnets and there was thus no opportunity for further experimental investigation regarding the values of the constants of Defl. I and Defl. II. To start with we had only the rather doubtful values Dr. Edler had got from the observations made at Potsdam in April 1903. These values were:

$$b_a \text{ for } \begin{cases} \text{Defl. I} \quad . \; . \; . \; . \quad 0.000041 \\ \text{Defl. II} \quad . \; . \; . \; . \quad 0.000020 \end{cases}$$

Table XXI.

Defl.	Station	Year	Month	C_a				C_s	b_a	b_s	Remarks
				k_e	k_E	l_e	l_E				
2	Potsdam	1903	April	8.94413*	—	—	—	—	—	5.0	* Derived from $C = 9.61910$.
	Godhavn	1903	July	—	8.57037	—	—	—	—	—	
	Sitka	1906	November	8.95063	8.56815	—	—	0.28825**	25.5	—	** Reduced by aid of $b_a = 25.5$.
	Potsdam	1907	August	8.94389	0.56390	—	—	0.29472	—	—	
3	Potsdam	1903	April	8.96705	—	—	—	0.31699	11.6	5.0	
	Godhavn	1903	July	—	8.57570	—	—	0.32593	—	—	
	Sitka	1906	November	8.95615	8.57510	—	—	0.32587*	32.3	—	* Reduced by aid of $b_a = 32.3$.
	Potsdam	1907	August	8.94896	8.56862	—	—	0.33349	—	—	
5	Potsdam	1903	April	8.55169	—	—	—	0.32771	16.9	7.7	Hamburg, June, 1893
	Godhavn	1903	July	8.55094	8.17025	—	—	0.32603	—	—	$a = 0.000307$ correspon-
	Gjøahavn	1904	January	—	—	—	7.57170	—	—	—	ding to $b_a = 15.8$.
	Sitka	1906	November	8.55440	8.17430	—	—	0.32276	32.0	15.7	
	Potsdam	1907	August	8.55153	—	—	—	0.32404	—	—	
6	Potsdam	1903	April	8.76040	—	—	—	0.02820	10.5	4.5	
	Godhavn	1903	July	—	8.37409	—	—	0.03313	—	—	
	Sitka	1906	November	8.75470	8.37298	—	—	0.03410	33.0	14.5	
	Potsdam	1907	August	8.74967	8.36836	—	—	0.03886	—	—	
7	Potsdam	1903	April	8.75225	—	—	—	0.03807	9.7	4.1	
	Godhavn	1903	July	—	8.36448	—	—	0.04318	—	—	
	Sitka	1906	November	8.73830	8.35713	—	—	0.04795*	35.5	—	* Reduced by aid of $b_a = 35.5$.
	Potsdam	1907	August	8.73233	8.35291	—	—	0.05463	—	—	
8	Gjøahavn	1904	January	—	7.79170	7.55820	—	—	—	—	
	Sitka	1906	November	8.17507	7.79563	—	—	—	32.3	—	
	Potsdam	1907	August	8.17239	—	—	—	—	—	—	
9	Gjøahavn	1904	April	—	7.51420	—	—	—	—	—	
	Sitka	1906	December	7.89430	7.51830	—	—	—	38.0	—	
	Potsdam	1907	August	7.88851	—	—	—	—	—	—	
10	Gjøahavn	1903	December	7.56670	—	—	—	—	—	—	
	Gjøahavn	1904	August	7.52300	7.12900	—	—	—	—	—	
11	Gjøahavn	1903	December	7.54000	—	—	—	—	—	—	
	Gjøahavn	1904	August	7.49400	7.12300	—	—	—	—	—	
12	Gjøahavn	1904	February	7.07800	—	—	—	—	—	—	
	Gjøahavn	1904	August	7.06100	—	—	—	—	—	—	
13	Gjøahavn	1904	February	7.04700	—	—	—	—	—	—	
	Gjøahavn	1904	August	7.03200	—	—	—	—	—	—	
I	Potsdam	1903	April	8.56529	—	—	—	0.53377	—	—	
	Godhavn	1903	July	—	8.15456	—	—	—	—	—	
	Gjøahavn	1904	January	—	—	—	7.53170	—	—	—	* at $t = -30°$ C.
	Gjøahavn	1905	January	—	—	—	7.51470	—	—	—	
	KingPoint	1905	September	—	—	—	—	0.59110	} 8.3*	4.8*	
	KingPoint	1906	April	—	—	—	—	0.59253			
II	Potsdam	1903	April	8.73185	—	—	—	0.37015	—	—	
	Godhavn	1903	July	—	8.33158	—	—	—	—	—	
	Gjøahavn	1904	January	—	—	—	7.73195	—	—	—	* at $t = -30°$ C.
	Gjøahavn	1905	January	—	—	—	7.72760	—	—	—	
	KingPoint	1905	September	—	—	—	—	0.38135	} 12.0*	6.6*	
	KingPoint	1906	April	—	—	—	—	0.38253			

These coefficients are obviously too low, at any rate according to Mascart.[1]) Discussing the question of the temperature influence on the magnetic moment of magnets in general, he comes to the result, that we are entitled to put the upper and lower limit for the value of a at:

$$a_{max} = 0.00084$$
$$\text{and } a_{min} = 0.00023$$

and he adds: « . . ., les valeurs extrêmes étant toujours très rares». The minimum value, 0.00023, corresponds to $b_a = 0.000072$, and therefore, the values given by Dr. Edler appear to be too small, as he himself was aware (cf. page 12).

For determination of the temperature coefficients of the Seemann deflectors no data are available from Gjøahavn; but a number of observations at King Point are suitable for this purpose. It will later on be shown that we had to use a complicated method, but the results appear, nevertheless, to be satisfactory. Concerning these studies we refer to the part of this work where the King Point material has been discussed and we shall there, pp. 113—119 see that attempts have been made also to determine the two constants of the formula (14), page 44, μ and λ, of which a is a function.

Before dealing with final data for b_a and b_s for the various magnets, we shall examine the material on which we can found preliminary values for C_a for the Seemann magnets. We have during the before-mentioned period, November 1903 to May 1904, only two observations of deflection for Defl. I and four for Defl. II, in both cases at distance l_E. We shall, however, later on see that without risk we may extrapolate the curve for B_h in Fig. 6, so that we shall have a preliminary value for B_h for any point of time up to June the 30th 1904, and by this we can enlarge the material for a preliminary determination of C_a for Defl. I and Defl. II to respectively 15 and 16 observations. As will be seen on page 17, Dr. Edler, from the observations taken at Potsdam in 1903, has extracted some preliminary values both for C_a and for C_s for the two Seemann magnets. The bar distance used on this occasion was k_e, while the distance l_E was used at Gjøahavn. The two values for C_a, corresponding to April 1903 and February 1904, will of course not be sufficient to get an idea of how the magnetic moment has varied in relation to time, especially as in this case we have to do with two new magnets. Seeking for more data, we have tried to see whether the observations taken in the last days of July 1903 at Godhavn could be used in this connection. Taking the value for H from the curve in Fig. 3 (p. 52), which may be said principally to depend on our standard magnet, Defl. 4, we have determined a value for C_a for the Seemann magnets and thus get a point of time between the two above-mentioned values. Finally we can to a certain degree make use of some preliminary calculations, obtained from the comparatively large material of both deflections and oscillations made at King Point. There is, however, no direct comparison between the Seemann magnets and Defl. 4.

Having above discussed the way in which we might obtain the necessary preliminary values for final determination of the constants of our magnets we shall in Table XXI give the values we have come to in each case. The various values for C_a are entered under the four headings k_e, k_E, l_e and l_E. For the C_s there is one column and for the temperature coefficient there is a column for b_a and one for b_s.

It will in Table XXI be seen that also for some others of the Zschau magnets the values found for the temperature coefficients are too low, or at least smaller than the figure given for a_{min}. These small values are those extracted by aid of the Potsdam material in 1903, while the Sitka data seem more reasonable, though in some cases probably too high.

[1]) E. Mascart: Traité de Magnétisme Terrestre, Paris, 1900. Page 128.

Table XXII.

Defl.	log A
2	0.38154
3	.38117
5	.38051
6	.38146
7	.38139

For those of the Zschau magnets where deflections have been taken at two bar distances we have made calculations for the constants P. In Table XXII we give the values for log A for five of the magnets. From formula (36), page 48, we see that log A = log sin φ_e — log sin φ_E, or we might simply put log $A = C_{ae} - C_{aE}$. For those of the magnets where deflections are made only at one bar distance, we cannot obtain the value for P and consequently not the value of M either. As this is the case only for the magnets 9, 10, 11, 12 and 13, which were in fact very little used, the matter is not very serious. As to the Seemann magnets we possess observations of deflection at two distances, but these observations are not simultaneous. From Table XXI we see that distance k_e was used at Potsdam in April 1903, and in King Point from October 1905 to March 1906, and in some few observations in May 1906. As to other distances, k_E was used at Godhavn in July 1903 and l_E the whole time at Gjøahavn. Studying the King Point material we shall see that it is in the first place very difficult to fix any reliable value for C_a, distance k_e, for the time when records were made at this station. Secondly, we may remark that even if we had a value for C_a for distance l_E at Gjøahavn and for distance k_e at King Point, more than four months elapsed between the last observation at Gjøahavn and the first observation at King Point, during which time the value of the magnetic moment may have decreased considerably. There can thus be no question of direct comparison between values for C_a available for the distances l and k_e. We shall at first discuss the possibility of fixing the most probable value for C_a for the distance k_e, to be used for the reduction of the h-curve of King Point. As the Seemann was lost before the Expedition had an opportunity of making comparisons at Sitka, we are entirely dependent on the King Point material. We might here proceed in somewhat the same manner as we did at Gjøahavn, which, as we remember, consisted in comparison between angles of deflection observed with the deflector in question and absolute data for H, derived from the register, the reduction of which again was based on absolute observations with a magnet for which we have reliable data for C_a. The trouble is, however, that the reduction of the h-curve from King Point cannot be directly based on absolute data taken with magnets for which we know the value of M, because during the time the register was kept at King Point only the Seemann magnets were used for observations. Luckily, however, we can, to start with, get a usable preliminary value for C_a, distance k_e, for the two Seemann deflectors, derived from comparison between nearly simultaneous absolute observations made with these two magnets and observations made with Defl. 4. These observations were taken by Amundsen in May 1906. The mean value for H at King Point, indicated by Amundsen's observations with Defl. 4, for May 1906, may be put at:

$$H = 0.08447 \text{ C.G.S.}$$

From observations with the Seemann deflectors some days later we have the following values for log sin φ, distance k_e:

	Defl. I	Defl. II
log sin φ . . .	9.57800	9.79200
log H	8.92788	8.92788
C_a	8.50588	8.71988

and for oscillations:

	Defl. I	Defl. II
2 log T	1.66620	1.45600
log H	8.92788	8.92788
C_s	0.59408	0.38388

As to the decrease in magnetic moment which these two magnets have undergone, we may make the following camparison with data for C_a and C_s, obtained at Potsdam;

Station	Year	Defl. I		Defl. II	
		C_a	C_s	C_a	C_s
Potsdam	1903	8.56530	0.53377	8.73185	0.37015
King Point	1906	8.50590	0.59408	8.72000	0.38388
Diff.: 1903—1906	......	0.05940	0.06031	0.01185	0 01373

Taking the mean between the differences $\triangle C_a$ and $\triangle C_s$, for the two magnets, we may for the decrease of their magnetic moment, during the said three years put:

for Defl. I . . . . . . 5985.10^{-5}
for Defl. II . . . . . 1279.10^{-5}

Having for these magnets the values for C_a, distance k_e for April 1903 and for May 1906, we can interpolate the value for C_a for a certain point of time at the beginning of 1904, where, as mentioned before, the value for C_a, distance l_E, is known. As to how an interpolation of this kind can be done, we must in the first place consider the fact that we have to do with comparatively new magnets, which according to experience has a certain influence on the form of the curve for C_a (in relation to time) and secondly we must remember the very important fact that in general we can draw curves for C_s and C_a, for the various bar distances, parallel for one and the same magnet. Supposing that we have means to correct eventual displacements of the baseline in relation to the h-curve of the photograms from Gjøahavn, we can find the course of the curve for C_a, distance l_E (in relation to time) in the period from November 1903 to June 1905.

Thus we are able to make a comparatively exact interpolation for the value of C_a, distance k_e, and consequently we are also able to get hold of preliminary values for log A for both deflectors. Calculating according to formulae 35, 36 and 37 (p. p. 47—48), we get the values in table XXIII:

Table XXIII.

Defl.	I	II
log P	0.90300	9.89230
M	382.10	618.20

Table XXIV.

Dist.	Zchau		Seemann	
	a	b	a	b
k_e	115.03	29.80	107.87	28.55
k_E	176.34	39.62	171.03	38.82
l_e	230.31	47.34	258.14	51.08
l_E	345.96	62.09	339.78	61.35

which values refer to February 1904. We may, however, remark that it was only through a very long series of calculations and recalculations that at last we arrived at the data given above as preliminary values for P and M for the Seemann magnets.

During the studies regarding the constants for the two Seemann magnets the following questions arose:

a. Is P to be considered a constant quantity, when the magnetic moment of a magnet has undergone so large a change as was the case with Defl. I?

b. If the value of P changes, what is then the relation between $\triangle P$ and $\triangle M$?

The literature does not seem to say anything directly concerning these questions, except what Lamont[1] writes in his book (§ 36). We have therefore found it desirable to make some investigations, the result of which may have a certain interest.

Let us start with the formulae:

$$\frac{M}{H} = \tfrac{1}{2} r^3 \sin \varphi \left(1 - \frac{P}{r^2}\right) \text{ and } H = \frac{K}{\sin \varphi}, \text{ where } \log K = C_a$$

[1]) J. Lamont, Handbuch des Erdmagnetismus, Berlin 1891.

Putting into the first formula: $\sin \varphi = \frac{K}{H}$, we can write:

$$\frac{M/K}{\frac{1}{2} r^3} + \frac{P}{r^2} = 1$$

Now putting:

$$r \sqrt{\tfrac{1}{2} r} = a, r = b, \sqrt{M/K} = x \text{ and } \sqrt{P} = y$$

we can give the formula the following appearance:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

from which we recognise the usual form for an ellipse.

From what is said above we see that graphically we are not able to make a general study of the question regarding the relation between $\triangle P$ and $\triangle M$, but we might see what we could do with it, if we tried to construct the ellipse. The axis of this ellipse is, as we see, only dependent on the deflector distance r. From this we may conclude that one and the same ellipse curve serves as line of intersection between the co-ordinates x and y, if, as values for these, we use exact data for M, K and P, obtained with any magnet, provided that in each case the same deflector distance has been used. For the construction of the ellipse we have for each distance the value for the axis given in Table XXIV for both instruments. In fig. 7 is given a demonstration of one of the ellipse figures used for the control of P for the Zschau magnets, for the distance k_e.

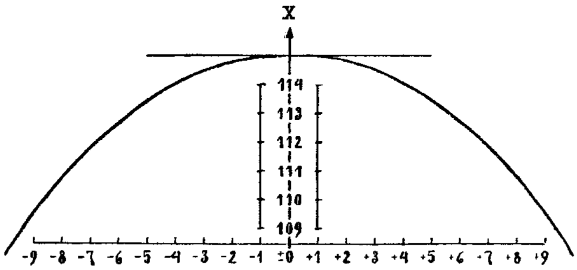


Fig. 7. Curve used for control of the values calculated for the constant P. Zschau, dist. k.

The X-axis is orientated vertically, the Y-axis horizontall. These curves have been used in the following way: By aid of preliminary determinations for the quantities, M, K, and P we have calculated the values:

$$x = \sqrt{M/K} \text{ and } y = \sqrt{P}$$

for eight cases, based on the determination for eight Zschau magnets for which data for P are obtainable. Plotted graphically we get eight points and, if our values were correct, the curve should coincide with all these points, which, however, was not the case. This shows that our preliminary values for the constants are not correct, which of course might be expected, remembering the uncertain data on which the determinations of P were founded. There is, however, reason to believe that we may largely improve the exactness of the data for P, if we are able to correct them by the aid of the ellipse curve constructed in this way. As to the Seemann there were only two sets of data for x and y and it was thus much more difficult to obtain a reliable values. On the other hand the control which such a curve affords was in this case of great value, since, without this control, it should have been almost impossible to obtain final values for the constants of Defl. I and Defl. II.

As to the method according to which we have worked, we see that theory demands that a certain value of $y = \sqrt{P}$ shall be brought to correspond with the value $\sqrt{M/K} = x$, being indicated by curves similar to that drawn in Fig. 7. With the material given in Table XXI (p. 67) we could gradually improve the result and by aid of this we could successively correct the various data for C_a and the differences between these quantities for the different distances, which in turn led to recalculations for the constant P. Such recalculations were continued until we had obtained satisfactory coincidence. Having finally arrived at the data given in Table XXVII, these data may enable us to supply a direct answer to the question put under b, page 70, while the first question, under a, has in fact already been answered. Let us put:

$$\frac{M - M'}{P - P'} = \frac{\triangle M}{\triangle P} = X$$

and by aid of data given in Table XXVII, we are able to obtain the data for X, given in Table XXV. Plotting the figures of this table graphically, we can draw a curve, which may be reconstructed by aid of the final data given in Table XXVI.

We have not in this work found it necessary to go further, as for practical use the problem may be said to be solved by what has been said above. Comparing the data of the two tables XXV and XXVI, we see that the final data, given in Table XXVII are not so exact as we could make them, if by aid of Table XXVI we made out new tables for the constants of the magnets. However, the errors in the values in Table XXVII are too small to be of practical consequence. In all cases where the Zschau magnets are concerned we see that practically no change should be noticed in the calculations for M and C_a, whether we correct P, or use a constant value by decreasing the value for M. In the Seemann magnets (Table XXIX) the variation in P is so great that it must be taken into account.

Table XXV.

P	X
49.3	0.0586
47.1	0.0235
44.4	0.0422
53.5	0.0284
42.7	0.0355
36.2	0.0403
33.9	0.0184
9.6	0.1164
7.3	0.1598
6.3	0.1549
1.4	0.1646
0.5	0.1322

Table XXVI.

P	X
60	0.021
50	0.025
40	0.037
30	0.057
20	0.087
10	0.124
0	0.169

It will from Table XXVII be seen that the temperature coefficients given for the deflectors 2, 3, 6, 7 and 9 are suspiciously low. These values are in fact more or less equal to those found from the Potsdam material for 1903, only that the values for 3, 6 and 7 have arbitrarily been raised so much that they do not lie below the value which Mascart consider to be the lowest figure acceptable (cf. page 66). From Table XXI (p. 67) we see that the coefficients indicated by the Sitka material are considerably higher, in fact so high that we did not venture to take a mean between these values and those from Potsdam and use this mean value as final. What finally led us to accept these low values for the above mentioned deflectors, as well as for the deflectors 2 and 9, is the fact that the material collected at Gjøahavn seems to be in favour of the accepted small value. Also for the four other magnets, mentioned above, the small values used for b_a, seem to work well, as far as this is controllable by the Gjøahavn material. (cf. Table XXVIII). A possible error in the values for b_a for some of the Zschau magnets has no significance for the reduction of the variation curves at Gjøahavn, as mentioned before. An unsatisfactory temperature coefficient may, however, influence the reduction of the field observations. Regarding an eventual error in the value of b_a, we may in this connection recall the fact, that the value found and used for the constant C_a has been calculated with use of just this small temperature coefficient, by which we see that the error in our final results for H cannot be very large, as long as the temperature. does not vary too much from the mean figure on which the calculation for C_a is based Regarding this point we refer to pp. 198—199, where the field observations are treated.

Table XXVII.

$^1/_7$			Defl. 2	Defl. 3	Defl. 4	Defl. 5	Defl. 6	Defl. 7	Defl. 8	Defl. 9
1903			1125.47	1149.69	684.45	441.80	716.28	705.21	189.15	99.42
04			1120.18	1138.45	684.27	.48	711.87	696.00	188.86	99.14
05	M		1116.98	1132.17	684.12	.25	709.07	689.24	188.66	98.92
06			1114.75	1127.98	684.00	.12	707.18	684.60	188.50	98.75
07			1112.93	1124.45	683.91	.05	705.39	681.08	188.43	98.66
1903			0.28715	0.32185	0.34015	0.32430	0.03046	0.03948	—	—
04			.28907	.32600	.34027	.32462	.03298	.04542	—	—
05	C_s		.29043	.32858	.34037	.32485	.03485	.04943	—	—
06			.29138	.33029	.34044	.32496	.03618	.05222	—	—
07			.29201	.33145	.34049	.32504	.03711	.05460	—	—
1903			1.63293	1.65106	1.64328	1.69289	1.67397	1.64203	1.55892	1.52997
05	log$P$		.63031	.64674	.64243	.69267	.67279	.63721	.55871	.52988
07			.62841	.64456	.64164	.69259	.67161	.63518	.55857	.52980
1903			6.55	6.69	6.63	7.02	6.87	6.62	6.02	5.82
05	y		.53	.66	.62	.02	.86	.59	.02	.82
07			.52	.64	.62	.02	.85	.57	.02	.82
	J		220.87	244.42	151.81	94.48	77.85	78.25	—	—
	a		23.0	24.5	62.7	34.7	23.0	23.0	35.1	24.3
	b_a		12.3	13.0	29.6	17.4	12.3	12.3	17.7	12.9
	b_s		5.6	5.9	14.2	8.5	5.6	5.6	8.2	5.8
1903			8.95124	8.96143	8.73578	8.54842	8.75718	8.74870	8.17327	7.89274
05	C_a	k_e	.94783	.95453	.73553	.54785	.75272	.73850	.17204	.89055
07			.94615	.95145	.73535	.54766	.75040	.73322	.17160	.88940
1903			8.57067	8.58044	8.35497	8.16638	8.37563	8.36792	7.79424	7.51423
05	C_a	k_E	.56732	.57364	.35473	.16582	.37120	.35783	.79301	.51204
07			.56568	.57061	.35458	.16563	.36891	.35260	.79257	.51089
1903			8.33508	8.34470	8.11930	7.93024	8.13967	8.13225	7.55924	7.27944
05	C_a	l_e	.33175	.33794	.11907	.92969	.13926	.12221	.55801	.27725
07			.33014	.33492	.11892	.92949	.13298	.11700	.55757	.27609
1903			7.97816	7.98762	7.76228	7.57278	7.78239	7.77525	7.20287	6.92326
05	C_a	l_E	.97484	.98089	.76207	.57223	.77799	.76524	.20165	.92107
07			.97325	.97790	.76193	.57204	.77571	.76005	.20121	.91992
1903			112.21	112.09	112.14	111.80	111.93	112.15	112.66	112.82
05	x	l_e	.23	.12	.15	.80	.94	.19	.66	.82
07			.24	.14	.16	.80	.95	.20	.66	.82
1903			173.92	173.81	173.85	173.55	173.67	173.86	174.30	174.43
05	x	l_E	.93	.83	.86	.55	.68	.89	.30	.43
07			.94	.84	.87	.55	.68	.90	.30	.43

Table XXVIII.

Date				Defl. 10	Defl. 11	Defl. 12	Defl. 13
1904	$^1/_1$		k_e	7.56000	7.52800	7.08300	7.05270
05	$^1/_1$	C_a		.52270	.48900	.06270	.03070
1904	$^1/_1$		k_E	7.17900	7.15600	—	—
05	$^1/_1$			.14500	.11900	—	—
1904		b_a		32.0	29.0	12.3	25.0

As mentioned, the temperature coefficients for the two Seemann magnets have been calculated according to formula (14), page 69, by which we find that the coefficient varies with the temperature readings. The coefficient used in each case will be seen from Table XXX. (Cf. Table XXIX.)

Table XXIX.

Date				Defl. I	Defl. II		Defl. I	Defl. II
1903	1/7			8.55346	8.73143		410.38	625.42
04	»	C_a	k_e	.52063	.72577	M	382.08	618.22
05	»			.50972	.72224		373.24	613.66
06	»			.50505	.71959		369.51	610.07
1903	1/7			8.15032	8.33059		0.54814	0.37244
04	»	C_a	k_E	.11831	.32523	C_s	.57919	.37747
05	»			.10775	.32184		.58934	.38068
06	»			.10323	.31924		.59370	.38323
1903	1/7			7.79135	7.97282		1.05279	0.29356
04	»	C_a	k_e	.75976	.96755	$\log P$	0.90301	9.89232
05	»			.74937	.96424		.81863	9.24920
06	»			.74491	.96166		.77882	9.14946
1903	1/7			7.55208	7.73399		3.36	1.43
04	»	C_a	l_E	.52065	.72882	y	2.83	0.88
05	»			.51034	.72554		2.57	0.46
06	»			.50592	.72297		2.45	0.00
1903	1/7			107.12	107.74	J	146.90	149.39
04	»	x	k_e	.34	.82			
05	»			.43	.86	α_{-10}	0.000302	0.000392
06	»			.47	.87			
						α_{-30}	248	330
1903	1/7			170.39	170.92	μ	0.0003290	0.0004230
04	»	x	k_E	.58	.99			
05	»			.65	171.02	λ	0.0000027	0.0000031
06	»			.69	.03			

In Table XXXII, pages 217—220, is given the complete material for data for H, observed at the base station at Gjøahavn. For the reduction of the observed deflections we have of course used the constants given above. These observations for H are, as before mentioned, taken at the "fixed tripod" of the absolute house at Gjøahavn. As to details of the reduction we refer to the Table CI, (pp. 147—150), and in this place we shall only give data for the factor A of formula (12), used in formula (11), p. 44, for determination of the correction for inequality in deflection. In Table XXXI are given corresponding data for the factor A and the angle φ, according to Liznar.

Table XXX.

t	Defl. I		Defl. II	
	b_a	b_s	b_a	b_s
− 50	5.88	3.60	9.38	5.22
− 40	7.10	4.20	10.70	5.91
− 30	8.32	4.80	12.02	6.60
− 20	9.54	5.40	13.34	7.29
− 10	10.76	6.00	14.66	7.98
0	11.98	6.60	15.98	8.67
+ 10	13.20	7.20	17.30	9.36
+ 20	14.42	7.80	18.62	10.05
+ 30	15.64	8.40	19.94	10.74
+ 40	16.86	9.00	21.26	11.43

In Table XXXII the data for H will be found tabulated chronologically.

In Table XXXIII we give monthly means for H. These means will have very different weights, as they are taken directly as arithmetical means from Table XXXII, where the number of data for each month differs considerably, which will be seen from the figures in Table XXXIV, where the number of observations for each month is tabulated.

Table XXXI.

φ	A	φ	A	φ	A	φ	A	φ	A	φ	A
°		°		°		°		°		°	
1	—	11	0.465	21	0.252	31	0.184	41	0.157	51	0.151
2	—	12	.425	22	.242	32	.180	42	.155	52	.152
3	1.669	13	.390	23	.233	33	.176	43	.154	53	.152
4	.233	14	.362	24	.225	34	.173	44	.153	54	.153
5	.003	15	.343	25	.218	35	.170	45	.152	55	.154
6	0.838	16	.325	26	.211	36	.167	46	.152	56	.155
7	.719	17	.307	27	.205	37	.165	47	.152	57	.157
8	.630	18	.290	28	.199	38	.163	48	.151	58	.159
9	.561	19	.275	29	.194	39	.161	49	.151	59	.161
10	.515	20	.263	30	.189	40	.159	50	.151	60	.163

Table XXXIII.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean
1903	—	—	—	—	—	—	—	—	—	—	735	723	—
1904	727	730	739	747	699	749	767	743	759	755	751	745	743
1905	724	709	737	696	702	—	—	—	—	—	—	—	—

Table XXXIV.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Sum
1903	—	—	—	—	—	—	—	—	—	—	8	16	24
1904	12	8	16	12	22	22	30	51	54	44	42	50	363
1905	32	14	10	4	22	—	—	—	—	—	—	—	82
Sum	44	22	26	16	44	22	30	51	54	44	50	66	469

Table XXXV.

Inst.	Defl.	Cyl.	Distance				Observer			Sum	Obs. not used
			k_e	k_E	l_e	l_E	W	A	H		
Z	2	I	—	—	—	2	—	2	—	2	2
»	3	»	—	—	—	—	—	—	—	0	0
»	4	»	—	—	—	12	6	6	—	12	0
»	5	»	—	—	—	16	10	6	—	16	2
»	6	»	—	—	—	—	—	—	—	0	0
»	7	»	—	—	—	—	—	—	—	0	0
»	8	»	—	2	16	—	6	12	—	18	0
»	9	»	—	16	—	—	6	10	—	16	0
»	10	»	18	—	—	—	6	12	—	18	18
»	11	»	14	—	—	—	6	8	—	14	14
»	12	»	12	—	—	—	6	6	—	12	12
»	13	»	12	—	—	—	6	6	—	12	12
S	I	II	—	—	—	232	158	66	8	232	14
»	II	»	—	—	—	196	128	64	4	196	12
Sum			56	18	16	458	338	198	12	548	79

As it may be of some importance to get a general view of the number of observations taken with the various deflectors of the two instruments used at the different bar distances, besides the number of observations taken by the three observers Amundsen (A), Wiik (W) and Hansen (H), these have been shown in Table XXXV. The total sum of observations taken is seen to be 548. From this number we must subtract the 79 observations entered under the heading "Obs. not used" and we then get 469, which corresponds to the total sum in the last column of Table XXXIV. The 79 observations tabulated as "*not used*" will be seen to be divided between the four Zschau magnets 10, 11, 12 and 13, besides the 12 observations taken by Hansen and finally 14 observations taken by Amundsen with the Seemann, which for various reasons have been disregarded in the calculation of base-line value for the *h*-curve.

Inclination.

General Remarks. — As to the instruments and the character of their corrections, we refer to pp. 48—51.

During the 19 months the stay at Gjøahavn lasted there were taken 113 absolute measurements of inclination. Among these observations 20 were taken with the Fox-Circle. As mentioned before, not all the observations of inclination were taken in the absolute observatory; some were made there and some in a snow-hut built about 90 metres to the north of the observatory, (cf. page 34 and page 35). The fact that the observations of inclination have been taken at two different places can scarcely be said to influence the homogeneity of the material, especially as the exactness of the observations is in any case very far from what it ought to be from a theoretical point of view.

Observations taken with the Dover and with the Fox-Circle are entered in the Journal, which in the Main List has got No. 4. Observations taken with the Earth-Inductor are entered in a journal, which in the same list appears as No. 5. In the beginning of the first of these journals Wiik has written: "The instruments were always located with reference to the base-line direction. For temperature readings we have always used thermometer II, belonging to the Zschau. On December the 5th 1903 the axis of the needle B, belonging to the Fox-circle, broke. On January the 20th 1904 a change was made in the system hitherto used in the deflection observations with the Fox-Circle. Before the mentioned date the zero-point of the vertical circle was adjusted only once, namely, in relation to the mean of the previously observed angles I_W and I_E, after this date, however, the zero point was adjusted twice, first in relation to I_W and then in relation to I_E." In the beginning of the Inductor-Journal we find: "The inductor was tried already in 1903, but could not be made to work on account of the extreme cold. The instrument was left standing in the absolute observatory for the greater part of the winter. The first observation was taken in July 1904, the galvanometer then working well, but there was much trouble with the inductor, which had to be taken to pieces to be cleaned before each observation."

As the observations of inclination are to be used for the determination of the base-line value of the *z*-curves, they must, to be serviceable for this purpose, have a degree of accuracy which, from a physical point of view, we know that they do not possess (cf. footnote page 9). It is therefore already at this place desirable to get an idea of the exactitude actually attainable. The relation between Z, H and I is, as we know:

$$Z = H \, tg \, I$$

where, on account of the system employed by the observer:

$$tg \, I = tg \, I' \cos \triangle D,$$

I' being the angle directly observed with the instrument oriented in reference to a fixed base-line direction and $\triangle D$ the difference between this line and the direction of the magnetic meridian during the observation. In order to see the effect on Z in exact figures, we must successively vary the three elements of which Z is a function, using assumed figures for their exactness, and, if for Gjøahavn we accept as average values:

$$H = 0.00760 \text{ C.G.S.}, D = 5.0° \text{ W and } I = 89° 17.0',$$

we get the following result:

Assumed exactness	Effect on Z
for H with 1γ	80γ
» D » 1°	125γ
» I » 1′	1430γ

from which we can plainly see that the utmost care must be taken in the reduction of the absolute observations of inclination. The Earth-Inductor is usually deemed the most accurate instrument for observation of inclination. The readings of the vertical scale have been given with an exactness of 0′.1 and the average exactness of a full observation may probably be put at 0.3′[1] On working up the data obtained with the Earth Inductor, there was reason to expect much less exactness than mentioned, considering the unfavourable conditions under which the observer had to work. We have, however, found that, nevertheless, the exactness of these observations may be put at something like 0.7′, which expressed as effect on Z should answer to about 1000γ.

Passing now to the observations taken with the inclinatorium, we see, that the readings of the vertical scale have been given with an exactness of 1′, both for the Dover observations and for those taken with the Fox-Circle. It is a known fact that the exactness with which we can measure the angle of inclination by aid of an inclination needle is not so much dependent on the division of the scale of the circle as on the friction and adhesion of the needle and the agate edges on which it rests.

If the conditions at Gjøahavn were unfavourable for measurements with the Earth Inductor, these conditions were indeed much more so when an inclinatorium was employed. In spite of every care, the observer could never expect to get the needle and the agate free from moisture. Small particles of ice or snow dust would always cling to some part of the needle, its axles, or at the agate edges. The needle can therefore seldom be expected to have settled in the right position. The only way in which we could expect to arrive at a reasonable exactitude for data to be used for calculations of the base-line value of the z-curve, was to use as data for I the mean of a very large number of observations. However, we have at our disposal only 40 observations with each of the two needles belonging to the Dover and 13 observations with the Earth Inductor, not counting the 20 observations with the Fox-Circle, the absolute value of which depends on how

Table XXXVI.

Year	Date		I'	δ	I
			° ′ ″	′ ″	° ′ ″
1904	Jul.	27	89 16 3	0 57	89 15 6
»	»	29	16 5	15	15 50
»	Aug.	4	16 29	16	16 13
»	»	5	20 2	31	19 31
»	»	8	24 42	30	24 12
»	»	13	14 42	13	14 29
»	Sep.	20	18 29	38	17 51
»	»	22	18 32	24	18 8
»	»	26	16 16	11	16 5
»	»	28	16 54	11	16 43
»	»	30	19 5	27	18 38
»	Oct.	3	13 52	13	13 39
»	»	5	19 42	10	18 32
Mean value					89°17′ 18″

[1] Cf. «Ergebnisse der Magnetischen Beobachtungen in Potsdam» 1901. (Page XXVII.)

exactly we are able to determine the index error. For the whole stay at Gjøahavn we can therefore only reckon with 40 + 40 + 13 = 93 absolute observations for determination of base-line value of the z-curve. As this number of observation is very limited we cannot expect to arrive at a reliable basis for the reduction of the register curves for Z without working up the absolute data for I with the utmost care. In order to get a preliminary mean value for I, we shall start with Table XXXVI, where data for I, emerging from the observations with the Earth Inductor, have been tabulated. The reduction of the absolute observations has been made according to formula (40), page 49, and the values obtained are entered under the heading I'. The correction for difference between the base-line direction and the mean meridian during the observation has been entered under the heading δ, and finally we have under the heading I the before-mentioned 13 absolute data for inclination, which give a mean value equal to 89°17′18″.

The Index Error of the Inclination Needles. — Even the most carefully prepared magnet needle is slightly asymmetrical, and experience, shows that two needles usually do not give the same result. There may be different reasons for this, but it has often been found to depend on the fact that some part of the instrument is affected by a disturbing effect of such a nature that true inclination can be had only if the observed mean angle is corrected. This correction is usually termed "*total index error*" of the needle in question. The value of the *total index error* is found by testing the needles at a magnetic station, where the exact value of I at the moment of observation is known.

The two Dover needles I and II were tested on three occasions and we have obtained the following corrections, given in Table XXXVII. Excluding the value obtained for needle II at Sitka in 1907 we get as mean values, respectively for I and II, + 0.8′ and + 1.5′, which values ought to represent the corrections of the data we get with the needles. We shall, however, see that there is very much doubt about the correctness of these values, even if, considering the high value of I at Gjøahavn, we use smaller corrections. For instance, we shall see that the mean of the 40 observations for each needle, obtained at Gjøahavn, seems to demand nearly the same correction for the observations taken with one needle as for those taken with the other needle. Secondly, we shall see that uncorrected values for both needles agree better with the result we get for I by aid of observations with the Earth Inductor, than corrected values would have done. Thirdly, we have made some special investigations, the results of which point in the same direction. The reason why the corrections emerging from the control observations do not seem to be correct may probably be considered to be due to the fact that no reliable value for the correction can be fixed by aid of the comparatively few control observations we possess. We may in this connection remark that the control observations with the needles of the Fox-Circle cannot be said to lead to a satisfactory result either. In this case, however, there is no doubt about the necessity of applying a correction.

Table XXXVII

Year	Station	I	II
		′	′
1906	Sitka	+ 1.7	+ 1.5
1907	Sitka	0.0	(2.5)
1907	Potsdam	+ 0.8	+ 1.6

The before-mentioned inexact setting of the needle on account of unclean axles and agate edges can scarcely have influenced the results in any special direction. A disturbing effect of this kind is very variable, it causes a reading to be sometimes too high, sometimes too low. We have therefore formed the idea, that we might increase the accuracy of the observations taken with the needles of the two inclinatoria, if by comparison with corresponding single readings we were able to point out comparatively exact and less exact settings of the needles.

Let us, in order to study the observations in detail, start with the system employed for the observations. Wiik states that there was always employed one and the same fixed system. Let us call the mean reading of the needle in the four (two) positions in which it can be placed: *a*, *b*, *c*, *d*, the meaning of which signs has already been stated in the chapter where the theory of the reduction of absolute magnetic observations was treated (cf. page 49). We see here that the system is the same for Dover as for the Fox-Circle, only that by the last instrument we have to do with permanent magnets, and accordingly get only the two positions *a* and *b*. If it is possible to calculate the index error for each of these mean positions of the needle, we might let corrected means I_a, I_b, I_c, I_d, represent individual observations and we should thus obtain $40 \times 4 = 160$ separate data for *I* for each of the two Dover needles. It is clear that this should make the material much more suitable for use, as with such a large number of data we could without risk reject results which differ too much from the average.

It will be understood that we cannot directly compare the means *a*, *b*, *c*, *d*, taken from different observations, as the variation of *H* and *D* renders observed values of *I* incomparable. A direct comparison is, however, possible between data for base-line values for the *z*-curve. If therefore, by aid of data for *I*, expressed by the separate values I_a, I_b, I_c, I_d, and corresponding data for *H*, we calculate base-line values for the *z*-curve, these values are comparable. In this connection we must, however, remember that a direct comparison between data for B_z, presupposes a constant relation between the curve and the base-line of the photogram. Now supposing we are able to correct for changes in the mentioned constant relation between curve and base-line of the photogram, we could get preliminary base-line values, which at least theoretically ought to be equal to a constant quantity, except for the inequality of the quantities I_a, I_b, I_c, I_d, used as representatives for inclination.

Before entering into details regarding our investigations, we shall examine Fig. 8. If the true inclination of a place is *I* and the mean reading of the vertical circle is *I'*, we have as before: $I = I' + \triangle$, where $\triangle$ is the index error of the needle in the position chosen. The reason why the mean reading in one position of the needle does not give true inclination plainly appears from Fig. 8. Here we see that the point of intersection of the axis of rotation does not fall exactly through the centre of gravity of the needle. The distance between the two points has been called *r* and the angle between this line and the direction of the geometrical axis of the needle is called *a*, and the weight of the needle, *p*. According to Liznar (cf. page 49) we have the following formula for the state of equilibrium:

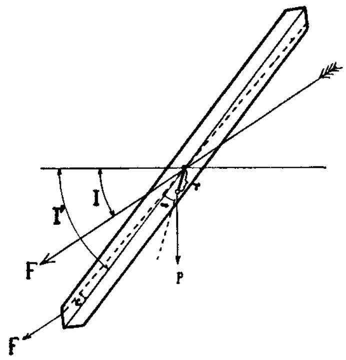


Fig. 8. Diagrammatic illustration of an inclination needle under influence of the total magnetic force, *F*.

(I) $$MF \sin (I' - I) = pr \cos (I' \pm a),$$

where *M* is the magnetic moment of the needle. Let us put $(I' - I) = \triangle$, and instead of sin $\triangle$ reckon with the small arc $\triangle$, and then assemble all the constant quantities of the equation, putting:

(II) $$\frac{pr}{M} = P$$

If the geometrical axis of the needle does not coincide with the magnetic axis, the angle between them being *c*, we arrive at the general formula:

(III) $$\triangle = \pm c + P/F. \cos (I' \pm a)$$

This formula presupposes, as we see, a permanent magnet and not needles like those belonging to the Dover, which are especially magnetized on each occasion, being in fact magnetized two times under change of polarity. If therefore we are to be able to make any use of the formula (III), we shall have to suppose that the needles have been treated so carefully that on each occasion they have recieved more or less the same magnetic charge, which to a certain degree may be the case if the magnetization has always been done according to the same system, with use of the same bar-magnets. Compared to the rough corrections we are able to apply to the observed values, a little change in M shall in our case be of small consequence, and we have therefore calculated according to formula (III), containing three constant quantities c, a, and P, and the variable $\triangle$, being a function of F and I'. If for a certain position of the needle in question we are able to extract usable approximate values for $\triangle$ for three stations, where the mean value of F and I are sufficiently different, we should theoretically be able to calculate the value of the three constants c, a, and P, by aid of which the index-error of the needle in any other position may be determined. The three equations are:

(IV)
$$\triangle_1 = -c + P/F_1 \cos (I_1' - a)$$
$$\triangle_2 = -c + P/F_2 \cos (I_2' - a)$$
$$\triangle_3 = -c + P/F_3 \cos (I_3' - a)$$

It may be remarked that a successful calculation is only possible if $\triangle$ can be derived with comparatively great accuracy. We shall in the following pages explain how we think we can obtain usable approximate values for $\triangle$ for the three stations, Potsdam, Sitka and Gjøahavn, reserving a similar value for King Point as control. As mean value for F and I for these stations we may accept the data given in Table XXXVIII.

Table XXXVIII.

Station	F	I
	C. G. S.	° ′
Potsdam . (P)	0.47590	66 17
Sitka . . . (S)	.58690	74 41
King Point (K.P)	.59060	81 50
Gjøahavn (G)	.59965	89 17

Data for I_a, I_b, I_c, I_d, at Potsdam. — In Table XXXIX we have tabulated the readings of the two Dover needles I and II in the positions a, b, c, d, according to what was observed at Potsdam. In each position readings were taken when the face of the vertical circle of the instrument turned towards the west and when it turned towards the east. The values in the table are to be read as: *66° plus the minutes tabulated.* The readings were sometimes below 66° and this is in the table indicated by putting the figures into brackets. In some cases we have found the observed readings somewhat suspicious in reference to the order in which they are tabulated and have supposed that perhaps the observer may have noted down these readings in the wrong place of the form employed. We have therefore divided the table into two parts. The upper part, designated "*Observed*", contains readings exactly as they have been transmitted to us, the lower part, designated "*Adopted*", contains in but two cases the same readings, but the mentioned suspicious readings for W and E here interchanged. The two cases where the figures are different from what was observed are due to the fact that these readings do not appear correct, and we have therefore changed the observed values to those printed in italics.

The material we possess of dip observations taken at Potsdam is of course too small to furnish reliable "*normal values*" for the settings of the needles in each of their four positions, but the values given in the last horizontal line of Table XXXIX may yet prove to be sufficiently exact for approximate use, because the differences between the mean readings for each position of the needle are comparatively large and the settings probably here more reliable than was the case at Gjøahavn.

Table XXXIX.

Dover No. 154.

	I	Needle I.								Needle II.							
		a		*b*		*c*		*d*		*a*		*b*		*c*		*d*	
		W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E
		′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
Observed	66°	36.0	(57.5)	12.5	17.5	22.5	29.0	40.0	(68.0)	(30.0)	55.0	(25.0)	48.0	7.5	23.0	(30.5)	25.5
	»	51.5	(39.5)	21.5	1.5	40.0	0.5	54.0	(47.5)	67.5	(39.0)	45.0	(51.5)	35.5	0.5	49.0	(46.0)
	»	52.5	(39.5)	17.5	6.5	35.0	7.5	52.0	(49.5)	58.5	(45.5)	24.0	(58.5)	35.5	1.5	49.0	(42.0)
Adopted	66°	36.0	(57.5)	17.5	12.5	29.0	22.5	40.0	(68.0)	55.0	(30.0)	48.0	(25.0)	23.0	7.5	25.5	(30.5)
	»	51.5	(39.5)	21.5	1.5	40.0	0.5	54.0	(47.5)	67.5	(39.0)	45.0	(51.5)	35.5	0.5	49.0	(46.0)
	»	52.5	(39.5)	17.5	6.5	35.0	*0.7*	52.0	(49.5)	58.5	*(49.5)*	24.0	(58.5)	35.5	1.5	49.0	(42.0)
	$I = 66° +$	46.7	(45.5)	18.8	6.8	33.7	10.2	48.7	(55.0)	60.3	(39.5)	39.2	(45.0)	31.3	3.2	41.2	(39.3)

Data for I_a, I_b, I_c, I_d, at the three stations, Sitka, King Point and Gjøahavn: From these three stations we possess a comparatively large body of material, by aid of which we shall try to extract a *mean normal value* for each position of the two needles. Considering the large material in connection with somewhat unreliable settings of the needle, we have here adopted a graphical method, the idea of which is in a practical way to overcome the difficulty of comparing the settings of the needles in their four positions, when as material for determination of a mean value for each setting we have a series of data belonging to observations taken with one and the same needle at one and the same station, but with varying values of the magnetic elements.

Suppose that we plot on one and the same paper the whole body of data for the eight mean readings resulting from observations taken at the place in question. We shall then see that the marks for each of the four (W and E) positions concentrate about certain mean points, which correspond to the mean value for the magnetic elements at the place in question. Above and below the mentioned spot, the number of points will gradually diminish and our investigations show that usually it is not difficult to fix the mean point with comparatively great exactitude. The figures we have finally fixed on as *mean normal values* for the setting of the two needles in their four positions (W and E) are, for the four stations, Gjøahavn, King Point, Sitka and Potsdam, given in Table XL.

Table XL.

Station		*I*	Mean	Dover No. 154. Needle I								Needle II							
				a		*b*		*c*		*d*		*a*		*b*		*c*		*d*	
				W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E
		°	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
Gjøahavn	G	89	17	23	12	16	18	13	25	26	7	20	14	18	16	16	19	23	11
King Point	KP	81	50	58	41	47	51	47	58	62	38	56	46	53	47	50	49	57	46
Sitka	S	74	41	48	32	40	38	44	38	50	34	48	35	45	39	42	38	47	33
Potsdam	P	66	17	47	(46)	19	7	34	4	49	(49)	60	(40)	39	(55)	31	3	41	(44)
Gjøahavn	G	$\triangle_G$		− 6	+ 5	+ 1	− 1	+ 4	− 8	− 9	+10	− 3	+ 3	− 1	− 1	+ 1	− 2	− 6	+ 6
King Point	KP	$\triangle_{KP}$		− 8	+ 9	+ 3	− 1	+ 3	− 8	−12	+12	− 6	+ 4	− 3	+ 3	0	+ 1	− 7	+ 4
Sitka	S	$\triangle_S$		− 7	+ 9	+ 1	+ 3	− 3	+ 3	− 9	+ 7	− 7	+ 6	− 4	+ 3	− 1	+ 3	− 6	+ 8
Potsdam	P	$\triangle_P$		−30	+33	− 2	+10	−17	+13	−32	+28	−43	+37	−22	+22	−14	+14	−24	+33

If now we draw lines between the points we have fixed as values for a mean state of the magnetic conditions at a place, as we have done in Fig. 11, p. 87, we get a curve which shows an individual picture for each needle.

At a place so near the magnetic pole as Gjøahavn we may with sufficient accuracy take $\frac{\triangle I}{\triangle H}$ *as a constant,* which means that a certain value for I always corresponds to a fixed value for H, and as the value of H at any time is known from the h-register, we also know the corresponding value for I, if the value for the constant relation $\frac{\triangle I}{\triangle H}$ can be found. We shall see that the value of this constant can be determined fairly closely even by aid of the rough observations we possess. The mean stand of the magnetic elements at the four stations represented in Table XL has been expressed by figures for I in the two columns to the left, headed I and *Mean* (cf. Table XXXVIII, p. 80). How the upper part of Table XL is to be read will be clear from what has already been said on page 80. As to the lower part, it contains the differences between the values given under a, b, c, d in the upper part and the mean figures for I at the four stations, and these differences will be understood to represent the first approximations for the index error $\triangle$ for our two needles. As $\triangle$ according to formula III (page 79) is a function of I_m (F_m), we are to a certain degree able to control our results, and this control has been made graphically in the way shown in Fig. 9.

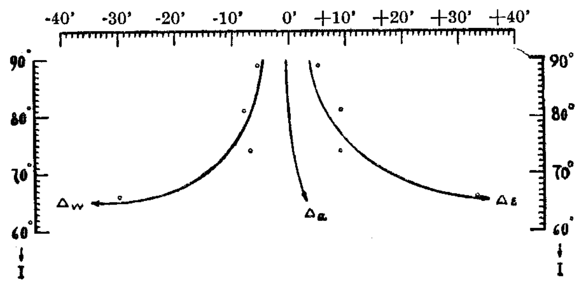


Fig. 9. Relation between $\triangle$ and I_m.

The vertical scale of Fig. 9 represents the varying value of I, given in degrees from 60 to 90, while the variation of the index error $\triangle$ is represented by the horizontal scale, which is graduated into minutes. The negative and the positive side of this scale refer respectively to readings under the heading W and E. The eight points marked out in Fig. 9 represent data for $\triangle$ for the four stations represented in Table XL, p. 81, and refer to needle I, position a, W and E. We see that the location of the points enables us to draw the two curved lines to the left and to the right, and by aid of these lines we get fairly reliable data for the relation between the index error $\triangle$ and I. Since for further use we need the relation between I and:

$$\frac{\triangle_W + \triangle_E}{2} = \triangle_a,$$

we have drawn the curve indicated $\triangle_a$, and having similar constructions for the three other positions of needle I, as well as corresponding constructions for needle II, it will be understood that now we possess the necessary data for calculation of the beforementioned constants c, a and P of the formulae (IV), page 80.

a. For each of the four positions of the needle we have as many equations as we have corresponding known data for F_m, I_m and $\triangle$.

b. The equation for one position of the needle only differs from the equation for another position by change of signs, which change, however, is individual for each special needle.

For the two Dover needles, as well as for the Fox needle A, we have examined the manner in which the different readings of an observation vary and we have found the combinations of signs to be as follows:

Needle I
$$\begin{aligned} -c + P/F \cos (I_a' - a) &= \triangle_a \\ +c + P/F \cos (I_b' + a) &= \triangle_b \\ -c - P/F \cos (I_c' - a) &= \triangle_c \\ +c - P/F \cos (I_d' + a) &= \triangle_d \end{aligned}$$

Needle II
$$\begin{aligned} -c - P/F \cos (I_a' + a) &= \triangle_a \\ +c - P/F \cos (I_b' - a) &= \triangle_b \\ -c + P/F \cos (I_c' + a) &= \triangle_c \\ +c + P/F \cos (I_d' - a) &= \triangle_d \end{aligned}$$

Needle A
$$\begin{aligned} -c - P/F \cos (I_a' - a) &= \triangle_a \\ +c - P/F \cos (I_b' + a) &= \triangle_b \end{aligned}$$

We are able to calculate the value of the constants four times, the four positions having a special combination of signs, and for each position we have data for F_m, I_m and $\triangle$ collected from observations at three stations, leaving, as said before, data for King Point as control. The calculations gave the following four values for the constants of the two Dover needles mentioned in Table XLI. The data we use for $\triangle$ have to be extremely exact, if we are to get reliable values for the constants c and P. We see that the calculation does not give exactly the same values as result from the four sets of equations, but we are of the opinion that the mean values given in the last horizontal line of Table XLI may be deemed acceptable.

Table XLI.

a		P		c	
I	II	I	II	I	II
° ′	° ′			′	′
+ 2 17	+ 2 36	+ 3.92	+ 1.78	+ 0.71	+ 0.19
+ 3 26	+ 2 29	+ 3.95	+ 1.80	+ 0.87	+ 0.21
+ 1 8	+ 2 36	+ 3.99	+ 1.78	+ 1.24	+ 0.15
+ 5 36	(+ 4 58)	+ 3.97	+ 1.72	+ 0.73	+ 0.01
+ 3 7	+ 2 59	+ 3.96	+ 1.77	+ 0.89	+ 0.14

Before we proceed, we shall take a glance at Table XLII, p. 84, where preliminary data for I have been given. These data for I are obtained from observations taken with the two Dover needles I and II, reduced in ordinary way by aid of formula (41), page 49 where no correction for index error has been applied, but on account of reference to a fixed base-line direction we have applied the correction δ, (cf. page 77 and page 78). Data for I obtained from observations with the Earth Inductor, copied from Table XXXVI, p. 77, are also entered in the same table. The data for I have been given in chronological order, and are entered in the columns bearing the name of the month in which the observations were taken. A second column has been added to indicate whether the observation was taken with the two Dover needles I and II, or with the Earth Inductor, using respectively the signs D_I, D_{II}, E.I. In the last horizontal line we have given monthly means.

Table XLII.

No.	1903 Nov.		Dec.		1904 Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.	
	° ′		° ′		° ′		° ′		° ′		° ′		° ′		° ′		° ′		° ′	
1	89 18.4	D I	89 21.8	D I	89 19.7	D I	89 18.2	D I	89 19.7	D I	89 —	—	89 —	—	89 19.2	D I	89 2.4	D I	89 16.2	E. I.
2	17.7	D II	18.7	D II	18.9	D II	16.8	D II	17.4	D II	—	—	—	—	17.8	D II	4.2	D II	19.5	E. I.
3	—	—	21.1	D I	24.4	D I	17.6	D I	14.2	D I	—	—	—	—	15.1	D I	24.2	D I	24.2	E. I.
4	—	—	18.8	D II	21.2	D II	20.4	D II	17.2	D II	—	—	—	—	15.2	D II	21.5	D II	14.5	E. I.
5	—	—	20.4	D I	19.0	D I	16.1	D I	15.9	D I	—	—	—	—	—	—	20.7	D I	—	—
6	—	—	19.7	D II	18.9	D II	14.8	D II	15.5	D II	—	—	—	—	—	—	20.8	D II	—	—
7	—	—	18.7	D I	18.2	D I	16.3	D I	16.6	D I	—	—	—	—	—	—	14.9	D I	—	—
8	—	—	19.4	D II	21.5	D II	15.8	D II	17.6	D II	—	—	—	—	—	—	15.7	D II	—	—
9	—	—	17.1	D I	19.1	D I	—	—	16.8	D II	—	—	—	—	—	—	15.1	E. I.	—	—
10	—	—	17.2	D II	18.4	D II	—	—	16.7	D I	—	—	—	—	—	—	15.8	E. I.	—	—
11	—	—	17.2	D I	—	—	—	—	16.1	D I	—	—	—	—	—	—	—	—	—	—
12	—	—	17.7	D II	—	—	—	—	17.2	D II	—	—	—	—	—	—	—	—	—	—
Mean	89°18′.0	—	89°19′.0	—	89°19′.9	—	89°17′.0	—	89°16′.7	—	—	—	—	—	89°16′.8	—	89°15′.5	—	89°18′.6	—

Table XLII (continued).

No.	1904 Sep.		Oct.		Nov.		Dec.		1905 Jan.		Feb.		March		Apr.		May	
	° ′		° ′		° ′		° ′		° ′		° ′		° ′		° ′		° ′	
1	89 17.8	E. I.	89 13.7	E. I.	89 20.5	D I	89 17.0	D I	89 17.8	D I	89 22.3	D I	89 20.8	D I	89 16.0	D I	89 13.5	D I
2	18.2	E. I.	18.5	E. I.	18.1	D II	17.0	D II	18.0	D II	19.8	D II	20.5	D II	16.5	D II	16.4	D II
3	16.1	E. I.	17.9	D I	15.9	D I	18.4	D I	—	—	—	—	—	—	—	—	18.5	D I
4	16.7	E. I.	16.7	D II	16.2	D II	17.2	D II	—	—	—	—	—	—	—	—	19.7	D II
5	18.7	E. I.	—	—	18.6	D I	—	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	—	16.5	D II	—	—	—	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mean	89°17′.5	—	89°16′.7	—	89°17′.9	—	89°17′.4	—	89°17′.9	—	89°21′.0	—	89°20′.6	—	89°16′.2	—	89°17′.0	—

In Table XLIII, p. 85, we have copied the monthly means for 10 months of the year 1904 under the heading I_a, and for comparison we have also calculated corresponding monthly means by aid of the formula: $tg\, I = Z/H$, where H and Z are monthly means for these elements, extracted from the reduced hourly means of the corresponding records. These means have been headed I_r. Under the heading *"diff"* the differences between I_a and I_r have been noted, while the last column to the right gives number of absolute data for each month. The total number of observations, as shown in the last column to the right, is 67, divided among 10 months. The average means of

I_r and I_a give a difference of 0.7′, which result does not seem bad, considering the changing position of I at each observation. Comparing the mean 89° 17.4′ with the mean in Table XXXVI, p. 77, for absolute observations with the Earth Inductor alone, 89° 17.3′, the difference only amounts to 0.1′. In order to eliminate the effect of the changing mean stand of the magnetic elements we have plotted the following graph, illustrated in Fig. 10.

Table XLIII.

Year	Month	I_r	I_a	Diff.	Number of observations
		° ′	° ′	′	
1904	Jan.	89 18.1	89 19.9	— 1.8	10
»	Feb.	17.3	17.0	+ 0.3	8
»	Mar.	16.9	16.7	+ 0.2	12
»	Apr.	—	—	—	0
»	May	—	—	—	0
»	June	16.0	16.8	— 0.8	4
»	July	15.0	15.5	— 0.5	10
»	Aug.	16.3	18.6	— 2.3	4
»	Sep.	16.9	17.5	— 0.6	5
»	Oct.	16.6	16.7	— 0.1	4
»	Nov.	17.1	17.9	— 0.8	6
»	Dec.	17.1	17.4	— 0.3	4
Mean	....	89°16′.7	89°17′.4	— 0.′7	—

This method for reduction of the absolute observations to a mean value for inclination can, as mentioned, be employed for a place situated so near the magnetic pole as Gjøahavn. Besides a fairly exact value for the mean inclination, we can also obtain the value for the constant relation between $\triangle I$ and $\triangle H$. Looking at Fig. 10 we see that the line through the points cannot reasonably be placed very far from where we have drawn the line, and knowing that the mean value for H at Gjøahavn is 0.00760 C.G.S., we can read that *the mean value for I is 89° 16.5′, which value we have accepted as final.*

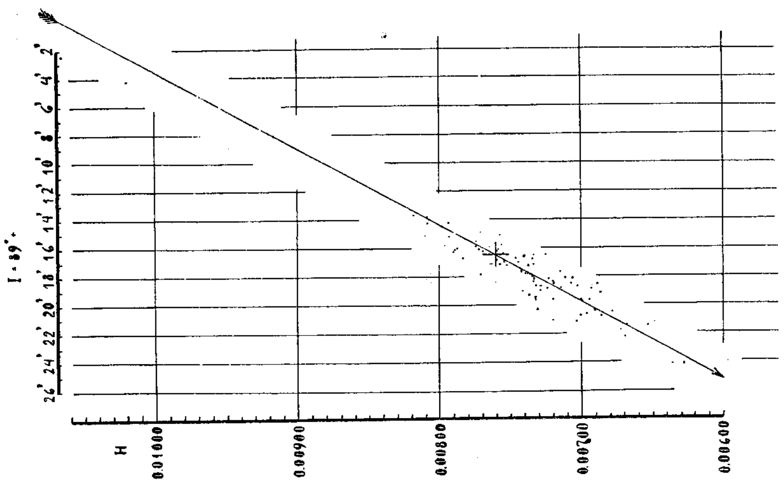


Fig. 10. Relation between I and H at Gjøahavn.

Let us now pass to the observations obtained with the Fox Circle. There were, as mentioned, two needles, A and B, but the latter needle could not be used after December the 5th 1903. The index error we could derive from the one observation, we have with this needle, is so uncertain that we have left the observation out. With needle A there was taken one control observation at Potsdam in 1907 and this observation indicates an index error of — 18.3′, which seems to be too large in comparison with what the material at Gjøahavn shows, namely: $\triangle = -3.4'$. Beside correction for index error we shall in the usual way have to correct for difference between base-line direction and the direction of the true meridian, δ. The data for I' given in Table XLIV are obtained from observations with "free needle".

Inclinations derived from observations taken with the same needle A with use of one of the two deflectors N and S are collected in Table XLV. The angle I' has been derived from the observation through reduction by formula (46), page 50, and the two corrections δ and $\triangle$ are applied in the ordinary way.

Table XLIV.

Year	Date		I'	δ	$\triangle$	I
			° ′ ″	′ ″	′ ″	° ′ ″
1903	Nov.	28	89 21 65	0 55	3 25	89 21 55
»	Dec.	5	17 30	40	3 25	13 25
»	»	12	30 0	35	3 25	26 0
»	»	16	8 45	55	3 25	4 25
»	»	23	15 0	30	3 25	11 5
»	»	30	28 5	45	3 25	23 55
1904	Jan.	7	31 50	40	3 25	27 25
»	»	14	9 20	35	3 25	5 20
»	»	20	14 35	45	3 25	10 15
»	»	30	31 50	5	3 25	28 20
»	Feb.	3	24 20	50	3 25	20 5
»	»	17	18 45	5	3 25	15 15
»	»	17	24 0	10	3 25	20 25

Taking the mean values in these two tables we get respectively:

Free needle . . . . . . $I = 89°17.5'$
Deflected needle . . . . $I = 89°17.2'$

Final Calculation of the Index Error for the Dover Needles.—We have in the preceding pages succeeded in extracting the necessary data for final determination of the index error $\triangle$ for the two Dover needles I and II. The general formula for calculation was, as we remember:

$$\triangle = \pm c + P/F \cos (I' \pm a),$$

where the individual combination of signs, when the needles are put in their different positions, will appear from the sets of formulae stated on page 83. Data for I_m and F_m for the four stations in question have already been given in Table XXXVIII, p. 80, where, however, the value given for I_m at Gjøahavn (89°17.0′) according to Fig. 10

Table XLV.

Year	Date		I'	δ	$\triangle$	I	Defl.
			° ′ ″	′ ″	′ ″	° ′ ″	
1904	Jan.	20	89 12 0	0 50	3 25	89 7 45	N
»	»	30	32 10	5	3 25	28 40	S
»	»	30	16 30	5	3 25	13 0	N
»	Feb.	3	20 35	35	3 25	16 35	N
»	»	3	20 35	35	3 25	16 35	S
»	»	17	20 35	5	3 25	17 5	N
»	»	17	24 25	5	3 25	20 55	S

will have to be changed to 89°16.5′. As final data for the constants c, a and P we have those given in the last horizontal line of Table XLI, p. 83. Finally, we can get good approximations for I' by putting $I' = I - \triangle'$, and for $\triangle'$ we can use the values given in Table XL, p. 81. The result of our final determination of index error for the Dover needles I and II and the Fox needle A for the four stations Potsdam, Sitka, King Point, and Gjøahavn hass been given in Table XLVI, p. 87, where the mean readings I_a, I_b, I_c, I_d, have been added. As we remember, these readings refer to observations taken under an average stand of the magnetic elements at the place in question, and presupposes of course that no friction or adhesion between the axles and the agate edges occurs during the observation.

As mean values for H and I for Gjøahavn we have agreed to accept: $H = 0.00760$ and $I = 89°16'30''$, which give $Z = 0.60050$. As the variation of Z practically does not effect the liniar relation between H and I, we can for any value of H find the corresponding value for I by aid of Fig. 10, p. 85. As we furthermore now know the index error for each position of the needles used, we in fact know what the readings should have been if everything had been right, and we are consequently able to control the separate readings of the inclination observations taken.

Table XLVI.

Needle		I	I'_a	I'_b	I'_c	I'_d	$\triangle_a$	$\triangle_b$	$\triangle_c$	$\triangle_d$
		°	′	′	′	′	′	′	′	′
Pots-dam	I	66	16.03	15.08	23.53	20.93	+ 2.87	+ 3.82	− 4.63	− 2.03
	II	»	20.35	20.43	17.72	17.09	− 1.45	− 1.53	+ 1.18	+ 1.81
	A	»	42.04	37.71	—	—	− 23.14	− 18.81	—	—
Sitka	I	74	41.73	40.68	46.01	43.54	+ 1.24	+ 2.32	− 3.01	− 0.53
	II	»	43.78	43.80	42.50	41.92	− 0.78	− 0.80	+ 0.50	+ 1.08
	A	»	56.16	52.20	—	—	− 13.16	− 9.20	—	—
King Point	I	81	49.45	48.50	51.90	49.65	+ 0.25	+ 1.30	− 2.10	+ 0.15
	II	»	50.05	50.05	49.70	49.40	− 0.25′	− 0.25	+ 0.10	+ 0.40
	A	»	—	—	—	—	—	—	—	—
Gjøa-havn	I	89	18.35	17.29	19.23	16.73	− 0.45	+ 0.61	− 1.33	+ 1.17
	II	»	17.92	17.95	18.16	17.57	− 0.02	− 0.05	− 0.26	+ 0.33
	A	»	22.22	16.42	—	—	− 2.32	+ 1.48	—	—

For this control of the readings of the needles in their four different positions (W and E) we have for observations taken at Gjøahavn constructed curves like those given in Fig. 11. The upper and the lower curve of the figure refer respectively to the following stands of H and I:

H	I
0.00700	89°19.6′
800	14.4′

A critical examination of the observations taken at Gjøahavn through comparison between theoretical and observed readings seems to show that most of the readings have an exactness which more or less agrees with that found for observations taken with the Earth Inductor, 0.7′. We believe therefore that it may be worth while to correct readings taken with the Dover needles which show too large a difference between the theoretical and the observed value, and that in this way we can make the material more serviceable. The results of our investigation are given in Tables XLVII, XLVIII, XLIX and L, pp. 88—93. The two first tables, referring respectively to Needle I and Needle II, contain under the heading i the eight original readings for the positions a, b, c, d, instrument turned east, instrument turned west. In connection with these columns we have put two headed + and —, where we have entered the correction found through comparison between the readings under i and those emerging from our theoretical curve. Furthermore, each of the chief headings a, b, c, d, contains corrected readings followed by corresponding mean values of H, and finally is entered under the heading *corr.*, the angular influence of different stands, depending on the quantity $(H_0 — H)$. (For H_0 has in this connection been used 0.00750, as to start with this value was accepted as mean

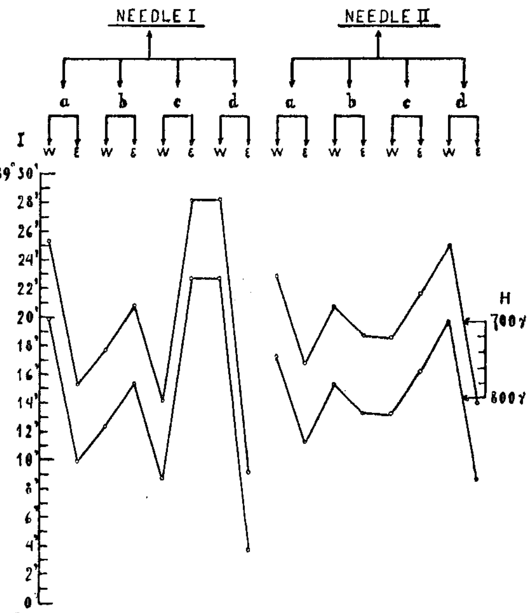


Fig. 11. Normal curves for the single readings of needle I and needle II at two mean values for I at Gjøahavn.

Table XLVII.

Needle I — *a*

Year	Day	W *i*	W +	W −	E *i*	E +	E −	W	E	*H*	corr.
		′	′	′	′	′	′	′	′	γ	′
1903	23/11	29.00	—	—	11.00	2.0	—	29.00	*13.00*	715	− 2.0
»	1/12	27.83	—	—	10.66	8.0	—	27.83	*18.66*	668	− 4.7
»	8/12	28.00	—	—	7.00	5.0	—	28.00	*12.00*	720	− 1.7
»	15/12	34.83	—	6.0	10.67	—	—	*28.00*	10.67	728	− 1.3
»	18/12	18.17	4.0	—	15.67	—	—	*22.17*	15.67	*732*	− 1.1
»	22/12	24.17	—	—	8.00	2.0	—	24.17	*10.00*	764	+ 0.8
»	29/12	19.50	5.0	—	16.17	—	5.0	*24.50*	*11.17*	757	+ 0.4
1904	6/1	24.33	2.0	—	15.00	—	—	*26.33*	15.00	703	− 2.8
»	9/1	28.00	—	—	25.33	—	8.0	28.00	*17.33*	665	− 4.9
»	13/1	21.00	5.0	—	23.00	—	9.0	*26.00*	*14.00*	715	− 2.0
»	22/1	25.00	—	—	11.33	5.0	—	25.00	*16.33*	699	− 2.9
»	27/1	28.33	—	4.0	12.33	—	—	*24.33*	12.33	746	− 0.2
»	4/2	23.00	—	—	11.00	—	—	23.00	11.00	762	+ 0.7
»	12/2	24.67	—	—	13.67	—	—	24.67	13.67	736	− 0.8
»	17/2	21.00	—	—	12.67	—	4.0	21.00	*8.67*	801	+ 2.9
»	26/2	24.00	—	—	10.67	2.0	—	24.00	*12.67*	750	0.0
»	10/3	37.00	—	13.0	5.33	10.0	—	*24.00*	*15.33*	724	− 1.5
»	11/3	29.33	—	5.0	4.00	5.0	—	*24.00*	*9.00*	771	+ 1.2
»	12/3	15.83	2.0	—	11.00	—	—	*17.83*	11.00	815	+ 3.7
»	12/3	25.67	—	—	8.00	3.0	—	25.67	*11.00*	751	+ 0.1
»	14/3	30.33	—	5.0	5.50	7.0	—	*25.33*	*12.50*	740	− 0.6
»	14/3	30.50	—	10.0	3.00	10.0	—	*20.50*	*13.00*	775	+ 1.5
»	1/6	30.33	—	—	12.33	2.0	—	30.33	*14.33*	676	− 4.2
»	30/6	20.53	—	—	7.50	—	—	20.33	7.50	813	+ 3.6
»	1/7	6.50	—	2.0	− 0.67	—	6.0	*4.50*	*− 6.67*	1075	+ 18.6
»	7/7	28.17	2.0	—	22.50	—	—	*30.17*	22.50	617	− 7.6
»	8/7	25.67	—	—	17.50	—	—	25.67	17.50	681	− 4.0
»	18/7	20.50	3.0	—	10.50	—	—	*23.50*	10.50	774	+ 1.4
»	31/10	15.33	—	4.0	25.00	—	—	*11.33*	25.00	752	+ 0.1
»	3/11	29.00	—	—	16.33	—	—	29.00	16.33	676	− 4.2
»	8/11	19.00	3.0	—	12.33	—	—	*22.00*	12.33	763	+ 0.8
»	29/11	27.00	—	—	10.00	5.0	—	27.00	*15.00*	698	− 3.0
»	16/12	25.67	—	—	8.00	3.0	—	25.67	*11.00*	742	− 0.5
»	29/12	21.00	—	—	12.00	—	—	21.00	12.00	*763*	+ 0.8
1905	16/1	23.00	—	—	15.67	—	—	23.00	15.67	732	− 1.1
»	9/2	32.33	—	3.0	20.50	—	3.0	*29.33*	*17.50*	653	− 5.5
»	14/3	24.67	—	—	16.33	—	—	24.67	16.33	709	− 2.3
»	25/4	5.00	*5.0*	—	23.33	—	*3.0*	*20.33*	*10.00*	789	+ 2.2
»	23/5	21.50	—	—	4.33	2.0	—	21.50	*6.33*	814	+ 3.7
»	29/5	24.00	2.0	—	13.83	—	—	*26.00*	13.83	720	− 1.7
			0.82	1.30		1.78	1.00			742	

Needle I — *b*

Year	Day	W *i*	W +	W −	E *i*	E +	E −	W	E	*H*	corr.
		′	′	′	′	′	′	′	′	γ	′
1903	23/11	18.33	—	—	18.00	—	—	18.33	18.00	718	− 1.8
»	1/12	18.66	—	—	33.00	—	8.0	18.66	*25.00*	669	− 4.6
»	8/12	13.50	5.0	—	31.00	—	11.0	*18.50*	*20.00*	716	− 1.9
»	15/12	6.50	10.0	—	32.83	—	12.0	*16.50*	*20.83*	728	− 1.3
»	18/12	18.67	—	2.0	20.50	—	—	*16.67*	20.50	*729*	− 1.2
»	22/12	14.33	—	—	19.33	—	2.0	14.33	*17.33*	764	+ 0.8
»	29/12	16.50	—	—	20.33	—	—	16.50	20.33	737	− 0.8
1904	6/1	16.00	2.0	—	24.50	—	—	*18.00*	24.50	685	− 3.8
»	9/1	29.00	—	7.0	27.00	—	2.0	*22.00*	*25.00*	635	− 6.6
»	13/1	24.33	—	8.0	19.33	—	—	*16.33*	19.33	731	− 1.1
»	22/1	21.17	—	2.0	23.33	—	—	*19.17*	23.33	678	− 4.1
»	27/1	20.00	—	3.0	18.17	—	—	*17.00*	18.17	739	− 0.7
»	4/2	17.00	—	—	23.00	—	2.0	17.00	*21.00*	730	− 1.2
»	12/2	16.33	—	—	21.67	—	2.0	16.33	*19.67*	736	− 0.8
»	17/2	15.50	—	4.0	16.17	—	—	*11.50*	16.17	796	+ 2.6
»	26/2	16.00	—	—	24.00	—	8.0	16.00	*16.00*	771	+ 1.2
»	10/3	15.00	—	—	26.50	—	3.0	15.00	*23.50*	*722*	− 1.6
»	11/3	9.17	—	—	21.50	—	4.0	9.17	*17.50*	818	+ 3.9
»	12/3	16.00	—	—	13.00	—	—	13.00	16.00	787	+ 2.1
»	12/3	19.00	—	—	16.00	4.0	—	19.00	*20.00*	733	− 1.0
»	14/3	5.83	10.0	—	31.50	—	21.0	*15.83*	*19.50*	738	− 0.7
»	14/3	11.00	4.0	—	22.00	—	4.0	*15.00*	*18.00*	772	+ 1.3
»	1/6	12.67	8.0	—	22.33	—	—	*20.67*	22.33	667	− 4.8
»	30/6	16.67	—	4.0	14.17	—	—	*12.67*	14.17	810	+ 3.4
»	1/7	8.00	—	12.0	4.17	—	—	*− 4.00*	4.17	1045	+ 16.8
»	7/7	26.83	—	2.0	25.33	—	—	*24.83*	25.33	628	− 7.0
»	8/7	27.67	—	8.0	16.00	8.0	—	*19.67*	*24.00*	655	− 5.4
»	18/7	17.83	—	3.0	16.17	3.0	—	*14.83*	*19.17*	762	+ 0.7
»	31/10	28.00	—	12.0	6.00	12.0	—	*16.00*	*18.00*	754	+ 0.2
»	3/11	17.83	2.0		24.33	—	—	*19.83*	24.33	674	− 4.3
»	8/11	17.17	—	2.0	16.33	—	—	*15.17*	16.33	771	+ 1.2
»	29/11	12.00	4.0	—	25.00	—	—	*16.00*	25.00	690	− 3.4
»	16/12	14.00	—	—	21.83	—	—	14.00	21.83	743	− 0.4
»	29/12	20.67	—	*6.0*	20.00	—	*2.0*	*14.67*	*18.00*	*755*	+ 0.2
1905	16/1	19.00	—	2.0	21.00	—	2.0	*17.00*	*19.00*	738	− 0.7
»	9/2	24.33	—	2.0	23.00	—	—	*22.33*	23.00	655	− 5.5
»	14/3	24.50	—	4.0	20.33	—	—	*20.50*	20.33	682	− 3.9
»	25/4	13.00	—	—	19.00	—	4.0	13.00	*15.00*	792	+ 2.4
»	23/5	10.50	—	—	17.00	—	—	10.50	17.00	804	+ 3.1
»	29/5	21.00	—	2.0	19.33	—	—	*19.00*	19.33	707	− 2.4
			1.12	2.02		0.68	2.05			739	

value for *H* at Gjøahavn). The corrected readings in the columns headed W and E are put in italics.

The next two tables XLIX and L, referring respectively to Needle I and Needle II, are extracts from the preceding (respectively XLVII and XLVIII) and contain under the headings *a*, *b*, *c*, *d*, the observed mean values for these positions of the needles. Mean corrections, (W + E) : 2, are in the same way as in the preceding tables entered under the headings + and —, and finally we find under the headings *I* and *H* respectively

Table XLVII.

Needle I		c										d									
		W			E			W	E	*H*	corr.	W			E			W	E	*H*	corr.
Year	Day	*i*	+	—	*i*	+	—					*i*	+	—	*i*	+	—				
		′	′	′	′	′	′	′	′	γ	′	′	′	′	′	′	′	′	′	γ	′
1903	23/11	13.33	—	—	27.00	2.0	—	13.33	*29.00*	723	— 1.5	28.33	—	—	9.33	—	—	28.33	9.33	723	— 1.5
»	1/12	16.83	—	—	31.17	—	—	16.83	31.17	676	— 4.2	33.00	—	—	8.50	—	—	33.00	8.50	679	— 4.1
»	8/12	45.00	—	30.0	— 1.67	30.0	—	*15.00*	*28.33*	721	— 1.7	31.00	—	—	20.67	—	15.0	31.00	*5.67*	722	— 1.6
»	15/12	13.00	—	2.0	29.33	—	—	*11.00*	29.33	734	— 0.9	31.00	—	4.0	11.00	—	3.0	*27.00*	*8.00*	735	— 0.9
»	18/12	10.17	2.0	—	28.17	—	—	*12.17*	28.17	732	— 1.1	33.00	—	5.0	2.83	5.0	—	*28.00*	*7.83*	735	— 0.9
»	22/12	2.00	8.0	—	35.00	—	10.0	*10.00*	*25.00*	770	+ 1.2	37.33	—	9.0	— 2.00	5.0	—	*28.33*	*3.00*	754	+ 0.2
»	29/12	3.00	7.0	—	33.67	—	9.0	*10.00*	*24.67*	774	+ 1.4	37.33	—	12.0	— 5.00	10.0	—	*25.33*	*5.00*	768	+ 1.1
1904	6/1	13.50	—	—	29.00	—	—	13.50	29.00	*710*	— 2.3	32.00	—	1.0	8.00	—	—	*31.00*	8.00	703	— 2.8
»	9/1	13.00	—	—	35.00	—	8.0	13.00	*27.00*	733	— 1.0	34.00	—	3.0	7.00	—	—	*31.00*	7.00	700	— 2.8
»	13/1	10.83	—	—	28.17	—	—	10.83	28.17	743	— 0.4	30.00	—	2.0	7.83	—	—	*28.00*	7.83	728	— 1.3
»	22/1	14.00	—	—	20.33	6.0	—	14.00	*26.33*	728	— 1.3	28.83	—	—	4.67	2.0	—	28.83	*6.67*	721	— 1.7
»	27/1	15.67	—	3.0	24.17	3.0	—	*12.67*	*27.17*	744	— 0.3	31.00	—	3.0	6.67	—	—	*28.00*	6.67	735	— 0.9
»	4/2	15.00	3.0	—	27.00	3.0	—	*18.00*	*30.00*	675	— 4.3	25.00	3.0	—	12.00	—	3.0	*28.00*	*9.00*	725	— 1.4
»	12/2	11.83	—	—	20.00	7.0	—	11.83	*27.00*	744	— 0.4	27.50	—	2.0	9.50	—	2.0	*25.50*	*7.50*	752	+ 0.1
»	17/2	11.50	—	—	23.50	—	—	11.50	23.50	782	+ 1.8	22.67	—	—	7.00	—	—	22.67	7.00	778	+ 1.6
»	26/2	9.00	—	—	23.67	—	2.0	9.00	*21.67*	812	+ 3.6	22.50	—	—	3.67	—	2.0	22.50	*1.67*	827	+ 4.4
»	10/3	16.50	—	1.0	28.50	—	—	*15.50*	28.50	705	— 2.6	27.00	2.0	—	7.00	—	—	*29.00*	7.00	727	— 1.3
»	11/3	19.33	—	10.0	9.67	10.0	—	*9.33*	*19.67*	*820*	+ 4.0	13.00	10.0	—	11.33	—	10.0	*23.00*	*1.35*	*822*	+ 4.1
»	12/3	19.50	—	5.0	19.67	5.0	—	*14.50*	*24.67*	729	— 1.2	20.50	5.0	—	14.00	—	8.0	*25.50*	*6.00*	763	+ 0.8
»	12/3	13.00	—	—	22.00	6.0	—	13.00	*28.00*	731	— 1.1	27.00	—	—	7.00	—	—	27.00	7.00	745	— 0.3
»	14/3	16.00	—	5.0	15.67	11.0	—	*11.00*	*26.67*	*755*	+ 0.3	23.17	5.0	—	10.33	—	5.0	*28.17*	*5.33*	751	+ 0.1
»	14/3	8.00	4.0	—	29.33	—	5.0	*12.00*	*24.33*	772	+ 1.3	28.00	—	3.0	1.83	5.0	—	*25.00*	*6.83*	767	+ 1.0
»	1/6	15.17	—	—	38.00	—	8.0	15.17	*30.00*	674	— 4.4	17.00	12.0	—	6.33	—	—	*29.00*	6.33	725	— 1.5
»	30/6	10.17	—	1.0	23.83	—	1.0	*9.17*	*22.83*	807	+ 3.3	26.00	—	3.0	5.50	—	3.0	*23.00*	*2.50*	811	+ 3.5
»	1/7	3.67	—	11.0	0.83	7.0	—	*— 7.33*	*7.83*	1066	+ 18.0	6.00	—	—	— 9.17	—	—	6.00	— 9.17	1057	+ 17.5
»	7/7	23.83	—	5.0	28.33	5.0	—	*18.83*	*33.33*	635	— 6.6	30.83	4.0	—	17.33	—	2.0	*34.83*	*15.33*	631	— 6.8
»	8/7	21.33	—	8.0	21.00	8.0	—	*13.33*	*29.00*	712	— 2.2	32.00	—	2.0	5.00	—	—	*30.00*	5.00	725	— 1.5
»	18/7	9.33	2.0	—	23.00	2.0	—	*11.33*	*25.00*	776	+ 1.5	27.00	—	—	3.00	2.0	—	27.00	*5.00*	772	+ 1.3
»	31/10	23.00	—	—	10.00	—	—	10.00	23.00	792	+ 2.4	16.67	7.0	—	21.33	—	17.0	*23.67*	*4.33*	787	+ 2.1
»	3/11	16.83	—	—	30.50	2.0	—	16.83	*32.50*	669	— 4.6	31.83	—	—	7.17	2.0	—	31.83	*9.17*	692	— 3.3
»	8/11	10.67	—	—	23.33	2.0	—	10.67	*25.33*	766	+ 0.9	28.00	—	—	4.00	—	—	28.00	4.00	760	+ 0.6
»	29/11	13.33	2.5	—	27.33	2.5	—	*15.83*	*29.83*	687	— 3.6	31.00	—	—	9.00	—	—	31.00	9.00	680	— 4.0
»	10/12	12.83	—	—	25.67	—	—	12.83	25.67	743	— 0.4	26.00	—	—	6.00	—	—	26.00	6.00	747	— 0.2
»	29/12	15.00	—	3.0	23.33	3.0	—	*12.00*	*26.33*	752	+ 0.1	11.00	12.0	—	16.67	—	10.0	*23.00*	6.67	770	+ 1.2
1905	16/1	10.50	3.0	—	25.00	—	—	*13.50*	25.00	740	— 0.6	29.00	—	—	3.33	—	—	29.00	3.33	745	— 0.3
»	9/1	8.67	5.0	—	33.33	—	5.0	*13.67*	*28.33*	708	— 2.4	36.00	—	6.0	3.00	6.0	—	*30.00*	*9.00*	701	— 2.8
»	14/3	19.83	—	4.0	26.33	4.0	—	*15.83*	*30.33*	671	— 4.5	32.00	—	—	4.33	4.0	—	32.00	*8.33*	681	— 4.0
»	25/4	12.00	—	—	22.00	—	—	12.00	22.00	767	+ 1.0	26.00	—	3.0	9.50	—	7.0	*23.00*	*2.50*	799	+ 2.8
»	23/5	6.50	—	—	21.83	—	—	6.50	21.83	814	+ 3.7	26.33	—	—	0.83	—	—	26.33	0.83	800	+ 2.8
»	29/5	14.50	—	—	26.50	2.0	—	14.50	*28.50*	693	— 3.3	30.50	—	—	3.83	3.0	—	30.50	*6.83*	707	— 2.4
			0.91	2.20		2.26	1.95			745			1.50	1.45		1.10	2.18			749	

data for corresponding values of inclination and horizontal intensity, where those of the data for *I*, by which one or more of the eight single readings have been corrected, are put in italics. In the last horizontal line of the four tables XLVII, XLVIII, XLIX, L, we have given the mean under the columns headed + and —. "Mean" in this connection denotes: the sum of the figures in the column in question divided by the number of observations (which amounts to 40).

Finally, we have made out Table LI, p. 94. It contains for each of the two Dover

Table XLVIII.

Needle II		a										b									
		W			E			W	E	*H*	corr.	W			E			W	E	*H*	corr.
Year	Day	*i*	+	−	*i*	+	−					*i*	+	−	*i*	+	−				
		′	′	′	′	′	′	′	′	γ	′	′	′	′	′	′	′	′	′	γ	′
1903	23/11	10.33	8.0	—	18.00	—	—	*18.33*	18.00	751	+ 0.1	19.83	—	—	18.83	—	—	19.83	18.83	737	− 0.8
»	1/12	19.67	5.0	—	21.67	—	5.0	*24.67*	*16.67*	705	− 2.6	22.00	—	—	16.00	1.0	—	22.00	*17.00*	712	− 2.2
»	8/12	22.08	—	—	21.67	—	4.0	22.08	*17.67*	717	− 1.9	23.00	—	—	15.50	2.0	—	23.00	*17.50*	705	− 2.6
»	15/12	18.00	—	—	18.00	—	—	18.00	18.00	738	− 0.7	21.33	—	—	16.00	—	—	21.33	16.00	727	− 1.3
»	18/12	18.50	—	—	21.00	—	3.0	18.50	*18.00*	740	− 0.6	33.67	—	15.0	2.33	15.0	—	*18.67*	*17.33*	742	− 0.5
»	22/12	18.00	5.0	—	19.50	—	5.0	*23.00*	*14.50*	*725*	− 1.5	18.67	—	—	16.50	2.0	—	18.67	*18.50*	731	− 1.1
»	29/12	16.83	5.0	—	17.33	—	—	*21.83*	17.33	715	− 2.0	19.00	2.0	—	17.17	2.0	—	*21.00*	*19.17*	706	− 2.5
1904	6/1	21.33	2.0	—	19.00	—	—	*23.33*	19.00	690	− 3.4	22.00	—	—	18.00	2.0	—	22.00	*20.00*	694	− 3.2
»	9/1	19.67	1.0	—	18.00	—	—	*20.67*	18.00	715	− 2.0	20.33	—	2.0	16.00	—	—	*18.33*	16.00	765	+ 0.9
»	13/1	22.00	—	—	17.00	—	—	22.00	17.00	*717*	− 1.9	20.00	—	—	18.00	—	—	20.00	18.00	718	− 1.9
»	22/1	24.00	—	—	21.00	—	—	24.00	21.00	*655*	− 5.4	21.67	—	—	21.00	—	—	21.67	21.00	*675*	− 4.3
»	27/1	30.00	—	10.0	7.33	10.0	—	*20.00*	*17.33*	734	− 0.9	23.00	—	2.0	19.00	—	2.0	*21.00*	*17.00*	728	− 1.3
»	4/2	19.00	3.0	—	13.00	3.0	—	*22.00*	*16.00*	739	− 0.7	18.00	4.0	—	19.00	—	—	*22.00*	19.00	716	− 2.0
»	12/2	24.67	—	—	14.83	2.0	—	24.67	*16.83*	696	− 3.1	18.83	3.0	—	24.83	—	5.0	*21.83*	*19.83*	699	− 2.9
»	17/2	16.00	—	—	12.67	—	—	16.00	12.67	794	+ 2.5	19.50	—	—	13.00	—	—	19.50	13.00	776	+ 1.5
»	26/2	21.00	—	—	15.00	—	—	21.00	15.00	751	+ 0.1	15.17	6.0	—	15.50	—	—	*21.17*	15.50	751	+ 0.1
»	10/3	14.00	2.0	—	21.00	—	—	21.00	*16.00*	741	− 0.5	18.00	2.0	—	19.00	—	2.0	*20.00*	*17.00*	742	− 0.5
»	11/3	23.00	—	—	12.00	—	—	23.00	12.00	765	+ 0.9	19.00	—	—	18.50	—	—	19.00	18.50	735	− 0.9
»	12/3	18.17	—	—	12.00	—	—	18.17	12.00	*790*	+ 2.3	13.50	—	—	15.00	—	—	13.50	15.00	*800*	+ 2.9
»	12/3	21.67	—	—	16.17	—	—	21.67	16.17	735	− 0.9	18.50	—	—	17.17	—	—	18.50	17.17	744	− 0.4
»	14/3	21.83	—	—	11.50	—	—	21.83	11.50	*761*	+ 0.7	14.50	—	—	19.50	—	—	19.50	14.50	*757*	+ 0.4
»	14/3	24.33	—	4.0	8.00	6.0	—	*20.33*	*14.00*	763	+ 0.8	16.33	2.0	—	20.67	—	4.0	*18.33*	*16.67*	762	+ 0.7
»	1/6	18.67	3.0	—	21.67	—	5.0	*21.67*	*16.67*	733	− 1.0	18.00	—	—	15.33	2.0	—	18.00	*17.33*	751	+ 0.1
»	30/6	15.00	4.0	—	16.00	—	4.0	*19.00*	*12.00*	792	+ 2.4	23.67	—	5.0	10.00	3.0	—	*18.67*	*13.00*	790	+ 2.3
»	1/7	2.00	—	—	2.50	—	2.0	2.00	*0.50*	1033	+ 16.2	6.50	—	4.0	− 6.00	—	—	*2.50*	− 6.00	1084	+ 19.1
»	7/7	28.33	—	—	17.17	—	—	28.33	17.17	666	− 4.8	20.50	4.0	—	23.83	—	—	*24.50*	23.83	652	− 5.6
»	8/7	26.67	—	5.0	12.33	3.0	—	*21.67*	*15.33*	725	− 1.5	20.50	—	—	20.33	—	—	20.50	20.33	704	− 2.6
»	18/7	19.33	2.0	—	13.50	2.0	—	*21.33*	*15.50*	748	− 0.1	19.00	—	—	15.67	2.0	—	19.00	*17.67*	748	− 0.1
»	31/10	18.17	2.0	—	15.67	—	—	*20.17*	15.67	744	− 0.4	21.00	—	2.0	12.33	2.0	—	*19.00*	*14.33*	756	+ 0.4
»	3/11	21.17	2.0	—	16.00	—	—	*23.17*	16.00	711	− 2.2	21.33	—	—	18.00	2.0	—	21.33	*20.00*	722	− 1.6
»	8/11	20.50	—	—	12.00	2.0	—	20.50	*14.00*	762	+ 0.7	17.00	—	—	17.00	—	—	17.00	17.00	755	+ 0.3
»	29/11	22.33	—	—	13.00	2.0	—	22.33	*15.00*	728	− 1.3	18.00	2.0	—	16.00	2.0	—	*20.00*	*18.00*	721	− 1.7
»	16/12	23.67	—	—	12.00	—	—	23.67	12.00	750	0.0	18.00	—	—	17.00	—	—	18.00	17.00	752	+ 0.1
»	29/12	23.00	—	—	12.00	—	—	23.00	12.00	759	+ 0.5	14.00	*2.0*	—	19.00	—	—	19.00	*16.00*	758	+ 0.5
1905	16/1	22.00	—	—	13.00	—	—	22.00	13.00	748	− 0.1	16.00	—	—	20.00	—	—	20.00	16.00	750	0.0
»	9/2	25.00	—	—	12.00	2.0	—	25.00	*14.00*	719	− 1.8	19.00	—	—	23.00	—	*2.0*	*21.00*	19.00	700	− 2.8
»	14/3	29.00	—	5.0	12.67	5.0	—	*24.00*	*17.67*	693	− 3.3	18.00	—	—	24.00	—	—	24.00	18.00	685	− 3.7
»	25/4	20.00	3.0	—	12.33	3.0	—	*23.00*	*15.33*	714	− 2.1	17.00	3.0	—	17.00	3.0	—	*20.00*	*20.00*	709	− 2.3
»	23/5	18.67	—	—	12.00	—	—	18.67	12.00	783	+ 1.9	14.67	—	—	18.50	—	—	18.50	14.67	759	+ 0.5
»	29/5	19.33	—	—	21.33	*2.0*	—	*23.33*	19.33	694	− 3.2	21.50	—	—	18.33	—	—	21.50	18.33	709	− 2.3
			1.22	0.60		1.00	0.70			741			0.70	0.95		1.05	0.32			741	

needles a final tabulation of the eight mean readings of which an observation consists. The readings which have been accepted as they were originally read are here printed in heavy type. Data for declination have for each observation with the two needles been entered under the heading *D*, and the initial of the observer has on each occasion been given in the last column to the right. The figures in Table LI will be seen not to agree with the corresponding figures in the preceding tables, as in Table LI the data have been reduced, so that they express readings corresponding to a mean horizontal

Table XLVIII.

Needle II		c										d									
		W			E			W	E	H	corr.	W			E			W	E	H	corr.
Year	Day	i	+	−	i	−	+					i	+	−	i	+	−				
		′	′	′	′	′	′	′	′	γ	′	′	′	′	′	′	′	′	′	γ	′
1903	23/11	18.17	—	—	20.33	—	—	18.17	20.33	737	− 0.8	26.33	—	—	11.00	—	—	26.33	11.00	743	− 0.4
»	1/12	28.00	—	10.0	10.67	14.0	—	18.00	24.67	699	− 2.9	28.00	—	—	10.33	4.0	—	28.00	14.33	696	− 3.1
»	8/12	21.00	—	3.0	16.08	5.0	—	18.00	21.08	724	− 1.5	30.00	—	5.0	7.00	5.0	—	25.00	12.00	728	− 1.3
»	15/12	20.50	—	3.0	24.00	—	3.0	17.50	21.00	728	− 1.3	20.33	5.0	—	28.00	—	16.0	25.33	12.00	733	− 1.0
»	18/12	15.83	—	—	27.33	—	5.0	15.83	22.33	730	− 1.2	22.83	—	—	21.33	—	8.0	22.83	13.33	736	− 0.8
»	22/12	15.33	—	—	18.67	2.0	—	15.33	20.67	741	− 0.5	23.67	—	—	12.33	—	—	23.67	12.33	734	− 0.9
»	29/12	17.50	—	—	19.00	2.0	—	17.50	21.00	725	− 1.4	27.00	—	—	12.50	—	—	27.00	12.50	714	− 2.1
1904	6/1	18.67	—	—	18.17	4.0	—	18.67	22.17	705	− 2.5	25.00	3.0	—	15.00	—	—	28.00	15.00	681	− 3.9
»	9/1	23.17	—	2.0	21.17	—	2.0	21.17	25.17	657	− 5.3	31.33	—	6.0	16.00	—	—	25.33	16.00	679	− 4.1
»	13/1	18.00	—	—	18.00	2.0	—	18.00	20.00	726	− 1.4	26.00	—	2.0	13.00	—	—	24.00	13.00	734	− 0.9
»	22/1	18.50	2.0	—	23.00	—	—	20.50	23.00	678	− 4.1	29.00	—	—	14.33	—	—	29.00	14.33	666	− 4.8
»	27/1	19.00	—	3.0	15.67	3.0	—	16.00	18.67	755	+ 0.3	30.00	—	5.0	7.00	7.0	—	25.00	14.00	716	− 2.0
»	4/12	16.00	—	—	23.00	—	—	16.00	23.00	727	− 1.3	24.00	—	—	10.67	—	—	24.00	10.67	755	+ 0.2
»	12/2	22.33	—	—	22.00	—	—	22.33	22.00	676	− 4.2	27.67	—	—	15.50	—	—	27.67	15.50	690	− 3.4
»	17/2	15.67	—	—	13.50	—	—	15.67	13.50	796	+ 2.6	19.00	—	—	10.67	—	2.0	19.00	8.67	806	+ 3.2
»	26/2	10.50	4.0	—	17.00	4.0	—	14.50	21.00	756	+ 0.3	24.50	—	2.0	12.50	—	2.0	22.50	10.50	764	+ 0.8
»	10/3	18.50	—	—	18.00	2.0	—	18.50	20.00	730	− 1.2	24.50	—	—	13.00	—	—	24.50	13.00	736	− 0.8
»	11/3	20.50	—	3.0	15.00	5.0	—	17.50	20.00	738	− 0.7	22.00	—	—	13.33	—	2.0	22.00	11.33	769	+ 1.1
»	12/3	14.50	2.0	—	19.50	—	—	16.50	19.50	746	− 0.2	18.75	5.0	—	15.00	—	5.0	23.75	10.00	760	+ 0.6
»	12/3	14.67	2.0	—	22.17	—	—	16.67	22.17	733	− 1.0	26.83	—	—	10.00	—	—	26.83	10.00	746	− 0.2
»	14/3	14.33	—	—	21.50	—	—	14.33	21.50	751	+ 0.1	27.50	—	2.0	7.50	—	—	25.50	7.50	768	+ 1.0
»	14/3	14.00	2.0	—	20.00	—	—	16.00	20.00	751	+ 0.1	33.50	—	10.0	6.00	6.0	—	23.50	12.00	751	+ 0.1
»	1/6	23.00	—	6.0	15.83	4.0	—	17.00	19.83	738	− 0.7	21.50	2.0	—	10.50	2.0	—	23.50	12.50	727	− 1.3
»	30/6	21.17	—	7.0	10.00	7.0	—	14.17	17.00	795	+ 2.6	15.50	5.0	—	14.50	—	5.0	20.50	9.50	796	+ 2.6
»	1/7	10.00	—	3.0	4.00	5.0	—	7.00	9.00	923	+ 9.9	5.83	—	—	10.67	—	12.0	5.83	− 1.33	1039	+ 16.5
»	7/7	24.00	—	—	23.00	2.0	—	24.00	25.00	646	− 5.9	26.00	3.0	—	21.00	—	3.0	29.00	18.00	648	− 5.8
»	8/7	17.83	—	—	23.17	—	2.0	17.83	21.17	708	− 2.4	31.50	—	4.0	15.17	—	—	27.50	15.17	664	− 4.9
»	18/7	14.67	2.0	—	18.67	2.0	—	16.67	20.67	750	0.0	26.50	—	—	9.50	—	—	26.50	9.50	745	− 0.3
»	31/10	20.50	—	5.0	13.00	5.0	—	15.50	18.00	759	+ 0.5	22.00	—	—	14.00	—	2.0	22.00	12.00	759	+ 0.5
»	3/11	18.83	—	—	20.50	—	—	18.83	20.50	711	− 2.2	24.00	—	—	18.00	—	—	24.00	18.00	701	− 2.8
»	8/11	16.50	—	—	15.67	2.0	—	16.50	17.67	758	+ 0.5	21.00	—	—	13.33	—	—	21.00	13.33	760	+ 0.6
»	29/11	20.00	—	—	14.50	7.0	—	20.00	21.50	698	− 3.0	20.00	6.0	—	14.00	—	—	26.00	14.00	712	− 2.2
»	16/12	11.67	4.0	—	23.00	—	4.0	15.67	19.00	755	+ 0.3	28.00	—	5.0	6.00	5.0	—	23.00	11.00	757	+ 0.4
»	29/12	19.67	—	—	17.00	—	2.0	15.00	19.67	752	+ 0.1	30.00	—	7.0	5.00	7.0	—	23.00	12.00	743	− 0.4
1905	16/1	20.00	—	—	18.00	—	—	18.00	20.00	746	− 0.3	27.00	—	—	13.00	3.0	—	27.00	16.00	694	− 3.2
»	9/2	23.00	—	—	21.00	—	—	21.00	23.00	675	− 4.3	25.67	—	—	13.67	—	—	25.67	13.67	703	− 2.7
»	14/3	22.67	—	—	18.00	2.0	—	20.00	22.67	688	− 3.6	29.33	—	2.0	12.50	—	—	27.33	12.50	692	− 3.3
»	25/4	13.00	2.0	—	18.00	—	—	15.00	18.00	768	+ 1.1	24.00	2.0	—	14.17	—	—	26.00	14.17	741	− 0.5
»	23/5	15.00	2.0	—	19.33	—	—	17.00	19.33	745	− 0.3	23.67	—	—	13.00	—	—	23.67	13.00	735	− 0.9
»	29/5	18.67	2.0	—	23.00	—	—	20.67	23.00	683	− 3.8	23.33	5.0	—	17.67	—	5.0	28.33	12.67	690	− 3.4
			0.65	1.18		1.92	0.40			735			0.90	1.25		0.98	1.55			735	

intensity, which also denotes a constant mean inclination. This reduction has been made in order to be able to compare the readings taken on different days. In the last horizontal line of the table are added mean figures for the various columns. It will be seen that we have not found it adviseable to correct more closely than by a certain number of whole minutes.

If we have really succeeded in applying the right corrections, this fact may be controlled by the base-line values which the corrected readings produce. Now it is the

89°+

Table XLIX. — **Dover No. 154, Needle. I.**

Year	Day	a	+	−	I	H	b	+	−	I	H	c	+	−	I	H	d	+	−	I	H
		′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ
1903	23/11	20 0	1 0	—	21 0	715	18 10	—	—	18 10	718	20 10	1 0	—	21 10	723	18 50	—	—	18 50	723
»	1/12	19 15	4 0	—	23 15	668	25 50	—	4 0	21 50	669	24 0	—	—	24 0	676	20 45	—	—	20 45	679
»	8/12	17 30	2 30	—	20 0	720	22 15	—	3 0	19 15	716	21 40	—	—	21 40	721	25 50	—	7 30	18 20	722
»	15/12	22 45	—	3 0	19 45	728	19 40	—	1 0	18 40	728	21 10	—	1 0	20 10	734	21 0	—	3 30	17 30	735
»	18/12	16 55	2 0	—	18 55	732	19 35	—	1 0	18 35	729	19 10	1 0	—	20 10	732	17 55	—	—	17 55	735
»	22/25	16 5	1 0	—	17 5	764	16 50	—	1 0	15 50	764	18 30	—	1 0	17 30	770	17 40	—	2 0	15 40	754
»	29/12	17 50	—	—	17 50	757	18 25	—	—	18 25	757	18 20	—	1 0	17 20	774	16 10	—	1 0	15 10	768
1904	6/1	19 40	1 0	—	20 40	703	20 15	1 0	—	21 15	683	21 15	—	—	21 15	710	20 0	—	0 30	19 30	703
»	9/1	26 40	—	4 0	22 40	665	28 0	—	4 30	23 30	635	24 0	—	4 0	20 0	733	20 30	—	1 30	19 0	700
»	13/1	22 0	—	2 0	20 0	715	21 50	—	4 0	17 50	731	19 30	—	—	19 30	743	18 55	—	1 0	17 55	728
»	22/1	18 10	2 30	—	20 40	699	22 15	—	1 0	21 15	678	17 10	3 0	—	20 10	728	16 45	1 0	—	17 45	721
»	27/1	20 20	—	2 0	18 20	746	19 5	—	1 30	17 35	739	19 55	—	—	19 55	744	18 50	—	1 30	17 20	735
»	4/2	17 0	—	—	17 0	762	20 0	—	1 0	19 0	730	21 0	3 0	—	24 0	675	18 30	—	—	18 30	725
»	12/2	19 10	—	—	19 10	736	19 0	—	1 0	18 0	736	15 55	3 30	—	19 25	744	18 30	—	2 0	16 30	752
»	17/2	16 50	—	2 0	14 50	801	15 50	—	2 0	13 50	796	17 30	—	—	17 30	782	14 50	—	—	14 50	778
»	26/2	17 20	1 0	—	18 20	750	20 0	—	4 0	16 0	771	16 20	—	1 0	15 20	812	13 5	—	1 0	12 5	827
»	10/3	21 10	—	1 30	19 40	724	20 45	—	1 30	19 15	722	22 30	—	0 30	22 0	705	17 0	1 0	—	18 0	727
»	11/3	16 40	—	—	16 40	771	15 20	—	2 0	13 20	818	14 30	—	—	14 30	820	12 10	—	—	12 10	822
»	12/3	13 25	1 0	—	14 25	815	14 30	—	—	14 30	787	19 35	—	—	19 35	729	17 15	—	1 30	15 45	763
»	12/3	16 50	1 30	—	18 20	751	17 30	2 0	—	19 30	733	17 30	3 0	—	20 30	731	17 0	—	—	17 0	745
»	14/3	17 55	1 0	—	18 55	740	18 40	—	1 0	17 40	738	15 50	3 0	—	18 50	755	16 45	—	—	16 45	751
»	14/3	16 45	—	—	16 45	775	16 30	—	—	16 30	772	18 40	—	0 30	18 10	772	14 55	1 0	—	15 55	767
»	1/6	21 20	1 0	—	22 20	676	17 30	4 0	—	21 30	667	26 35	—	4 0	22 35	674	11 40	6 0	—	17 40	725
»	30/6	13 55	—	—	13 55	813	15 25	—	2 0	13 25	810	17 0	—	1 0	16 0	807	15 45	—	3 0	12 45	811
»	1/7	2 55	—	4 0	-1 5	1075	6 5	—	6 0	0 5	1045	2 15	—	2 0	0 15	1066	-1 35	—	—	-1 35	1057
»	7/7	25 20	1 0	—	26 20	617	26 5	—	1 0	25 5	628	26 5	—	—	26 5	635	24 5	1 0	—	25 5	631
»	8/7	21 35	—	—	21 35	681	21 50	—	—	21 50	655	21 10	—	—	21 10	712	18 30	—	1 0	17 30	725
»	18/7	15 30	1 30	—	17 0	774	17 0	—	—	17 0	762	16 10	2 0	—	18 10	776	15 0	1 0	—	16 0	772
»	31/10	20 10	—	2 0	18 10	752	17 0	—	—	17 0	754	16 30	—	—	16 30	792	19 0	—	5 0	14 0	787
»	3/11	22 40	—	—	22 40	676	21 5	1 0	—	22 5	674	23 40	1 0	—	24 40	669	19 30	1 0	—	20 30	692
»	8/11	15 40	1 30	—	17 10	763	16 45	—	1 0	15 45	771	17 0	1 0	—	18 0	766	16 0	—	—	16 0	760
»	29/11	18 30	2 30	—	21 0	698	18 30	2 0	—	20 30	690	20 20	2 30	—	22 50	687	20 0	—	—	20 0	680
»	16/12	16 50	1 30	—	18 20	742	17 55	—	—	17 55	743	19 15	—	—	19 15	743	16 0	—	—	16 0	747
»	29/12	16 30	—	—	16 30	763	20 20	—	4 0	16 20	755	19 10	—	—	19 10	752	13 50	1 0	—	14 50	770
1905	16/1	19 20	—	—	19 20	732	20 0	—	2 0	18 0	738	17 45	1 30	—	19 15	740	16 10	—	—	16 10	745
»	9/2	26 25	—	3 0	23 25	653	23 40	—	1 0	22 40	655	21 0	—	—	21 0	708	19 30	—	—	19 30	701
»	14/3	20 30	—	—	20 30	709	22 25	—	2 0	20 25	682	23 5	—	—	23 5	671	18 10	2 0	—	20 10	681
»	25/4	14 10	1 0	—	15 10	789	16 0	—	2 0	14 0	792	17 0	—	—	17 0	767	17 45	—	5 0	12 45	799
»	23/5	12 55	1 0	—	13 55	814	13 45	—	—	13 45	804	14 10	—	—	14 10	814	13 35	—	—	13 35	800
»	29/5	18 55	1 0	—	19 55	720	20 10	—	1 0	19 10	707	20 30	1 0	—	21 30	693	17 10	1 30	—	18 40	707
		—	0 46	0 35	—	742	—	0 15	1 23	—	739	—	0 40	0 24	—	745	—	0 25	0 55	—	749

case that neither original nor corrected readings with the Dover needles can be expected to be exact, but knowing that each separate observation of inclination, expressed by I_a, I_b, I_c, I_d, theoretically ought to lead to one and the same base-line value for the z-curve, it is clear that this affords an excellent control. As to how the final mean value B_z has been decided on, this point will be treated in combination with the reduction of the variometer curves, but we shall in this place mention that the first approximation was fixed upon by comparing the following two mean values for B_z:

Table L. — **Dover No. 154, Needle II.**

89°+

Year	Day	a	+	−	I	H	b	+	−	I	H	c	+	−	I	H	d	+	−	I	H
		′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ	′ ″	′ ″	′ ″	′ ″	γ
1903	23/11	14 10	4 0	—	18 10	751	19 20	—	—	19 20	737	19 15	—	—	19 15	737	18 40	—	—	18 40	743
»	1/12	20 40	—	—	20 40	705	19 0	0 30	—	19 30	712	19 20	2 0	—	21 20	699	19 10	2 0	—	21 10	696
»	8/12	21 50	—	2 0	19 50	717	19 50	1 0	—	20 15	705	18 30	1 0	—	19 30	724	18 30	—	—	18 30	728
»	15/12	18 0	—	—	18 0	738	18 40	—	—	18 40	727	22 15	—	3 0	19 15	728	24 10	—	5 30	18 40	733
»	18/12	19 45	—	1 30	18 15	740	18 0	—	—	18 0	742	21 35	—	2 30	19 5	730	22 5	—	4 0	18 5	736
»	22/12	18 45	—	—	18 45	725	17 35	1 0	—	18 35	731	17 0	1 0	—	18 0	741	18 0	—	—	18 0	734
»	29/12	17 5	2 30	—	19 35	715	18 5	2 0	—	20 5	706	18 15	1 0	—	19 15	725	19 45	—	—	19 45	714
1904	6/1	20 10	1 0	—	21 10	690	20 0	1 0	—	21 0	696	18 25	2 0	—	20 25	705	20 0	1 30	—	21 30	681
»	9/1	18 50	0 30	—	19 20	715	18 10	—	1 0	17 10	765	25 10	—	2 0	23 10	657	23 40	—	3 0	20 40	679
»	13/1	19 30	—	—	19 30	717	19 0	—	—	19 0	718	18 0	1 0	—	19 0	726	19 30	—	1 0	18 30	734
»	22/1	22 30	—	—	22 30	655	21 20	—	—	21 20	675	20 45	1 0	—	21 45	678	21 40	—	—	21 40	666
»	27/1	18 40	—	—	18 40	734	21 0	—	2 0	19 0	728	17 20	—	—	17 20	755	18 30	1 0	—	19 30	716
»	4/2	16 0	3 0	—	19 0	739	18 30	2 0	—	20 30	716	19 30	—	—	19 30	727	17 30	—	—	17 20	755
»	12/2	19 45	1 0	—	20 45	696	21 50	—	1 0	20 50	699	22 10	—	—	22 10	676	21 35	—	—	21 35	690
»	17/2	14 20	—	—	14 20	794	16 15	—	—	16 15	776	14 35	—	—	14 35	796	14 50	—	1 0	13 50	806
»	26/2	18 0	—	—	18 0	751	15 20	3 0	—	18 20	751	13 45	4 0	—	17 45	756	18 30	—	2 0	16 30	764
»	10/3	17 30	1 0	—	18 30	741	18 30	—	—	18 30	742	18 15	1 0	—	19 15	730	18 45	—	—	18 45	736
»	11/3	17 30	—	—	17 30	765	18 45	—	—	18 45	735	17 45	1 0	—	18 45	738	17 40	—	1 0	16 40	769
»	12/3	15 5	—	—	15 5	790	14 15	—	—	14 15	800	17 0	1 0	—	18 0	746	16 50	—	—	16 50	760
»	12/3	18 55	—	—	18 55	735	17 50	—	—	17 50	744	18 25	1 0	—	19 25	733	18 25	—	—	18 25	746
»	14/3	16 40	—	—	16 40	761	17 0	—	—	17 0	757	17 55	—	—	17 55	751	17 30	—	1 0	16 30	786
»	14/3	16 10	1 0	—	17 10	763	18 30	—	1 0	17 30	762	17 0	1 0	—	18 0	751	19 45	—	2 0	17 45	751
»	1/6	20 10	—	1 0	19 10	733	16 40	1 0	—	17 40	751	19 25	—	1 0	18 25	738	16 0	2 0	—	18 0	727
»	30/6	15 30	—	—	15 30	792	16 50	—	1 0	15 50	790	15 35	—	—	15 35	795	15 0	—	—	15 0	796
»	1/7	2 15	—	1 0	1 15	1033	0 15	—	2 0	−1 45	1084	7 0	1 0	—	8 0	923	8 15	—	6 0	2 15	1039
»	7/7	22 45	—	—	22 45	666	22 10	2 0	—	24 10	652	23 30	1 0	—	24 30	646	23 30	—	—	23 30	648
»	8/7	19 30	—	1 0	18 30	725	20 25	—	—	20 25	704	20 30	—	1 0	19 30	708	23 20	—	2 0	21 20	664
»	18/7	16 25	2 0	—	18 25	748	17 20	1 0	—	18 20	748	16 40	2 0	—	18 40	750	18 0	—	—	18 0	745
»	31/10	16 55	1 0	—	17 55	744	16 40	—	—	16 40	756	16 45	—	—	16 45	759	18 0	—	1 0	17 0	759
»	3/11	18 35	1 0	—	19 35	711	19 40	1 0	—	20 40	722	19 40	—	—	19 40	711	21 0	—	—	21 0	701
»	8/11	16 15	1 0	—	17 15	762	17 0	—	—	17 0	755	16 5	1 0	—	17 5	758	17 10	—	—	17 10	760
»	29/11	17 40	1 0	—	18 40	728	17 0	2 0	—	19 0	721	17 15	3 30	—	20 45	698	17 0	3 0	—	20 0	712
»	16/12	17 50	—	—	17 50	750	17 30	—	—	17 30	752	17 20	—	—	17 20	755	17 0	—	—	17 0	757
»	29/12	17 30	—	—	17 30	759	16 30	1 0	—	17 30	758	18 20	—	1 0	17 20	752	17 30	—	—	17 30	743
1905	16/1	17 30	—	—	17 30	748	18 0	—	—	18 0	750	19 0	—	—	19 0	746	20 0	1 30	—	21 30	694
»	9/2	18 30	1 0	—	19 30	719	21 0	—	1 0	20 0	700	22 0	—	—	22 0	675	19 40	—	—	19 40	703
»	14/3	20 50	—	—	20 50	693	21 0	—	—	21 0	685	20 20	1 0	—	21 20	688	20 55	—	1 0	19 55	692
»	25/4	16 10	3 0	—	19 10	714	17 0	3 0	—	20 0	709	15 30	1 0	—	16 30	768	19 5	—	1 0	18 5	741
»	23/5	15 20	—	—	15 20	783	16 35	—	—	16 35	759	17 10	1 0	—	18 10	745	18 20	—	—	18 20	735
»	29/5	20 20	1 0	—	21 20	694	20 10	—	—	20 10	709	20 50	1 0	—	21 50	683	20 30	—	—	20 30	690
			0 37	0 16	—	741	—	0 32	0 14	—	741	—	0 46	0 16	—	735	—	0 16	0 47	—	735

a. Mean founded on data for *I* obtained with the Earth Inductor.

b. Mean founded on those of the mean readings I_a, I_b, I_c, I_d, which have been accepted as they were originally observed. These data have of course been corrected for index error.

Control of the Corrections Applied. — On examining the original readings, given in Table XLVI and Table XLVII, pp. 87 and 88, we see that some of the readings are more suspicious than the rest. We may assume that, when a larger correction than 3′

Table LI.

Needle I 89° +

Date		a W	a E	b W	b E	c W	c E	d W	d E	a	b	c	d	D	
		′	′	′	′	′	′	′	′	′ ″	′ ″	′ ″	′ ″	°	
1903	23/11	27.0	11.0	16.5	16.2	11.8	27.5	26.8	7.8	19 0	16 25	19 40	17 20	11.9	W
»	1/12	23.1	14.0	14.1	20.4	12.6	27.0	28.9	4.4	18 30	17 10	19 50	16 40	10.7	»
»	8/12	26.3	10.3	16.6	18.1	13.3	26.6	29.4	4.1	18 20	17 20	20 0	16 40	10.0	»
»	15/12	27.5	9.4	15.2	19.5	11.1	28.4	26.1	7.1	18 30	17 25	19 20	16 35	9.5	»
»	18/12	21.1	14·6	15.5	19.3	11.1	27.1	27.1	6.9	17 50	17 25	19 5	17 0	9.1	»
»	22/12	25.0	10.8	15.1	18.1	11.2	26.2	28.5	3.2	17 50	16 35	18 40	15 55	3.6	»
»	29/12	24.9	11.6	15.7	19.5	11.4	26.1	26.4	6.1	18 10	17 35	18 40	16 20	6.6	»
1904	6/1	23.5	12.2	14.2	20.7	11.2	26.7	28.2	5.2	17 55	17 25	18 55	16 40	8.6	»
»	9/1	23,1	12.4	15.4	18.4	12.0	26.0	28.2	4.2	17 50	16 55	19 0	16 10	5.8	»
»	13/1	24.0	12.0	15.2	18.2	10.4	27.8	26.7	6.5	18 0	16 40	19 5	16 35	6.8	»
»	22/1	22.1	13.4	15.1	19.2	12.7	25.0	27.1	5.0	17 50	17 5	18 55	16 5	5.6	»
»	27/1	24.1	12.1	16.3	17.5	12.4	26.9	27.1	5.8	18 5	16 55	19 35	16 25	7.6	»
»	4/2	23,7	11.7	15.8	19.8	13.7	25.7	26.6	7.6	17 40	17 50	19 40	17 5	10.8	»
»	12/2	23,9	12.9	15.5	18.9	11.4	26.6	25.6	7.6	18 25	17 10	19 0	16 35	8.4	»
»	17/2	23,9	11.6	14.1	18,8	13.3	25.3	24.3	8.6	17 40	16 25	19 20	16 25	3.7	»
»	26/2	24,0	12.7	17.2	17.2	12.6	25.3	26.9	6.1	18 20	17 10	18 55	16 30	5.4	»
»	10/3	22.5	13.8	13.4	21.9	12.9	25.9	27.7	5.7	18 10	17 40	19 25	16 40	9.3	»
»	11/3	25.5	10.2	13.1	21.4	13.3	23.7	27.1	5.4	17 55	17 10	18 30	16 20	7.8	»
»	12/3	21.5	14.7	15.1	18.1	13.3	23.5	26.3	6.8	18 5	16 35	18 25	16 35	2.8	»
»	12/3	25.8	11.1	18.0	19.0	11.9	26.9	26.7	6.7	18 25	18 30	19 25	16 40	9.0	»
»	14/3	24.7	11.9	15.1	18.8	11.3	27.0	28.3	5.4	18 20	17 0	19 5	16 50	8.6	»
»	14/3	22.0	14.5	16.3	19.3	13.3	25.6	26.0	7.8	18 20	17 50	19 30	16 55	8.9	»
»	1/6	26.1	10.1	15.9	17.5	10.8	25.6	27.5	4.8	18 5	16 40	18 10	16 10	5.2	»
»	30/6	23.9	11,1	16.1	17.6	12.5	26.1	26.5	6.0	17 30	16 50	19 20	16 10	6.5	»
»	1/7	23.1	11.9	12.8	21.1	10.7	25.8	23.5	8.3	17 30	16 55	18 10	15 55	0.5	»
»	7/7	22.6	14.9	17.8	18.3	12.2	26.7	28.0	8.5	18 40	18 5	19 30	18 20	16.4	»
»	8/7	21.7	13.5	14.3	18.6	11.1	26.8	28.5	3.5	17 35	16 25	19 0	16 0	0.6	»
»	18/7	24.9	11.9	15.5	19.9	12.8	26.8	28.3	6.3	18 25	17 40	19 40	17 20	11.3	»
»	31/10	25.1	11.4	16.2	18.2	12.4	25,4	25.8	6.4	18 20	17 10	18 55	16 5	4.6	»
»	3/11	24.8	12.1	15.5	20.0	12.2	27.9	28.5	5.9	18 30	17 50	20 5	17 10	12.8	»
»	8/11	22.8	13.1	17.4	17.5	11.6	26.2	28.6	4.6	18 0	16 55	18 55	16 35	7.1	»
»	29/11	24.0	12.0	12.6	21.6	12.2	26.2	27.0	5.0	18 0	17 5	19 10	16 0	9.4	»
»	16/12	25.2	10.5	13,6	21.4	12.4	25.3	25.8	5.8	17 50	17 30	18 50	15 50	7.3	»
»	29/12	21.8	12.8	14.9	18.2	12.1	26.4	24.1	7.9	17 20	16 30	19 20	16 0	6.2	»
1905	16/1	21.9	14.6	16.3	18.3	12.9	24.4	28.7	3,0	18 10	17 20	18 35	15 55	7.8	»
»	9/2	23.8	12.0	16.8	17.5	11.3	25.9	27.2	6.2	17 55	17 10	18 35	16 40	6.2	»
»	14/3	22.4	14.0	16.6	16.4	11.3	25.8	28.0	4.2	18 10	16 30	18 35	16 10	4.8	»
»	25/4	22.5	12.2	15,4	17.4	13.0	23.0	25.8	5.3	17 25	16 25	18 0	15 35	3.0	»
»	23/5	25.2	10.0	13,6	20.1	10.2	25.5	29.1	3.6	17 35	16 55	17 55	16 25	2.1	»
»	29/5	24.3	12.1	16.6	16.9	11.2	25.2	28.1	4.4	18 10	16 50	18 10	16 20	8.0	»
	89° +	23.9	12.2	15.4	18.9	12.0	26.0	27.1	5.8	18 3	17 0	19 6	16 31	7.3	W

Needle II 89° +

Date		a W	a E	b W	b E	c W	c E	d W	d E	a	b	c	d	D		Obs.
		′	′	′	′	′	′	′	′	′ ″	′ ″	′ ″	′ ″	°		
1903	23/11	18.4	18.1	19.0	18.0	17.4	19.5	25.9	10.6	18 20	18 30	18 25	18 20	11.8	W	A
»	1/12	22.1	14.1	19.8	14.8	15.1	21.8	24.9	11.2	18 5	17 20	18 25	18 5	9.4	»	»
»	8/12	20.2	15.8	20.4	14.9	16.5	19.6	23.7	10.7	17 55	17 35	18 0	17 10	10.3	»	»
»	15/12	17.3	17.3	20.0	14.7	16.2	19.7	24.3	11.0	17 20	17 25	17 55	17 40	10.0	»	»
»	18/12	17.9	17.4	18.2	16.8	14.6	21.1	22.0	12.5	17 35	17 30	17 55	17 20	9.0	»	»
»	22/12	21.5	13.0	17.6	17.4	14.8	20.2	22.8	11,4	17 20	17 30	17 30	17 5	5.2	»	»
»	29/12	19.8	15.3	18.5	16.7	16.1	19.6	24.9	10,4	17 35	17 35	17 50	17 35	8.1	»	»
1904	6/1	19.9	15.6	18.8	16.8	16.2	19.7	24.1	11.1	17 50	17 50	17 55	17 35	9.4	»	»
»	9/1	18.7	16.0	19.4	16.9	15.9	19.9	21.2	11.9	17 20	18 5	17 55	16 35	6.0	»	»
»	13/1	20.1	15.1	18.1	16.1	16.6	18.6	23.1	12.1	17 35	17 5	17 35	17 35	5.9	»	»
»	22/1	18.6	15.6	17.4	16.7	16.4	18.9	24.2	9.5	17 5	17 0	17 40	16 55	5.0	»	»
»	27/1	19.1	16.4	19.7	15.7	16.3	19.0	23.0	12.0	17 50	17 40	17 35	17 30	7.7	»	»
»	4/2	21.3	15.3	20.0	17.0	14.7	21.7	24.2	10.9	18 15	18 30	18 10	17 30	11.9	»	»
»	12/2	21.6	13.7	18.9	16.9	18.1	17.8	24.2	12.1	17 35	17 55	18 0	18 10	8.2	»	W
»	17/2	18.5	15.2	21.0	14.5	18.3	16.1	22.2	11.9	16 50	17 40	17 10	17 0	3.8	»	»
»	26/2	21.1	15.1	21.3	15.6	14.8	21.3	23.3	11.3	18 5	18 25	18 5	17 20	8.7	»	»
»	10/3	20.5	15.5	19.5	16.5	17,3	18.8	23.7	12.2	18 0	18 0	18 5	18 0	10.6	»	A
»	11/3	23.9	12.9	18.1	17.6	16.8	19.3	23.1	12.4	18 25	17 55	18 5	17 50	9.2	»	»
»	12/3	20.5	14.3	16.4	17.9	16.3	19.3	24.4	10.6	17 25	17 5	17 50	17 25	5.3	»	»
»	12/3	20.8	15.3	18.1	16.8	15.7	21.2	26.6	9.8	18 0	17 25	18 25	18 10	10.3	»	»
»	14/3	22.5	12.2	19.9	14.9	14.4	21.6	26.5	8.5	17 25	17 25	18 0	17 30	6.8	»	»
»	14/3	21.1	14.8	19.0	17.4	16.1	20.1	23.6	12.1	18 0	18 10	18 5	17 50	9.1	»	»
»	1/6	20.7	15.7	18.1	17.4	16.3	19.1	22.2	11.2	18 10	17 50	17 40	16 40	5.6	»	W
»	30/6	21.4	14.4	21.0	15.3	16.8	19.6	23.1	12.1	17 55	18 5	18 10	17 35	6.6	»	»
»	1/7	18.2	16.7	21.6	13.1	16.9	18.9	22.3	15.2	17 25	17 20	17 55	18 40	7.9	E	»
»	7/7	23.5	12.4	18.9	18.2	18.1	19.1	23.2	12.2	17 55	18 35	18 35	17 40	14.6	W	»
»	8/7	20.2	13.8	17.9	17.7	15.4	18.8	22.6	10.3	17 0	17 50	17 5	16 25	7.9	E	»
»	18/7	21.2	15.4	18,9	17.6	16.7	20.7	26.2	9.2	18 20	18 10	18 40	17 40	14.0	W	»
»	31/10	19.8	15.3	19.4	14.7	16.0	18.5	22.5	12.5	17 30	17 5	17 20	17 30	7.0	»	»
»	3/11	21.0	13.8	19.7	18.4	16.6	18.8	21.2	15.2	17 25	19 5	17 30	18 10	9.8	»	»
»	8/11	21.2	14.7	17.3	17,3	17.0	18.2	21.6	13.9	16 55	17 20	16 35	17 50	7.8	»	»
»	29/11	21.0	13.7	18.3	16.3	17.0	18.5	23.8	11.8	17 25	17 20	17 50	17 50	9.5	»	A
»	16/12	23.7	12.0	18.1	17.1	16.0	19.3	23.4	11.4	17 50	17 35	17 35	17 25	7.0	»	»
»	29/12	23.5	12.5	19.5	16.5	15.1	19.8	22.6	11.6	18 0	18 0	17 25	17 5	6.3	»	»
1905	16/1	21.9	12.9	20.0	16.0	17.7	19.7	23.8	12.8	17 25	18 0	18 40	18 20	10.9	»	»
»	9/2	23.2	12.2	18.2	16.2	16.7	18.7	23.0	11.0	17 40	17 10	17 40	17 0	7.6	»	W
»	14/3	20.7	14.4	20.3	14.3	16.4	19.1	24.0	9.2	17 30	17 20	17 40	16 35	4.6	»	»
»	25/4	20.9	13.2	17.7	17.7	16.1	19.1	25.5	13.7	17 5	17 40	17 35	17 35	6.9	»	»
»	23/5	20.6	13.9	19.0	15.2	16.7	19.0	22.7	12.1	17 10	17 5	17 55	17 20	7.0	»	»
»	29/5	20.1	16.1	19.2	16.0	16.9	19.2	24.9	9.3	18 5	17 55	18 0	17 5	9.4	»	»
	89° +	20.7	14.7	19.1	16.1	16.3	19.5	23.6	11.5	17 40	17 44	17 52	17 31	7.5	W	

has been applied, there can be no doubt as to a decided error in the original reading. Most of the readings have, however, corrections between 0′ and 3′, and in these corrected data there may be some danger that we may have influenced the final data in a special direction. In order to answer this question we have made out the two tables LII and LIII, respectively referring to Needle I and Needle II. In these tables corrections between 0′ and 3′ are tabulated under the same headings as before, and the figures of the various columns are reckoned up. Under the heading *I*, in the two last columns (+ and —), we have for each series belonging to one complete observation counted up the sums of the positive and negative corrections.

We may suppose that the general conditions have been more or less constant and consequently a decided tendency in the distribution of the corrections should be suspicious. In our opinion these two tables give a good impression regarding this question, and, so far as we can judge, there is nothing suspicious, except the fact that the total sum of the positive corrections for Needle II amounts to more than double the corresponding sum for negative corrections which, however, may be reasonable all the same.

In Table LIV we have in the customary eight columns for each needle tabulated some mean values. The figures in the first horizontal line, marked *i*, refer to the mean for all readings which have been accepted as they were originally noted by the observer,

Table LII.

Needle I	*a*				*b*				*c*				*d*				*I*	
	W		E		W		E		W		E		W		E		+	—
	+	—	+	—	+	—	+	—	+	—	+	—	+	—	+	—		
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	–	–	2	–	–	–	–	–	–	–	2	–	–	–	–	–	4	–
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	3	–	5
5	–	–	–	–	–	2	–	–	2	–	–	–	–	–	–	–	2	2
6	–	–	2	–	–	–	–	2	–	–	–	–	–	–	–	–	2	2
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	2	–	–	–	2	–	–	–	–	–	–	–	–	1	–	–	4	1
9	–	–	–	–	–	–	–	2	–	–	–	–	–	3	–	–	–	5
10	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
11	–	–	–	–	–	2	–	–	–	–	–	–	–	–	2	–	2	2
12	–	–	–	–	–	3	–	–	–	3	3	–	–	3	–	–	3	9
13	–	–	–	–	–	–	–	2	3	–	3	–	3	–	–	3	9	5
14	–	–	–	–	–	–	–	2	–	–	–	–	–	2	–	2	–	6
15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	–	–	2	–	–	–	–	–	–	–	–	2	–	–	–	2	2	4
17	–	–	–	–	–	–	–	–	–	1	–	–	2	–	–	–	2	1
18	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	3
19	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–
20	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
22	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	3
23	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–
24	–	–	–	–	–	–	–	–	–	1	–	1	–	3	–	3	–	8
25	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
26	2	–	–	–	–	2	–	–	–	–	–	–	–	–	–	2	2	4
27	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
28	3	–	–	–	–	3	3	–	2	–	2	–	–	–	2	–	12	3
29	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
30	–	–	–	–	2	–	–	–	–	–	2	–	–	–	2	–	6	–
31	3	–	–	–	–	2	–	–	–	–	2	–	–	–	–	–	5	2
32	–	–	–	–	–	–	–	–	2.5	–	2.5	–	–	–	–	–	5	–
33	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
34	–	–	–	–	2	–	–	–	–	3	3	–	–	–	–	–	5	3
35	–	–	–	–	–	2	–	2	3	–	–	–	–	–	–	–	3	4
36	–	3	–	3	–	2	–	–	–	–	–	–	–	–	–	–	–	8
37	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
38	–	3	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	6
39	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–
40	2	–	–	–	–	2	–	–	–	–	2	–	–	–	3	–	7	2
Sum	14.0	8.0	16.0	3.0	6.0	20.0	3.0	13.0	12.5	10.0	21.5	3.0	5.0	22.0	9.0	15.0	**87**	**94**

Table LIII.

Needle II	a W +	a W −	a E +	a E −	b W +	b W −	b E +	b E −	c W +	c W −	c E +	c E −	d W +	d W −	d E +	d E −	I +	I −
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
3	–	–	–	–	–	–	2	–	–	3	–	–	–	–	–	–	2	3
4	–	–	–	–	–	–	–	–	–	3	–	3	–	–	–	–	–	6
5	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	3
6	–	–	–	–	–	–	2	–	–	–	2	–	–	–	–	–	4	–
7	–	–	–	–	2	–	2	–	–	–	2	–	–	–	–	–	6	–
8	2	–	–	–	–	–	2	–	–	–	–	–	3	–	–	–	7	–
9	1	–	–	–	–	2	–	–	–	2	–	2	–	–	–	–	1	6
10	–	–	–	–	–	–	–	–	–	–	2	–	–	2	–	–	2	2
11	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	–
12	–	–	–	–	–	2	–	2	–	3	3	–	–	–	–	–	3	7
13	3	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–
14	–	–	2	–	3	–	–	–	–	–	–	–	–	–	–	–	5	–
15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2
16	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	4
17	2	–	–	–	2	–	–	2	–	–	2	–	–	–	–	–	6	2
18	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	2	–	5
19	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	–
20	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	–
21	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
22	–	–	–	–	2	–	–	–	2	–	–	–	–	–	–	–	4	–
23	3	–	–	–	–	–	2	–	–	–	–	–	2	–	2	–	9	–
24	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	3	–
25	–	–	–	2	–	–	–	–	–	3	–	–	–	–	–	–	–	5
26	–	–	–	–	–	–	–	–	–	–	2	–	3	–	–	3	5	3
27	–	–	3	–	–	–	–	–	–	–	–	2	–	–	–	–	3	2
28	2	–	2	–	–	–	2	–	2	–	2	–	–	–	–	–	10	–
29	2	–	–	–	–	2	2	–	–	–	–	–	–	–	–	2	4	4
30	2	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	4	–
31	–	–	2	–	–	–	–	–	–	–	2	–	–	–	–	–	4	–
32	–	–	2	–	2	–	2	–	–	–	–	–	–	–	–	–	6	–
33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
34	–	–	–	–	–	–	2	–	–	2	–	–	–	–	–	–	2	2
35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	3	–
36	–	–	2	–	–	2	–	–	–	–	–	–	–	–	–	–	2	2
37	–	–	–	–	–	–	–	–	2	–	–	–	–	2	–	–	2	2
38	3	–	3	–	3	–	3	–	2	–	–	–	2	–	–	–	16	–
39	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	–
40	2	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	4	–
Sum	22.0	0.0	19.0	5.0	14.0	8.0	27.0	4.0	18.0	19.0	17.0	7.0	10.0	8.0	5.0	11.0	**132**	**62**

reduced however, as explained for the data tabulated in Table LI, (cf. page 94). The figures in the first horizontal line of Table LIV represent in other words the mean of the data which in Table LI are printed in heavy type. The next horizontal line, marked $\frac{i + i^*}{2}$ represents the total mean for the 40 readings, copied from the last horizontal

Table LIV.

89° +	Needle I a W	a E	b W	b E	c W	c E	d W	d E	Needle II a W	a E	b W	b E	c W	c E	d W	d E
i	24′.1	12′.8	15′.2	18′.7	11′.9	26′.0	27′.4	5′.5	20′.1	14′.6	19′.9	16′.3	16′.5	19′.4	23′.6	11′.3
$\frac{i + i^*}{2}$	23′.9	12′.2	15′.4	18′.9	12′.0	26′.0	27′.1	5′.8	20′.7	14′.7	19′.1	16′.1	16′.3	19′.5	23′.6	11′.5
Graph.	22′.0	12′.0	14′.4	17′.4	10′.8	24′.8	24′.8	5′.8	19′.5	13′.5	17′.4	15′.4	15′.3	18′.3	21′.7	10′.7
Pct.	55	42	35	52	45	30	42	42	55	52	60	55	45	42	50	52

line of Table LI. The third line of Table LIV represents the theoretical values we get from the curve in Fig. 11, p. 87. Finally, in the last horizontal line of Table LIV marked Pct., are tabulated figures representing per centage data accepted *uncorrected*. We see that the mean precentages for uncorrected data for Needle I and Needle II are respectively 43 % and 51 %. The percentage of acceptable original readings is of course dependent on what we set as limit for allowed difference between theoretical and observed values and it may be found that we have corrected more than was strictly necessary. The reason why we have set the limit of the mentioned difference so low is that we wanted to increase the exactitude of the observations taken with the Dover needles to a degree which corresponded to the accuracy we have found for the observations taken with the Earth Inductor. As the observations of inclination are to be used for calculation of base-line values of the z-curves, we may mention that the degree of accuracy demanded is such that the difference between the calculated base-line value, founded on each separate observation, and the average value B_z is never greater than 1000γ.

We may finally remark that the figures in the two first horizontal lines of Table LIV have not been corrected for variation of the declination, while the readings taken from Fig. 11 are corrected for this error. This explains why the figures in the last line are somewhat smaller than those in the two upper lines.

Distribution according to Instruments and Observers. — The meaning of the heading of Table LV needs no explanation except the last column headed —, which contains the number of observations which for various reasons have been rejected.

Table LV.

Instrument			Observer		Numb. of Obs.	—
Name	N	Defl.	A	W		
D	I	—	23	19	42	2
»	II	—	23	19	42	2
F	A	—	13	—	13	13
»	B	—	2	—	2	2
»	A	N	4	—	4	4
»	B	S	3	—	3	3
Earth Ind.			—	19	19	6
Sum			68	57	125	32

Total Intensity.

For vertical force and total intensity we have respectively the well-known formulae:

$$Z = H \, tg \, I \text{ and } F = \frac{H}{\cos I},$$

in which we see that both Z and F are functions of H and I. Furthermore, we assume that for the magnetic pole itself F is equal to Z, and even at Gjøahavn there is no greater difference between them than 5γ. As to H we have seen that we are able to observe this quantity with a high degree of exactness, while the observations we can obtain for the angle of inclination have an exactness which is very far from satisfactory, if we want to obtain a reasonable degree of accuracy for Z and F. It is therefore of great importance for places in the neighbourhood of the pole that there is an opportunity of making special observations by which we can control the values for Z and F, obtained by aid of the above two formulae. The observations we refer to are those which the Fox Circle enables us to make. By aid of deflections with the permanent needle of the Fox Circle we may derive the value of the total intensity by aid of the formula:

$$F = \frac{R\,(1 + \beta t)}{\sin \psi}$$

where ψ is the observed angle of deflection, R a constant quantity dependent on the magnetic moment of the combination of magnets employed, and β the temperature coefficient of the same combination. It will be seen that the absolute value of the total intensity F can be extracted as soon as the values of the two constants R and β are known.

However, the excellent control afforded by observations of this kind is not appliable in our case. In the Instructions we have seen that Steen states that no determination was made for the constants of the Fox Circle before the departure of the Expedition and therefore he recommends the collection of the required material for determination of the constants at the first base-station as soon as there was opportunity of doing so. In spite of the lack of any determination of the constants before the start of the Expedition, there was still a chance of getting a control for the value of the total intensity, namely this, that the constants might have been determined from observations taken after the Expedition returned. Unfortunately, however, also this chance got lost, as the observations actually taken at Potsdam on the 3rd of August 1907, show that something must have happened to the magnet during the time between the departure from King Point and the above mentioned date. Referring to page 32 we see that there was at Sitka taken a single observation for total intensity on the 8th of October 1906, and from this observation we have extracted the following values for the constant R at a temperature of 11.2° C: $R = 0.50766$.

Table LVI.

Station	Date		H	I	Z	F	ψ	t	$F \sin \psi$	R	△	Defl.	M.
			C. G. S.	° ′	C. G. S.	C. G. S.	° ′ ″	°	C. G. S.	C. G. S	γ		
Godhavn	1903	30/7	0.08210	81 45	0.56623	0.57215	59 26 10	29.0	0.49265	0.50700	+ 435	N + S	A
Gjøahavn	1903	28/11	.00722	89 19	.60536	.60540	56 49 55	− 13.3	.50676	.50700	+ 24	»	»
Gjøahavn	1904	17/2	.00775	89 16	.60548	.60552	58 18 43	− 36.0	.51526	.50700	− 826	»	»
King Point	1906	13/6	.08470	81 50	.59020	.59625	58 39 20	3.5	.50924	.50700	− 224	»	»
Potsdam	1907	3/8	.18860	66 18	.42965	.46921	66 41 15	25.0	.43090	.43600	+ 510	»	»

Table LVII.

Station	Date		H	I	Z	F	ψ	t	$F \sin \psi$	R	△	Defl.	M.
			C. G. S.	° ′	C. G. S.	C. G. S.	° ′ ″	°	C. G. S.	C. G. S.	γ		
Godhavn	1903	30/7	0.08210	81 45	0.56623	0.57215	65 58 10	33.0	0.52256	0.53900	+1644	N + S	B
Beechey Island	»	23/8	*.01700*	88 22	.59619	.59643	65 32 30	5.3	.54291	.53900	− 391	»	»
Gjøahavn	»	28/11	.00720	89 19	.60367	.60371	64 6 50	− 12.5	.54314	.53900	− 414	»	»

From what has been said we see that the observations for total intensity collected at Gjøahavn only have a certain relative value for the base-station itself, but as soon as we are able to extract values for the constants through the material collected there, the observations for total intensity taken at the field stations may be considered absolute. The whole material collected at Gjøahavn amounts to 13 observations, and by aid of this material we shall try to extract values for the constants. In 12 cases the needle A was employed and in one case the needle B. In all the 13 cases of course the same two deflectors N and S were used. The observations for total intensity have by the observer been entered in the *Inclination Journal, No. 4* in the *Main List.* As to the system used in the observations we refer to page 51 and to a remark by Wiik, quoted on page 76. This remark concerns, as we see, a certain change in the system used in the observation. The angle ψ is in all cases derived from the observation by aid of formula (49), p. 51.

We have seen that the observations of inclination taken with the Fox Circle turned out very little satisfactory in comparison with the results obtained with the Dover. This was the case when "free" needle was employed as well as when observations were made with deflected needle by aid of one of the deflectors N or S. When, however, both deflectors N and S are applied at the same time and the observed angle of deflection is used to obtain the value of the total intensity, we get results which seem to agree well with each other, as will be seen from the data for F given in Table LVIII below. For determination of the constants we should, as mentioned, consider H and I for Gjøahavn as being known at the time when the observations with the Fox Circle were taken. The required value for F can thus be calculated from the formula given above, where we put: $R' = R(1 + \beta t)$ or $R - R' = \triangle$, where $\triangle$ is the variable correction for temperature influence and:

$$\beta = -\frac{\triangle}{Rt}$$

As the variation in the temperature for the observations taken amounts to more than 30° C, we ought to obtain a reliable value for the temperature coefficient β. The trouble is, however, that we do not know whether the magnetic moment of the employed magnets has remained constant between November 1903 and March 1904. Looking at Table LVIII below, we see that the temperature has the whole time been falling and we have for the first observation, November the 28th 1903 and the last, February the 17th 1904, respectively — 13.3° and — 36.0°, which give a difference of 22.7°, corresponding to a difference in R': 0.50676 — 0.51526 = — 0.00850, which, if the magnetic moment has been constant, should give: $\beta = 37.10^{-5}$. On examining the data for R and t for the rest of the observations at Gjøahavn, they will lead to more or less the same result for β. Now supposing that the magnetic moment has undergone a permanent change during the interval in question, we see that this should lead to still higher values for β. In order to decide regarding the question of a constant magnetic moment, we shall have a look at the two tables LVI and LVII, The first of these tables gives data obtained with the same needle as the data given in Table LVIII, while Table LVII gives the data obtained with needle B. In Table LVI we see that the observation at Potsdam, on the 3rd of August 1907, leads to $R' = 0.43090$ at a temperature of 25° C. Now supposing that the data for R', as found at Gjøahavn and at Potsdam, indicate that the magnetic moment has gradually decreased during the years 1903—1907, this

Table LVIII

Date		Gr. M. T.	ψ	t	$\beta \cdot 10^5$	corr.	R	F	Defl.	M.	Obs.
		h. m.	° ′ ″	°		γ	C. G. S.	C. G. S.			
1903	28/11	10 4 p.	56 49 10	− 13.6	− 20	272	0.50700	0.60849	N + S	A	A
		47 »	50 45	− 13.0	»	260	»	0819	»	»	»
»	5/12	10 12 p.	57 3 45	− 21.7	»	434	»	0.60844	»	»	»
		32 »	16 30	− 21.6	»	432	»	0898	»	»	»
»	12/12	5 47 p.	57 1 30	− 16.5	»	330	»	0.60767	»	»	»
		60 »	0 45	− 16.5	»	330	»	0775	»	»	»
»	16/12	11 8 p.	56 44 15	− 22.8	»	456	»	0.61091	»	»	»
		23 »	36 45	− 22.1	»	442	»	1163	»	»	»
»	23/12	5 32 p.	56 57 45	− 25.5	»	510	»	0.60990	»	»	»
		46 »	56 15	− 25.0	»	500	»	1007	»	»	»
»	30/12	6 38 p.	56 54 45	− 28.0	»	560	»	0.61073	»	»	»
		53 »	56 15	− 27.8	»	556	»	1063	»	»	»
1904	7/1	5 50 p.	56 48 45	− 27.1	»	542	»	0.61125	»	»	»
		63 »	48 45	− 26.9	»	538	»	1121	»	»	»
»	14/1	5 46 p.	57 9 45	− 37.1	»	742	»	0.61085	»	»	»
		60 »	10 30	− 37.0	»	740	»	1352	»	»	»
»	20/1	10 39 p.	56 45 0	− 37.4	»	748	»	0.61374	»	»	»
»		54 »	48 0	− 37.1	»	742	»	1333	»	»	»
»	30/1	6 28 p.	56 72 45	− 36.0	»	720	»	0.61029	»	»	»
		43 »	58 30	− 35.8	»	716	»	1186	»	»	»
»	3/2	11 8 p.	57 18 45	− 47.0	»	940	»	0.61181	»	»	»
		24 »	15 0	− 46.8	»	936	»	1218	»	»	»
»	17/2	5 38 p.	58 22 30	− 36.0	»	720	»	0.60362	»	»	»
		52 »	15 0	− 36.0	»	720	»	0343	»	»	»

would in the first place lead to an immensely large value for the temperature coefficient and secondly it would demand a mean value for Z at Gjøahavn which would be about 1400γ lower than the one we have accepted, and this could only be established, if we accepted a correction of at least — 3.5′ for the "*total index error*" of the observations obtained with the Dover needles I and II. We have, however, seen that this index error seems to be in strong opposition to the results obtained with the Earth Inductor. As already mentioned, we have therefore accepted as a fact that something has happened to the magnets before they reached Potsdam in 1907, and we may put the effect of this abrupt fall in the moment at about *7000*γ. On looking at the four first data for R', given in Table LVI, these data will be found to demand a gradual increase in the value for the constant R. As R is proportional to the magnetic moment of the two deflectors N and S, a change in their magnetic moment could not explain an increase in the value for R, as an increase of the moment of a magnet is contrary to experience. On the other hand it may be possible that a decrease in the magnetic moment of the small needle which has been employed as deflected magnet might explain the increase in the value for R which the observations seem to indicate. As to the relation between the moment of the deflected needle and the value of R, we have not found it necessary to solve this rather complicated question and have therefore simply supposed R to have kept constant until after July 1906. As final value for R we have put: 0.50700 before the change took place, and 0.43600 after that date. As to Table LVII, containing the material for determination of constants for needle B, we may remark that the value for H at Beechey Island is only interpolated. We have as most reasonable value for R for this needle put: 0.53900. From the data for the differences $(R - R')$, under the heading $\triangle$ in Table LVI and Table LVII, we have as final values for the temperature coefficients accepted: 0.00020 for needle A and 0.00045 for needle B. Reduced with the constants we had previously decided upon we get as data for total intensity for Gjøahavn the figures given under the heading F in Table LVIII. In Table LIX we have finally collected the data for F, given in Table LVIII, in columns representing the four months, November 1903 to February 1904, wherefrom we see that the numbers of data within each month are respectively 2, 10, 8 and 4. The last horizontal line of Table LIX contains monthly means, which, however, must be given unequal weights. The total mean for F at Gjøahavn should according to these monthly means be 0.60997.

Table LIX.

No.	1903		1904	
	XI	XII	I	II
	C. G. S.	C. G. S.	C. G. S.	C. G. S.
1	0.60849	0.60844	0.61125	0.61181
2	0819	0898	1121	1218
3	—	0767	1085	0263
4	—	0775	1352	0343
5	—	1091	1374	—
6	—	1163	1333	—
7	—	0990	1029	—
8	—	1007	1186	—
9	—	1073	—	—
10	—	1063	—	—
Mean	0.60834	0.60966	0.61201	0.60751

Summary for the Absolute Magnetic Observations taken at Gjøahavn.

The absolute magnetic observations taken at Gjøahavn may with sufficient approximation be referred to the geographical co-ordinates:

$$\varphi = 68^\circ\, 37'\, 14''\ \mathrm{N} \text{ and } \lambda = 95^\circ\, 53'\, 25''\ \mathrm{W}$$

As before mentioned some of the observations for inclination were taken in the so-called *Inclination Hut*, but this will scarcely make any difference. All the absolute observations have, according to the Instructions, been taken in relation to a fixed "*base-line direction*" and the error this arrangement involved has been duly corrected. The meteorological data for the "Absolute House" show that the conditions have been very unfavourable. Thus we find temperature readings varying from + 10° C to — 40° C.

Besides all difficulties arising from handling fine instruments under such circumstances we may specially remark that the large range of temperature must strongly affect the accuracy of the absolute observations for intensity and this so much the more as it has not been possible to collect sufficient material for determination of reliable data for the temperature coefficient for several magnets. This defect does not, however, influence the accuracy of the base-line determination for the *h*-variometer, as most of the absolute measurements were taken with the two Seemann magnets, the temperature coefficient of which we have succeeded in determining with sufficient accuracy. As no observations of oscillation could be taken at Gjøahavn, the value of *H* had to be extracted by aid of observations of deflection alone, which presupposes a known magnetic moment of the magnets employed.

As to the observations of declination, the small value of the directing force brought about a comparatively strong torsional effect, the disturbing influence of which, however, seems to have been successfully corrected.

The abnormal exactitude of the data for inclination, which the relation between *I* and *Z* demands at a place so near the magnetic pole as Gjøahavn, seems to a certain degree to have been attained through the method by which the observed data have been treated. The distribution of the number of absolute measurements, arranged with respect to observer and instrument, will be seen from Table LX.

Table LX.

El.	Observer			Instrument					S_o	Diff.	S_b
	W	A	H	Z	S	D	F	E. I.			
D	132	258	8	67	331	—	—	—	398	57	341
H	338	198	12	120	528	—	—	—	548	79	469
I	57	68	0	—	—	84	22	19	125	32	93
F	0	14	0	—	—	—	14	—	14	0	14
Sum ...	527	538	20	187	859	84	36	19	1085	168	917

The headings in Table LX, also used in all the preceding tables, have the following meaning:

El . . . . Magnetic Element (*D*, *H*, *I*, *F*)
Z . . . . Theodolite Zschau
S . . . . Theodolite Seemann
D . . . . Inclinatorium Dover
F . . . . Inclinatorium Fox
E.I. . . . Earth Inductor Toepfer
(Z, S, D, F, E.I.: Instrument)
W . . . . Wiik
A. . . . . Amundsen
H . . . . Hansen
(W, A, H: Observer)

Finally, the figures of the two columns S_o and S_b refer respectively to the number of observed data and the number of observations which have actually been made use of. Under the heading Diff. the difference ($S_o - S_b$) has been entered, but regarding the figures we may remark, that they do not express the number of actually rejected observations, but merely the number of observations, which from various reasons have not been utilized for determination of the base-line values of the variometer curves. Thus measurements taken before November the 1st 1903 and after June the 1st 1905 are included in the sum 168, besides observations taken during periods where there is a gap in the register records. Included in this sum are also some of the observations taken with the Zschau for control of the constants of the various magnets. The 32 observations for inclination entered under the heading Diff. refer to the observations taken with the Fox Circle, and these observations have not been rejected because they are wrong, but because the exactness that could be attained with that instrument is too small in comparison with those taken with the Dover and the Earth Inductor. From what has been said, we see that in fact very few observations can be said to be wrong.

As to the observations for inclination, there have of course been taken too few observations. However, this is to a large degree due to an unfortunate defect in the Instructions (cf. page 9). The 80 observations taken with the Dover have, as we have seen, been reduced so that each observation, when corrected for index error, gives data for inclination. The number of data for I, suitable for determination of the base-line value of the z-curve may now be said to amount to: $80 \times 4 + 13 = 333$ instead of 93, as shown in Table LX.

Table LXI.

Instr.	Mg.	Defl.	Number	I
				° ′
D	I	—	40	89 17.9
»	II	—	40	17.6
F	A	—	13	17.5
E. I.	—	—	13	17.3
F	A	N	4	} 17.2
»	»	S	3	
Sum			113	
Mean				89°17′.5

In Table LXI we have tabulated data for I actually observed; the number of observations according to instrument and magnet, and the mean value obtained for I in each case. These data for I are not corrected for index error except where observations taken with the Fox Circle are concerned. Correction for difference between base-line direction and true meridian has of course been applied.

In the four tables LXII, LXIII, LXIV and LXV, we have tabulated mean monthly figures for D, H, I and F. The data under the heading where the index r is added to the element in question, are means extracted from the reduced hourly readings of the variometer curves, while those under the heading where the index a is added indicate mean monthly values derived from the absolute observations.

The columns headed "Diff." in these four tables give the difference $(D_r - D_a)$, $(H_r - H_a)$, etc., and thus represent a measure for the exactness of the mean values obtained in the absolute observations, in which, however, the time of the day when the measurements were taken comes into consideration. The columns headed "Number" give the number of observations in each month.

Table LXII.

Month	1903						1904						1905					
	D_r		D_a		Diff.	Numb.	D_r		D_a		Diff.	Numb.	D_r		D_a		Diff.	Numb.
	°		°		°		°		°		°		°		°		°	
1	—		—		—	—	8.7	W	8.0	W	+ 0.7	12	6.9	W	6.6	W	+ 0.3	41
2	—		—		—	—	8.9	»	9.7	»	− 0.8	14	7.3	»	5.7	»	+ 1.6	8
3	—		—		—	—	8.2	»	7.5	»	+ 0.7	14	5.3	»	2.4	»	+ 2.9	10
4	—		—		—	—	7.9	»	4.4	»	+ 3.5	8	5.8	»	6.8	»	− 1.0	4
5	—		—		—	—	7.7	»	6.7	»	+ 1.0	14	5.1	»	5.7	»	− 0.6	17
6	—		—		—	—	7.0	»	5.9	»	+ 1.1	14	—		—		—	—
7	—		—		—	—	6.6	»	3.4	»	+ 3.2	21	—		—		—	—
8	—		—		—	—	6.2	»	4.0	»	+ 2.2	26	—		—		—	—
9	—		—		—	—	6.5	»	4.1	»	+ 2.4	24	—		—		—	—
10	—		—		—	—	6.7	»	3.5	»	+ 3.2	26	—		—		—	—
11	9.7	W	7.9	W	+ 1.8	5	6.9	»	5.5	»	+ 1.4	25	—		—		—	—
12	8.1	»	7.4	»	+ 0.7	17	6.9	»	6.9	»	0.0	41	—		—		—	—
	—		—		—	—	7.4	W	5.6	W	+ 1.8	239	—		—		—	—

Table LXIII.

Month	1903				1904				1905			
	H_r	H_a	Diff.	Numb.	H_r	H_a	Diff.	Numb.	H_r	H_a	Diff.	Numb.
1	—	—	—	—	0.00737	0.00727	+ 10	12	0.00749	0.00724	+ 25	32
2	—	—	—	—	750	730	+ 20	8	743	709	+ 34	14
3	—	—	—	—	758	739	+ 19	16	751	737	+ 14	10
4	—	—	—	—	758	747	+ 11	12	745	696	+ 49	4
5	—	—	—	—	765	699	+ 66	22	763	702	+ 61	22
6	—	—	—	—	774	749	+ 25	22	—	—	—	—
7	—	—	—	—	781	767	+ 14	30	—	—	—	—
8	—	—	—	—	769	743	+ 26	51	—	—	—	—
9	—	—	—	—	764	759	+ 5	54	—	—	—	—
10	—	—	—	—	764	755	+ 9	44	—	—	—	—
11	0.00744	0.00735	+9	8	755	751	+ 4	42	—	—	—	—
12	732	723	+9	16	755	745	+ 10	50	—	—	—	—
	—	—	—	—	0.00761	0.00743	+ 18	363	—	—	—	—

Table LXIV.

Month	1903				1904				1905			
	I_r	I_a	Diff.	Numb.	I_r	I_a	Diff.	Numb.	I_r	I_a	Diff.	Numb.
	° ′	° ′	′		° ′	° ′	′		° ′	° ′	′	
1	89 —	89 —	—	—	89 18.1	89 19.7	− 1.6	10	89 17.4	89 18.0	− 0.6	2
2	—	—	—	—	17.3	17.3	0.0	8	17.8	20.8	− 3.0	2
3	—	—	—	—	16.9	17.1	− 0.2	12	17.3	20.6	− 3.3	2
4	—	—	—	—	—	—	—	0	17.7	16.4	+ 1.3	2
5	—	—	—	—	—	—	—	0	16.6	17.6	− 1.0	4
6	—	—	—	—	16.0	17.0	− 1.0	4	—	—	—	—
7	—	—	—	—	15.0	17.6	− 2.6	8	—	—	—	—
8	—	—	—	—	—	—	—	0	—	—	—	—
9	—	—	—	—	—	—	—	0	—	—	—	—
10	—	—	—	—	16.6	16.5	+ 0.1	2	—	—	—	—
11	17.8	18.5	− 0.7	2	17.1	19.0	− 1.9	6	—	—	—	—
12	18.4	18.6	− 0.2	12	17.1	17.0	+ 0.1	4	—	—	—	—
	89 —	89 —	—	14	89°16′.8	89°17′.6	− 0′.8	54	89 —	89 —	—	12

Table LXV.

Month	F_r	F_a	Diff.	Numb.
	C. G. S.	C. G. S.	γ	
1903 Nov.	0.60658	0.60834	— 176	2
» Dec.	.60517	.60966	— 449	10
1904 Jan.	.60446	.61201	— 755	8
» Feb.	.60431	.60751	— 320	4
Mean	0.60488	0.60997	— 425	—
Sum				24

Table LXVI.

Index	D	H	I
	°	C. G. S.	° ′
r	7.4 W	0.00761	89 16.8
a	5.6 W	743	17.5
Diff.....	1°.8 W	+18γ	− 0′.7
Numb.	239	363	113

The mean difference between the r-data and a-data for each of the three elements D, H and I, for the year 1904, has been given in Table LXVI. Finally, in Table LXVII, are given the extreme values actually observed with the absolute instrument during the stay at Gjøahavn.

Table LXVII.

El.	Max.	Date	Min.	Date	Range
D	18° 15′ W	1905 Jan. 6	7° 43′ E	1904 Aug. 4	25° 58′
H	0.01072	1904 July 14	0.00600	1904 May 13	472 γ
I	89° 23′.9	1904 July 7	88° 59′.4	1904 July 1	24′.5

Introduction to the Variation Material for Gjøahavn.

General Remarks. — As we remember, the first observation at Gjøahavn was taken on the 21st of September 1903. This observation consisted of a long series of measurements for declination by aid of which the base-line direction was determined and marked out on the hill where the tripod stood. At this same place there was dug out a hole in which the marble slab forming the foundation for the variation instruments was carefully levelled down. The walls of the variation house were then erected by using packing cases filled with sand. 40 packing cases were used for this building, and on the 26th the house was roofed and the instruments could be mounted. In the last days of October some records were taken, which proved to be satisfactory, and on the 1st of November the continuous series of variation curves was begun. The location of the three variation instruments in relation to the registrator and in relation to the direction north—south will be seen from the plan of site given in Fig. 12 below. For further information regarding the variation house we refer to Part I p. 9 and Part III p. 5 where there also is given a map from which the relation between the different buildings at the station will be seen.

The variation instruments used on the Expedition were, as mentioned, of the well-known Eschenhagen pattern, manufactured by Otto Toepfer at Potsdam. Besides the Photographic Recorder there were:

Declination Variometer	*d*-variometer
Horizontal Intensity Variometer . .	*h*-variometer
Vertical Intensity Variometer	*z*-variometer

The recorder and the variometer instruments were provided with tripods, which were placed in a fixed relation to each other by means of a brass frame, specially constructted for that purpose. To the set of instruments belonged also the above-mentioned marble slab, 2,5 m. long and 0,75 m. broad. This slab formed the foundation for the brass frame and it was dug into the ground and carefully levelled, whereupon the instruments were put into place.

The variation instruments had been specially selected by professor *Schmidt* for Amundsen's Expedition and some slight alterations, or rather improvements, demanded by the special conditions under which the instruments were supposed to work, had been made. Thus the declinometer, contrary to what is the custom, had the shortest focal distance and both the torsion instruments were provided with much more sensitive torsion heads than is usually the case. This last alteration was obtained by providing the general arrangement with a tangent screw so made that a certain twist of the torsion head could be read with an accuracy of 3 minutes.

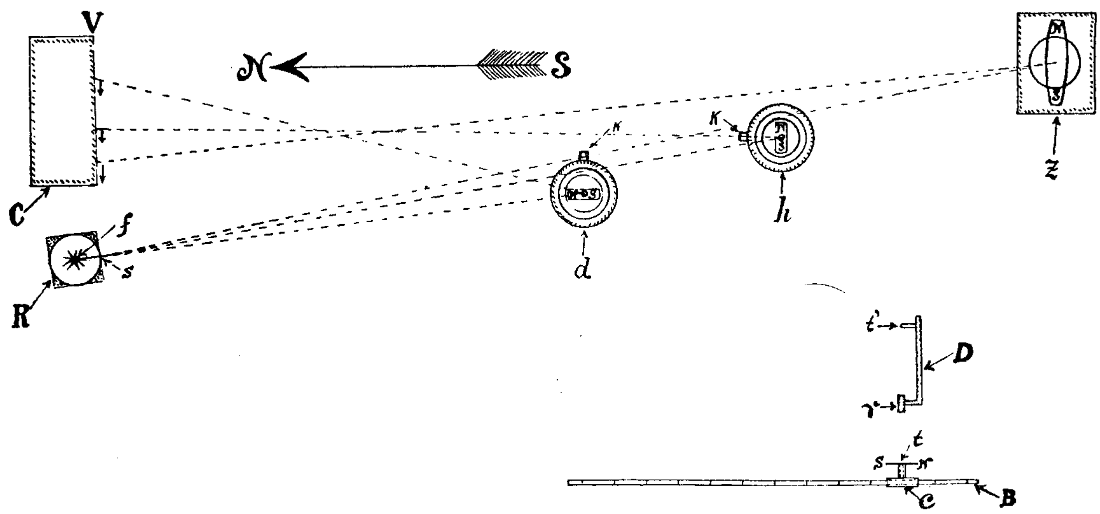


Fig. 12. The arrangement of the variometers used during the Gjøa Expedition.

Fig 12 shows how the three variometers and the recorder were placed in relation to each other and in relation to the magnetic meridian, this direction being indicated by the large arrow N—S. The drum of the recorder is indicated by C, the lamp house by R and the three variometers by d, h and z. The varation magnets are marked with N—S, by which we can see how they were pointing. The dotted lines between the lamp house, the instruments and the drum of the recorder illustrate the passage of the light between those points. The small arrows on the light-rays close by the drum indicate that the variation, in the direction of the arrows, gave for the intensity variometers increasing values and for the declinometer increasing westerly declination.

In order to show which system of deflection was used, the two sub-figures B and D are given. B shows the deflection bar with the magnet-carriage c and the small deflector N—S. D shows the necessary additional bar used for deflection on the z-instrument. For further details we refer to Part III.

Before proceeding to discuss the reduction constants of the variometer curves we shall, in order to avoid repetition for each element, explain some details which have a general bearing.

It may already have been noticed that we have consistently used the capital letters D, H, Z, to indicate absolute values of the magnetic elements and have, when the ordinates of the curves have occasionally been mentioned, referred to these data as respectively d, h, z. For the scale values of the curves we have chosen the greek letter ε, to which the index marks, d, h, z are added when γ per millimeter is meant. As, however, in declination the scale value is usually expressed in degrees per millimeter, the sign ω will mostly be found where the d-curve is concerned. The base-line value has always been indicated by the letter B, to which the mentioned index marks d, h, z, are added. It will from the tables containing data for determination of base-line values be seen that beside the often changing value B there is also added a second value B', indicating a base-line value where the effect of all abrupt changes in the relation between base-line and curve has been eliminated by suitable corrections to the ordinates. The general formula used for determination of the base-line value may thus be put:

$$B' = O - \varepsilon o',$$

where O stands for the observed elements D, H, Z, and o' for the ordinates d, h, z, and finally ε for the scale values ε_d (ω), ε_h, ε_z, As by B' we mean a constant, or an only gradually changing value, we have: $o' = (o + \triangle)$, where $\triangle_d$, $\triangle_h$, $\triangle_z$, mean the before mentioned corrections of the ordinates.

The Timing of the Photograms. — Experience shows that exact timing of a photogram is not always so easy as one might think, even if every precaution has been taken to overcome the well known irregularities in the interdistance of the hour marks, which are principally due to:

a. Imperfectness of the mechanism of the registrator.
b. Impossibility of applying the photographic paper to the cylinder of the registrator so that it does not leave room for irregularities.
c. The process connected with the development of the photogram, by which it is apt to contract and stretch unequally.

As to the imperfectness of the mechanism of the registrator, this causes variation in the hour length, even if the register watch is so regulated that, when controlled, it coincides with true time every 24 hours. As we do not possess material to control this variation, we shall have to base the timing on the automatic hour marks in combination with the manual hour mark, put on some minutes after the cylinder was put in motion. The manual hour mark is of course referred to true time, and noted on the back of each photogram. In connection with the irregularities due to the development process we have also the effect due to variation in the humidity. To control these irregularities, the usual precaution was taken by providing the photograms with marks (punctures) before it was applied to the register cylinder.

Examination of the photograms of the Expedition shows that the combined effect of the above-mentioned causes of irregularities in the distance between the hour marks may exceed *one millimetre* and to this comes the fact that simultaneously applied hour marks appear to have a different place on the three base-lines. As to special investigations we may mention that the average coefficient for the effect of humidity may be put at: $\triangle = 0.000077$. This coefficient is, however, a function of the humidity and the relation between this quantity, expressed in per cent will be seen from the figures in Table LXVIII.

Table LXVIII.

Pct.	$\triangle$
10—30	0.000054
30—60	060
60—80	073
80—90	166

Before entering into the results of the other examinations we may shortly explain the mathematical expressions we have used in connection with the timing of the photograms.

L indicates the length of register line, lying between a certain number of whole ($n = 23$) register hours. L is on each photogram measured in millimetres.

X' indicates the length of the register line, lying between the starting point of the curve (τ_b) and the end of same (τ_s). X' is on each photogram measured in millimetres.

T indicates the time required to register the length X'. We have the expression: $T = \tau_s - \tau_b$. The quantity T expressed in minutes is converted to millimetres by division by 3 (varying between 3.03 and 2.99).

L/n means the average register length per hour, expressed in millimetres.

X'/T means the average hour length, expressed in millimetres.

b indicates the correction for the watch. We have: $X'/T - L/n = b$.

g indicates the reduction factor for time: $g = 60\, T/X'$.

l_s indicates the length of the register hour in which paper has been changed. We have $l_s = l_s' + \delta$, where:

$$l_s' = \frac{l_{23} + l_1}{2} \text{ and } \delta = \frac{d}{l_{23}} (l_{23} - l_s') + \frac{e}{l_1} (l_1 - l_s')$$

τ_s indicates the point of time when the curve ends, according to calculation by aid of the known point of time τ_b, when the new curve commences. We have: $\tau_s = \tau_b + \triangle$, where $\triangle = gf = g\ [l_s - (d + e)]$.

f indicates the part of the curve which has not been registered during the time required for change of paper.

e indicates the part of l_s, lying at the end of the curve.

d indicates the part of l_s, lying at the beginning of the curve of the following paper.

n means number of minutes between τ_b and the first hour mark τ_1.

The method used for the final timing of the records may shortly be described as follows: The photograms were to start with provided with the date of the day on which they were put on the register cylinder, (referred to Gr. M. T.). Then the records were sorted according to the quality they showed as regards the marks necessary for precise timing. The four quantities X', L, d, e, were measured on the base-line of the d-curve. Calling the time noted for the manual mark t_e, we have $\tau_e = t_e + \lambda$ and $T = \tau_s - \tau_b$. Here is $\tau_e = \tau_b$, and λ means correction to Gr. M. T. As mentioned, τ_b is known, while τ_s is usually unknown, and must be calculated by aidfo τ_b on the next record. Change of paper usually takes between 10 and 15 minutes. For this last hour we have: $l_s = d + e + f$. For the reduction factor g tables were of course drawn up, and this was also the case for the hour length. To avoid too many measurements it was resolved not to mark individually all the curves. Therefore when the point τ_b, for the base-line of the d-curve, had been fixed, there was drawn a line across the record, so placed that differences between this line and the starting marks, of all the curves and base-lines were equally considered. The distance from this starting line to the first hour line was now determined. We have: $m = \tau_1 - \tau_b$, which quantity divided by g gives the distance we want. Now follows the marking of the rest of the hour points, and the drawing of the lines. Theoretically may for the hour length l_h be put:

$$l_h = L/n + (\varkappa_1 + \varkappa_2) + b,$$

where L/n means the average hour length, b the watch correction and $(\varkappa_1 + \varkappa_2)$ the correction which requires l_h as we proceed along the photogram. The meaning of $(\varkappa_1 + \varkappa_2)$ is plainly to be seen from Fig. 13. Usually the relation between the automatic hour marks and the marks indicating the true hour point is such that the portion between two hour marks consists of two pieces, designated on the figure by a and a'. We may put:

$$(\varkappa_1 + \varkappa_2) = a/l_r\,(l_r - L/n) + a'/l'_r\,(l'_r - L/n),$$

where a' is unknown, but with sufficient exactness may be put at: $a' = X'/T - a$.

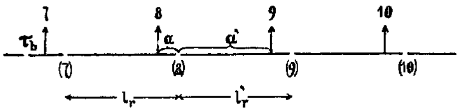


Fig. 13. Example of application of hour marks to the photograms.

In all cases where the automatic hour marks have worked well, we have used the above method for marking of the hour lines, but in many cases things occur which cause some marks to be absent and here it will be of importance to have a means of getting a trustworthy interpolation. Investigation of the records shows that we can draw a standard curve, exhibiting the system of the variation of the hour length. Such standard curve has been given in Fig. 14.

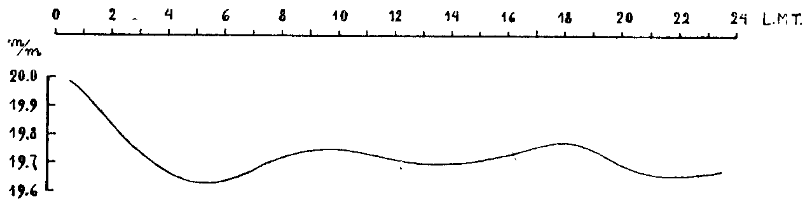


Fig. 14. Curve showing the average effect of the way in which the paper is applied to the cylinder of the registrator.

From the curve we see that the largest hour length occurs at the beginning, where the length is about 20 mm. The reason is that here the paper lies double, and that the end of the paper projects past the clasp and forms a ridge. The end of the paper shall, however, lie so tight that the hour length shall here have its minimum. In the middle the paper is apt to bulge, with the consequence that a secondary maximum is formed. This maximum in the middle of the record is usually seen to be divided into two ridges with a secondary minimum between, and investigation shows that the site of this secondary minimum is continually moving backwards and forwards between an extreme point to the right and one to the left. We have here to do with a wandering minimum caused by an irregularity of one of the teeth of the wheels of the machinery. As the movement of the wandering secondary minimum is related to time according to a certain system, we can usually place it, when the curve in Fig. 14 is required for interpolation.

As in this place we cannot go further into details, we hope that what has been said above will suffice to give an idea of the accuracy with which the timing of the photograms has been performed.

Remarks on the Reading of Hourly Ordinates. — To start with the measurements were made by aid of an ordinary millimetre rule, where the hourly ordinates represented the distance between the base-line and the curve in question, measured along a vertical line drawn on the photograms to indicate the points for every hour, referred to L. M. T. After having consulted Professor *Schmidt*, it was, however, resolved to refer the hourly readings to Gr. M. T., and furthermore Schmidt advised that the readings should be taken according to a method which had recently been adopted at *Potsdam Observatory.* The main point in this method consisted in letting the ordinate represent an integration of the curve between every two hour marks.

During the year 1904 they had at Potsdam experimented with this new method, had closely studied the results of this mode of measuring in comparison with the old method and having constructed a very convenient glass scale, by aid of which measurements according to the new method could be effected just as quickly as by the old procedure, the method of integration was adopted at Potsdam and later on by several other observatories. For further information concerning the method itself, the result of the measurements and the glass scale, we refer to Dr. Schmidt.[1]

On account of change of paper there will always be a part of the curve missing, and this gap is, when the measurements are taken as described above, of much more consequence than it would otherwise have been, especially if during the change of paper the magnetic elements have been disturbed. The interpolation had therefore to be done very carefully. The following method has been employed: A piece of transparent millimetre paper was by aid of Canadian balsam fixed to a thin glass plate. At a convenient distance from the lower border of the plate the base-line was marked by a horizontal line, drawn with Indian ink and this line was at an interdistance of 20 millimetres provided with two hour marks. The plate was laid, first on the end of the one photogram and then on the beginning of the next — in both cases so that the base-line of the plate covered that of the photogram, with the left and the right hour mark respectively covering the two hour marks in question. Having in both cases drawn the visible parts of the curve on the glass plate by aid of ink and filled in the missing part of the curve, the reading could be made directly. The interpolated hour value has in this case, as well as elsewhere when interpolation was necessary, been put in italics. We must, however, remark that this same mode of designating every interpolated value is not very justifiable, as in most cases the interpolated value is nearly as reliable as any other hour value. The main point in any kind of interpolation is the state of the magnetic conditions: Have the elements been quiet or not? In this connection we may point out the fact that some of the readings, where no part of the curve is missing, may also be dubious. This is due to the construction of the Eschenhagen instruments, where the three elements are registered on one and the same paper, with the consequence that during a magnetic storm it is often impossible to discern the different curves. Hence the italics ought only to be used, when there is reason to believe that the value is doubtful, no matter whether the value is an interpolated one or not.

After Control of the Reduced Readings. — After having reduced the readings, the absolute values have been controlled by comparison with the photograms. This control was effected by aid of an apparatus consisting of a wooden board above which some parallel threads had been stretched with an interdistance of, for example, 50γ (5 degrees). The threads were so fixed that their interdistance could easily be changed if required. As

[1] Ergebnisse der Magnetischen Beobachtungen im Jahre 1905, by Ad. Schmidt. (Page 31.)

the control was intended to reveal eventual large errors, the origin of which may have been wrong reading or wrong reduction, it was not necessary to employ great exactness. One of the threads in the middle, distinguished from the rest by a different colour, represented in the control respectively for the three elements:

D_o . . . . . 10° W
H_o . . . . .0.00760 C.G.S.
Z_o . . . . .0.60460 C.G.S.

By placing the records on the board under the thread the distance between the marked thread and the base-line of the curve depended on the temperature of the variometer house during the day in question, so that the temperature correction could be eliminated.

As we cannot go into details concerning this important after-control, we hope that what is said above may give an idea of the procedure.

Remarks on the Back of the Records: Besides what has been stated by Wiik concerning the variation house, the instruments and the records in the before-mentioned Journal, there were frequently put remarks on the back of the records. Most of these remarks have not any special interest and are therefore omitted, but some of them shall, together with occasional remarks made by those who have worked with the records, be copied below. Each of the remarks is signed by the person who inserted them, whereby:

Wk. . . . . . means *Wiik*
R. . . . . . » *Russeltvedt*
K. . . . . . » *Krafft*
Ws. . . . . . » *Wasserfall.*

We have the following *List of Remarks*:

1903	Nov.	11.	Z and H difficult to keep apart from each other	(K).
»	»	15.	Absolute observations taken during the time when quick-run was used on the variometers	(Wk).
»	Dec.	4.	Lamp found smoking, slit blocked up with soot	(Wk).
»	»	21.	The curves displaced during deflection experiment	(Ws).
»	»	24.	Lamp repaired	(Wk).
1904	Jan.	15.	There has lately been a lot of trouble with the lamp	(Wk).
»	»	20.	The screw of the torsion head does not work, the two first points are not reliable	(Wk).
»	Feb.	11.	Wiik's marks on H and Z must be wrong	(K).
»	»	15.	The slit of the lamp blocked with ice	(Wk).
»	Mar.	11.	Lamp found smoking	(Wk).
»	Apr.	8.	The hour division unreliable	(K).
»	»	11.	Lamp has during several days worked badly	(Wk).
»	»	12.	The hour division unreliable	(R).
»	»	24.	Lamp found smoking	(Wk).
»	»	28.	Lamp has been turned	(Wk).
»	May	19.	According to Wiik there has between 6 and 8 o'clock been used an iron spade to remove the snow just outside the house . . .	(Ws).
»	»	20.	Ice begins to gather on the lenses	(Wk).
»	Jun.	29.	Hour division unreliable	(R).
»	»	»	The door of the house was left open at 5^h 40^m p.m. to get the instruments aired	(Wk).
»	Jul.	28.	The division of the quick-run records unreliable	(R).

1904 Aug.	8.	Photogram divided with the division machine	(R).
» »	13.	The z-curve cannot be reduced from this date to the 20th of September	(Ws).
» »	14.	Photogram divided with division machine during the days, August 14th and 21st	(R)
» Sep.	10.	Lloyd's Balance was brought to work again on the 8th, but proved to be too sensitive, the sensibility has been diminished to-day at $7^h\ 15^m$ p.m.	(Wk).
» »	18.	Lloyd's Balance been out of order again since 15th	(Wk).
» »	29.	Hour division unreliable	(R).
» Oct.	7.	Photogram divided by the division machine	(R).
» »	17.	Photogram divided by the division machine	(R).
» »	28.	The readings for H partly unreliable	(K).
1905 Jan.	1.	The slit of the lamp blocked with ice	(Wk).
» Feb.	11.	Unreliable division	(R).
» »	22.	Unreliable division	(R).
» May	31.	The door of the house broken up with an iron bar	(Wk).

Interpolation. — In the tables containing hourly means of the three elements D, H, Z, there were some few gaps. These gaps have been filled in by interpolation. As foundation for the interpolation we have used the mean designated below as "*Mean* (*3*)", the meaning of which is explained below. According to the method employed, we have at first taken out the difference between respectively the *last* and the *first* recorded hourly value (at each side of the gap) and the corresponding values of *Mean* (*3*), (the figures printed in heavy type in the table given below).

If these two differences are equal, the corrections of the figures in *Mean* (*3*), between the mentioned *last* and *first* date, are all of them equal to this figure. If, however, the difference between the *last* recorded hourly value and the corresponding value of *Mean* (*3*) is unequal to the *first*, the interpolated differences are linearly increased (decreased) between *last* and *first* figure. Further information may be gathered from the following example, taken from the interpolation made between 10 a.m. and 4 p.m. of the d-curve for December the 4th 1903. We have:

Hour	11a	noon	1p	2p	3p	4p	5p
	°	°	°	°	°	°	°
Mean (3)	**6.3**	6.0	6.0	6.0	5.9	6.0	**6.2**
Dec 4th	**6.0**	5.1	4.4	3.8	3.0	2.5	**1.8**
Diff.	— **0.3**	— *0.9*	— *1.6*	— *2.2*	— *2.9*	— 3.5	— **4.4**

The three Mean Values given below in the tables for hourly means are designated (1), (2), (3), and have the following meaning:

Mean (*1*), represents the final monthly value, when every figure in the column in question has been taken into account in the calculation.

Mean (*2*), represents the monthly value, when interpolated as well as abnormally high and low data are excluded in the calculation.

Mean (*3*), represents the value under *Mean* (*2*), when these data are smoothed by aid of the formula:

$$x = \frac{a + 2b + c}{4}$$

Character Designations. — In the tables for hourly means there is a column containing some figures by which the general character of the day is meant to be indicated (the last column to the right). In the estimation of the character we have used a very simple method, based on the relation between the figures for the aperiodic amplitude for each day, the range, and the mean value for each month. Whenever the difference between the figure for diurnal range and that representing the monthly mean of this column is below ½ of said mean we have designated the character of the day by 0. If the difference exceeds ²/₃, the character is designated by 2, while all differences between the limits ½ and ²/₃ mean a character equal to 1.

This method of estimation give a fairly good idea of the magnetic conditions prevailing during the year at a place near the magnetic pole.

The Temperature of the Variation House.

The temperature of the variation house was read by a thermometer placed on the magnet house of the z-variometer so that the bulb was inside the house, in which also the photographically self-recording thermometer was put. Probably there was also placed a thermometer in the magnet house of the h-instrument, but it does not seem to have been read. The readings of the z-thermometer represent the absolute values T, to be used for calculation of reduction constants for the t-curve, and with sufficient approximation the thus reduced values for temperature may be accepted for calculation of temperature corrections for both intensity curves. The ordinates of the t-curve were read on the photogram with reference to the base-line of the z-curve, and rising curve corresponds to rising temperature, whereby, however, the ordinates themselves are negative.

It is a commonly accepted rule that the temperature variations of the variation house should be kept as small as possible. Under such conditions as prevailed at Gjøahavn this rule could not be kept and the only thing that could be done was to regulate the variation so that the change took place as gradually as possible. Thus we see that the readings change during the year from about + 5° to — 25° C. (T. LXIX) It must in this connection be remembered that the temperature in the open air fell to about — 50° C. A range of about 30° C would, with the sensibility which the register had (1° C equal to 5.6 mm.), correspond to 16.8 cm. and the t-curve would thus extend over nearly the whole photogram, which was 20 cm. broad, if it were left unaltered during the year. Now the t-curve ought not to be allowed to extend farther down on the paper than to the place reserved for the z-curve, and consequently the angle og the mirror belonging to this curve had to be altered several times. (Cf. T.X. in Part III. p. 15).

The absolute material intended for determination of reduction constants of the t-curve consists in series of readings, taken at certain intervals. These readings, according to Wiik, always refer to the moment of time when the light was shut off during change of paper, which, as mentioned before, means 12 o'clock L.M.T., or expressed in Gr. M. T. at $6^h\ 23^m$ p.m.

The formula by which the temperature is found is:

$$T = B'_\tau + \varepsilon_\tau t'$$

whereby:

$$t' = (t + \triangle_\tau)$$

Plotting the calculated figures B'_τ we see (Fig. 15), that the reduced base-line value has not remained constant, but has increased proportionally to time and reaches on the first of June 1905 a value of 0°.9, the value for November the 1st 1903 being 0°. This means on the photogram a gradual change of about 5 mm.

The sensibility was, as stated above, calculated to be 5.6 mm. for one degree. There were not, during the stay at Gjøahavn, made any direct experiments intended to furnish material for calculation of the sensibility of the curve. The temperature proves, however, several times to have changed about 3° C during a time interval of about 14 days, for which time there are absolute values for the temperature, and together

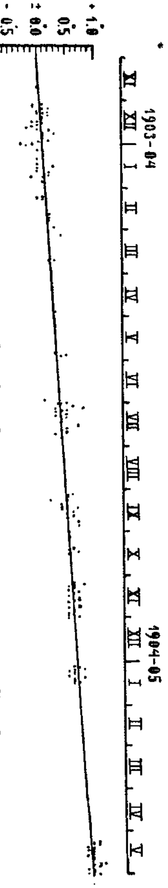


Fig. 15. Base-line value for the temperature curve at Gjøahavn.

Table LXIX. **Daily Mean Values for the Temperature of the Variation House.**

	1903		1904												1905				
Day	XI	XII	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	I	II	III	IV	V
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1	− 8.0	− 10.5	− 18.7	− 21.8	− 23.3	− 23.0	− 13.9	− 7.7	1.4	4.2	1.6	− 4.7	− 11.5	− 14.6	− 22.4	− 23.6	− 23.7	− 20.0	− 13.3
2	− 8.1	− 10.4	− 19.2	− 22.2	− 25.3	− 22.5	− 14.0	− 7.1	1.8	4.1	1.2	− 5.0	− 10.5	− 14.3	− 22.5	− 23.0	− 24.3	− 18.7	− 13.4
3	− 7.3	− 11.9	− 19.3	− 22.3	− 25.1	− 21.4	− 14.5	− 6.4	2.6	3.9	0.9	− 5.9	− 11.0	− 14.4	− 22.6	− 22.9	− 24.6	− 17.5	− 11.9
4	− 7.5	− 12.7	− 18.8	− 21.8	− 25.1	− 21.0	− 14.6	− 6.7	2.1	3.8	0.7	− 6.8	− 10.5	− 15.1	− 21.7	− 23.1	− 24.8	− 17.3	− 12.1
5	− 8.2	− 12.9	− 19.1	− 20.8	− 24.7	− 21.2	− 14.2	− 6.5	1.6	3.4	0.3	− 7.2	− 10.5	− 15.6	− 20.9	− 23.5	− 24.9	− 17.2	− 12.5
6	− 7.5	− 13.4	− 19.5	− 20.8	− 23.9	− 21.0	− 14.0	− 6.6	1.4	2.5	0.3	− 6.8	− 9.7	− 16.3	− 20.9	− 24.0	− 25.0	− 17.4	− 12.6
7	− 7.1	− 13.9	− 19.2	− 21.5	− 24.0	− 20.5	− 14.1	− 6.5	1.5	2.4	0.3	− 6.6	− 9.5	− 17.2	− 21.5	− 24.4	− 25.0	− 17.0	− 11.3
8	− 7.5	− 14.0	− 18.7	− 21.6	− 24.1	− 20.0	− 14.4	− 6.2	1.7	2.3	− 0.4	− 6.9	− 10.5	− 17.2	− 21.9	− 24.7	− 25.1	− 16.1	− 11.0
9	− 8.5	− 14.2	− 19.1	− 21.4	− 24.3	− 19.9	− 14.3	− 6.8	2.3	2.1	− 0.9	− 7.8	− 11.4	− 16.8	− 22.1	− 24.9	− 25.3	− 17.1	− 11.1
10	− 9.1	− 14.2	− 19.3	− 21.3	− 24.0	− 19.9	− 13.8	− 6.7	1.2	2.2	− 0.4	− 8.6	− 11.2	− 16.9	− 21.9	− 25.5	− 24.5	− 17.5	− 11.5
11	− 9.2	− 14.2	− 19.1	− 21.6	− 22.6	− 20.1	− 12.8	− 6.4	1.3	2.1	− 0.6	− 8.5	− 11.1	− 17.0	− 22.2	− 25.7	− 23.9	− 17.4	− 11.0
12	− 9.9	− 14.0	− 18.5	− 21.8	− 22.0	− 19.7	− 12.8	− 6.3	0.8	1.6	− 0.7	− 7.9	− 11.1	− 17.4	− 22.4	− 26.0	− 23.5	− 16.9	− 11.3
13	− 10.1	− 14.0	− 18.6	− 22.2	− 21.8	− 19.0	− 12.7	− 6.1	1.6	1.7	− 0.6	− 8.9	− 11.8	− 18.0	− 22.1	− 25.8	− 23.6	− 15.7	− 12.0
14	− 10.0	− 14.8	− 19.2	− 22.3	− 21.9	− 18.5	− 12.7	− 5.2	1.7	1.7	− 0.6	− 8.7	− 13.3	− 18.3	− 20.9	− 25.2	− 24.0	− 14.6	− 11.5
15	− 10.0	− 15.1	− 19.9	− 21.6	− 21.5	− 18.2	− 12.5	− 3.8	1.6	1.6	− 0.9	− 8.9	− 14.0	− 18.1	− 21.0	− 23.9	− 24.2	− 14.8	− 10.0
16	− 10.2	− 15.3	− 20.5	− 22.0	− 21.8	− 17.8	− 12.0	− 3.9	2.1	1.5	− 1.1	− 7.7	− 14.2	− 18.2	− 22.2	− 24.3	− 24.2	− 14.9	− 9.9
17	− 9.7	− 15.5	− 20.2	− 22.4	− 22.4	− 18.1	− 11.6	− 3.7	2.9	1.4	− 1.2	− 7.5	− 13.3	− 18.4	− 23.2	− 24.6	− 24.7	− 15.0	− 9.0
18	− 9.9	− 16.1	− 19.4	− 22.6	− 22.5	− 18.3	− 11.6	− 3.8	2.8	1.4	− 1.5	− 7.1	− 13.0	− 19.0	− 22.5	− 25.1	− 25.0	− 15.4	− 9.5
19	− 10.1	− 15.9	− 20.0	− 23.1	− 22.3	− 17.7	− 11.7	− 3.8	2.4	1.4	− 1.8	− 7.2	− 12.1	− 19.5	− 22.7	− 25.6	− 24.4	− 15.2	− 9.2
20	− 10.6	− 15.8	− 20.8	− 23.1	− 22.3	− 17.5	− 11.3	− 3.8	2.3	1.5	− 2.5	− 7.1	− 13.3	− 19.7	− 23.3	− 25.1	− 24.2	− 15.2	− 8.7
21	− 10.6	− 15.1	− 20.4	− 22.5	− 22.7	− 17.4	− 11.0	− 3.2	2.9	1.6	− 3.2	− 7.6	− 12.8	− 20.3	− 23.4	− 25.3	− 24.1	− 14.9	− 7.9
22	− 11.3	− 15.9	− 20.9	− 21.8	− 23.0	− 17.2	− 10.8	− 3.2	2.5	1.6	− 3.1	− 8.3	− 11.9	− 20.9	− 23.2	− 25.7	− 23.3	− 14.8	− 7.7
23	− 11.1	− 16.3	− 20.9	− 22.6	− 23.2	− 17.3	− 11.2	− 2.8	2.4	1.7	− 3.5	− 9.1	− 11.8	− 21.1	− 23.3	− 25.7	− 22.4	− 14.4	− 7.8
24	− 11.4	− 16.7	− 20.8	− 23.1	− 23.4	− 16.2	− 11.1	− 2.4	2.6	1.7	− 2.9	− 9.3	− 12.8	− 21.0	− 22.5	− 24.9	− 22.4	− 14.8	− 7.5
25	− 11.9	− 17.3	− 20.8	− 23.7	− 23.9	− 15.9	− 10.7	− 1.8	3.0	1.4	− 3.1	− 9.8	− 13.9	− 20.8	− 23.2	− 24.9	− 21.8	− 14.9	− 8.1
26	− 11.5	− 17.5	− 20.8	− 23.5	− 23.8	− 15.2	− 10.5	− 0.6	2.9	1.4	− 3.1	− 10.6	− 14.8	− 20.9	− 23.8	− 25.3	− 21.0	− 14.9	− 7.5
27	− 10.7	− 17.2	− 20.9	− 24.1	− 23.1	− 14.7	− 10.2	− 0.3	2.7	1.4	− 2.6	− 11.1	− 14.9	− 21.5	− 23.3	− 25.6	− 21.4	− 14.7	− 6.9
28	− 10.4	− 17.4	− 20.5	− 24.4	− 22.8	− 14.2	− 9.8	− 0.1	3.0	1.5	− 2.9	− 11.9	− 14.6	− 21.5	− 23.5	− 24.3	− 21.0	− 14.6	− 6.4
29	− 10.8	− 17.7	− 20.5	− 24.2	− 22.9	− 14.1	− 9.5	− 0.1	3.6	1.7	− 3.0	− 12.4	− 14.5	− 21.8	− 23.1	—	− 21.1	− 14.0	− 6.0
30	− 10.7	− 17.9	− 21.5	—	− 23.0	− 14.4	− 9.2	0.7	3.9	1.8	− 4.4	− 11.5	− 14.1	− 22.0	− 23.3	—	− 21.0	− 13.5	− 5.9
31	—	− 18.5	− 21.3	—	− 22.8	—	− 8.6	—	4.1	1.7	—	− 11.5	—	− 22.4	− 23.6	—	− 20.7	—	− 5.8
Mean	− 9.6	− 15.0	− 20.1	− 22.3	− 23.2	− 18.4	− 12.1	− 4.3	2.3	2.1	− 1.4	− 8.4	− 12.3	− 18.6	− 22.5	− 24.7	− 23.5	− 15.9	− 6.7

with corresponding ordinates these data give sufficient material for determination of the scale value ε_T. As an example we may point out the series between 7th and 22nd of December 1903, which data we have plotted graphically in Fig. 16.

Table LXX.

Year	Date	ε_T
1903	Nov. 28	*0.156*
»	Dec. 15	.183
»	» 27	*.224*
1904	Jan. 13	.179
»	Feb. 23	.178
»	June 5	.179
»	July 12	.206
»	Sep. 7	*.226*
»	» 18	.172
»	Nov. 3	.182
»	» 25	.184
1905	Jan. 10	.191
»	May 15	.177
»	» 28	.182
Mean	....	0.183

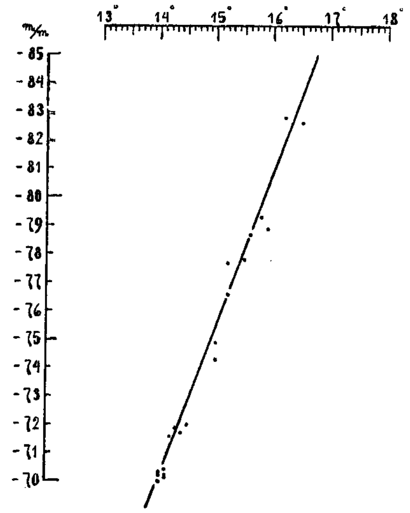


Fig. 16. Graphical determination of the scale value of the temperature curve at Gjøahavn.

The mean relation between T and t will be seen to give: $\varepsilon_T = 0.183$. In a similar way all the suitable series have been treated and Table LXX gives the various results obtained for ε_T in each single case. The data for ε_T correspond to the day which lies in the middle of each series, and these dates are to be found in the table. We have purposely treated each series separately, to be able to control a possible change in ε_T, but examination of the data given in Table LXX does not seem to indicate any such alteration and we can accept the coefficient as a constant, and as mean value take what was already found in Fig. 16. Reduction of hourly means for temperature was made at a very early date, when the material was not so well known as it is now. There seem to be some slight inaccuracies in the original tables, this being especially the case when interpolations were inserted, but we have not found it necessary to make any new reduction.

The Temperature Coefficient of the h- and z- Variometer at Gjøahavn.

Determination of the Temperature Coefficient of the h-variometer. Studies based on the King Point Material. — It has already (pp. 66—67) been said that we failed in our attempt to find material for determination of τ_h, when the first investigation was made in order to obtain preliminary reduction constants for the variation curves for H for the interval November 1903—April 1904. In the calculation of these approximate reduction constants, which was based on absolute observations with the Zschau magnet No. 4 (cf. page 64), we were therefore forced to put the temperature coefficient of the h-curve equal to 0. The reason why the coefficient could not be determined was that the main part of the absolute observations at Gjøahavn were taken with the two Seemann magnets, for which we did not possess reliable constants, We have also heard that the constants of these magnets could not be obtained by aid of the Gjøahavn material, but the material collected at King Point proved to be so composed that we succeeded in extracting the required constants for the absolute magnets in combination with the temperature coefficient of the variation magnet of the h-variometer.

According to Dr. Edler, (pp. 13 and 17), we had for the two Seemann magnets I and II the following approximate values for b_a and b_s:

Defl.	b_a	b_s
I	0.000041	0.000013
II	.000020	.000001

These data for b_a and b_s are apparently too small. According to Mascart (Lamont) (cf. page 66) the lowest acceptable value is put at: $a = 0.00023$, which, expressed logarithmically, corresponds to: $b_a = 0.00013$, a value which is considerably larger than the approximations extracted from the Potsdam material of 1903. The values we have finally accepted also prove to be rather small, but not far from the lower limit mentioned above. Referred to the temperature 0° C, we found:

Defl.	b_a	b_s
I . . .	0.000120	0.000066
II . . .	.000160	.000087

As approximate values for the constants C_a and C_s we may use:

Defl.	C_a	C_s
I . . .	8.50800	0.58980
II . . .	8.72050	0.37900

As mentioned, observations of deflection, as well as of oscillation, were made at King Point, and the observed data for φ and T were, together with above data for C_a and C_s, used in the formulae:

(I) $$\log H = C_a - \log \sin \varphi_o = C_s - 2 \log T_o$$

where for the temperature corrections of φ and T the coefficients given by Dr. Edler were applied. For each of the two magnets we had thus one series of data for H, extracted from the deflections, and one series extracted from the oscillations. These series were of course so chosen that the temperature changes were sufficiently large. The data thus obtained for H were now used in the formula:

(II) $$B_h = H - \varepsilon_h h_o,$$

where the temperature coefficient of the variation magnet τ_h was put equal to 0. We get in this way four series of data for B_h, where theoretically all values for the base-line should be identical, if the values used for C_a and C_s and the temperature coefficients τ_h, b_a and b_s had been correct. In this connection it is of course understood that the relation between base-line and curve has remained unaltered during the interval for which the ordinate readings h have been taken.

As expected, the various data for B_h showed considerable variation, which could be seen to have a marked relation to the changes in the temperature readings in the variation house. We did not, however, get a clear picture of the relation, because the temperature effect on B_h was affected by errors in the three coefficients b_a, b_s and τ_h, and disturbed by incertainty in the values used for C_a and C_s, besides the fact that unknown abrupt changes in the mentioned relation between base-line and curve may have occurred. Remembering that we can approximately put:

(III) $$b_a = 2\, b_s,$$

we have theoretically three equations with three unknown quantities τ_h, b_a and b_s, by which we see that the problem can be solved as soon as we can procure more or less reliable figures for C_a and C_s and the abrupt changes in the photograms. The temperature influence on B_h, due to incorrectness in the data for b_a and b_s, will work in opposite directions, when the determination has been derived by aid of H, extracted from the deflections or the oscillations, while the effect due to error in τ_h will always work in the same direction.

On account of incertainty regarding a probable gradual change in the magnetic moment of the two absolute magnets it will be more convenient to adopt an approximate mean value B_{hm}, and we have for this quantity calculated with:

$$B_{hm} = 0.08050 \text{ C.G.S.}$$
$$H_m = 0.08450 \text{ C.G.S.}$$

As a good control for the approximate correctness of these mean values for B_{hm} and H_m we may refer to the absolute observations for the 21st and 22nd of March 1906. Having resolved to refer the reduction constants of the absolute observations to the standard temperature $t'_o = 0°$, and the value for B_h to $t_o = -10.0°$, the temperature influence on the mentioned data will be very slight, which will be seen from temperature readings taken on these occasions and given in Table LXXI.

Table LXXI.

Temp.	Defl. I		Defl. II	
	defl.	oscil.	defl.	oscil.
	°	°	°	°
t	− 13.5	− 12.9	− 12.5	− 11.8
t'	− 3.5	− 1.8	− 0.6	0.0

Table LXXII.

Kind of Obs.	H	h	B_h
	C. G. S.	γ	C. G. S.
Deflection with I	0.08495	414	0.08071
Oscillation » I	8436	370	8066
Deflection » II	8436	398	8037
Oscillation » II	8453	388	8065
Mean	0.08472	392	0.08079

Calculations according to formula (II) give the data for B_h shown in Table LXXII.

Now reading the ordinates from the h-curve and putting B_h in formula (II) equal to B_{hm}, we could extract values for H and introduce these values in the two formulae (I), where for φ and T we put the observed data. On doing this, we get a series of data for the constants C_a and C_s by which we see that the total error due to temperature influence has been transmitted to C_a and C_s. For deflections we may now put:

$$C_{ao} = \log H + \tau_h t_a + \log \sin \varphi + b_a t'_a$$
$$C_a = \log H + 0 + \log \sin \varphi + 0$$

and for oscillation:

$$C_{so} = \log H + \tau_h t_s + 2 \log T - 2\, b_s t'_s$$
$$C_s = \log H + 0 + 2 \log T - 0$$

Substraction in both cases gives:

(IV)
$$C_{ao} - C_a = \triangle_a = \tau_h t_a + b_a t'_a$$
$$C_{so} - C_s = \triangle_s = \tau_h t_s - 2\, b_s t'_s$$

Now introducing: $2b_s = b_a$, we get the two equations:

$$\triangle_a = \tau_h t_a + b_a t'_a$$
$$\triangle_s = \tau_h t_s - b_a t'_s$$

For C_{ao} and C_{so} we may put approximations, for instance the values given on page 112, and for the unknown temperature coefficients we have:

$$\text{(V)} \qquad b_a = \frac{\triangle_a t_s - \triangle_s t_a}{t'_s t_a + t'_a t_s}$$

By aid of the logarithmical coefficient b_a we can calculate the ordinary coefficient a, expressed in γ per degree, and hereby again the corresponding value for b_s. For the temperature coefficient of the variation magnet we have:

$$\text{(VI)} \qquad \tau_h = \frac{\triangle_a - b_a t'_a}{t'_a}$$

Theoretically this proceeding seems to be rather satisfactory, but when it comes to practical use one will soon find that the results we obtain are absolutely unsatisfactory as long as we operate with single data for C_a and C_s, because in this case the unavoidable reading errors of the observations make themselves too much felt. Moreover we had, at least to start with, very unreliable data for C_{ao} and C_{so}.

In consequence with what has been said, we had evidently only one way to proceed, namely, to employ a graphical method with use of a very large quantity of data for C_a and C_s, calculated in the way described above. We resolved to use the whole series of observations taken at King Point, for which we had corresponding variation records, and it is therefore quite clear that we could not accept C_{ao} and C_{so} as constant values, especially as we had here to do with comparatively new magnets. In calculating B_h and comparing values extracted from observations taken at high and low temperature, an eventual error in C_a and C_s is of little consequence, but when we calculate with adopted values for C_{ao} and C_{so}, the unknown fall in the value of the magnetic moment in relation to time will cause considerable inconvenience. Investigations made with the material for Gjøahavn showed that the magnetic moment of Defl. I had changed much more than that of Defl. II, but how large the fall was it was difficult to say. Besides this, we had also to consider the relation between C_a and C_s in one and the same magnet. This last inconvenience we can to a certain degree overcome by adopting a fixed value for M, the eventual fall of this quantity in relation to time, and by aid of approximations for the constants P and J (cf. pp. 47—48) we then find more concordant values for C_{ao} and C_{so}, but it will be understood that also for these calculations we had a very unsatisfactory material, at any rate in the beginning.

We cannot here go into details as to how all the difficulties were overcome and shall only state that the method used consisted in a large series of approximations, whereby the coefficient τ_h and C_{ao} and C_{so}, and the gradual fall in these quantities, were adopted and systematically varied, while the values of b_a and b_s were calculated in concordance with the adoptions. On studying the effect of the different adoptions, we gradually came to the result that the temperature coefficient of the two Seemann magnets could not be accepted as constants, but that the value of a was a function of the temperature. We may remark, that the material for the last months of 1905 was rather difficult to treat, and to get it to harmonize with the rest we had to introduce an abrupt change in the relation between base-line and curve somewhere in the last half of November. On the whole, however, the final reduction seems to prove the correctness of the values we have finally accepted. As to the temperature coefficient of the variation instrument we came to the result that decreasing temperature increased the ordinate of the h-curve, which means that at King Point the h-variometer had been undercompensated. In Table LXXIII we have, for the two temperatures — 10° C and — 30° C, given the values we have extracted for b_a and b_s for the two Seemann magnets, and the four values for τ_h.

Table LXXIII.

α	Defl. I				Defl. II				τ_h
	b_a		b_s		b_a		b_s		
	− 10°	− 30°	− 10°	− 30°	− 10°	− 30°	− 10°	− 30°	
Deflection..........	11.8	9.1	—	—	—	—	—	—	17.1
Oscillation	—	—	5.5	4.5	—	—	—	—	18.3
Deflection..........	—	—	—	—	15.2	11.6	—	—	16.5
Oscillation	—	—	—	—	—	—	7.7	6.8	15.9

The coefficients are in Table LXXIII expressed logarithmically with the fifth decimal as unit. By aid of these values we can now calculate the ordinary temperature coefficient α, expressed in γ per 1° C (cf. pp. 45 and 47), and in this unit we shall also express τ_h. The values for b_a and b_s will each of them give a value for α, and for τ_h we get four values corresponding to those given in Table LXXII, and the results will be seen in Table LXXIV, where the figures given in the last horizontal line, "*Mean*", are accepted as final.

On reducing the absolute observations taken at Gjøahavn with the two Seemann magnets, by use of the temperature coefficients given in Table LXXIV, it was not difficult to extract the temperature coefficient τ_h for the h-variometer, as this instrument was mounted at that station. Falling temperature proved at Gjøahavn to decrease the value of the ordinate, which means that *at Gjøahavn the h-variometer had been overcompensated, and as final value we found*:

Table LXXIV.

α	Defl. I		Defl. II		τ_h
	− 10°	− 30°	− 10°	− 30°	
Defl.	32.5	26.4	—	—	3.3
Oscil.	27.8	23.2	—	—	3.5
Defl.	—	—	40.4	32.1	3.2
Oscil.	—	—	38.0	33.8	3.1
Mean	30.2	24.8	39.2	33.0	3.3

$$\tau_h = 0.45\ \gamma \text{ pr. } 1^\circ \text{ C}$$

After Control. — As will be seen the temperature coefficient found for h-variometer at Gjøahavn is very small, but on account of the large range of the temperature readings in the variation house the corrections will nevertheless have a considerable magnitude; in fact the quality of our final reduction of h-curves will largely depend on the correctness of the temperature coefficient used. The correctness of τ_h for Gjøahavn will depend on the accuracy with which we could extract data for α and τ_h for King Point, which again will depend on the quality of the rest of the reduction constants used in determination of the absolute values for H. We have before mentioned that the fall in the magnetic moment of the two Seemann magnets was fixed little by little through numerous approximations and that irregularities in the relation between curve and base-line of the photograms were partly hidden, so that some of them were even discovered after the final data for α and τ_h were determined. To be on the safe side, there was therefore made a final test for the correctness of the temperature coefficients α and τ_h by aid of the now considerably improved material from King Point.

The recalculation for test of the coefficients was done as follows:

By aid of the records data for H were calculated in accordance with all good observations of both deflections and oscillations. The calculations were made by aid of the formula (II), p. 114, whereby the ordinate readings h were corrected for abrupt changes according to the graph given in Fig. 34, p. 181, while for B_h we used the values given in the same figure. Values for C_a and C_s were now calculated by aid of formula (I), p. 114, where for log H the new calculated values were put in, while for φ and T we had the observed data, used uncorrected for temperature corrections, which was of course also the case with the ordinates h. For C_{a_0} and C_{s_0} we had now fairly certain values for any point of time from 1903 to 1907 and consequently the data determined for $\triangle_a$ and $\triangle_s$, by aid of the formulae (IV), p. 115, were rather reliable. To avoid the reading errors of the separate observations the data for $\triangle_a$ and $\triangle_s$ were tabulated according to falling values for corresponding temperature readings in the variation house, t and those read during the absolute observations t'. The data were divided into 7 parts, and for deflections and oscillations with the two magnets we got means consisting respectively of 8 and 7 separate data. These means are given in Table LXXV.

Table LXXV.

No.	Defl. I						Defl. II					
	Deflections			Oscillations			Deflections			Oscillations		
	t	t'	$\triangle_a$	t	t'	$\triangle_s$	t	t'	$\triangle_a$	t	t'	$\triangle_s$
	°	°	log	°	°	log	°	°	log	°	°	log
1	− 13.6	− 6.8	− 174	− 11.8	− 7.6	+ 43	− 12.7	− 3.1	− 89	− 11.0	− 9.5	+ 244
2	− 15.6	− 13.0	− 222	− 10.9	− 15.7	+ 80	− 10.8	− 10.6	− 157	− 9.9	− 14.8	+ 236
3	− 14.6	− 17.1	− 261	− 13.0	− 19.6	+ 159	− 13.4	− 13.4	− 232	− 11.3	− 17.6	+ 250
4	− 22.9	− 22.9	− 377	− 13.1	− 23.5	+ 202	− 19.7	− 18.9	− 414	− 17.6	− 23.5	+ 167
5	− 23.0	− 25.0	− 472	− 20.4	− 25.2	+ 81	− 20.6	− 24.8	− 458	− 21.1	− 28.8	+ 235
6	− 25.1	− 28.7	− 492	− 21.5	− 30.5	+ 98	− 23.9	− 26.3	− 559	− 20.5	− 32.8	− 222
7	− 25.5	− 34.1	− 573	− 23.7	− 36.8	+ 148	− 26.9	− 30.1	− 614	− 25.2	− 37.1	+ 226

By aid of the mean values for $\triangle_a$, $\triangle_s$, t and t', given in Table LXXV, we could now calculate b_a and τ_h according to formula (V) and formula (VI), p. 116, respectively and we got the results stated in Table LXXVI. As mean for τ_h based on observations with Defl. I we get 3.7 and for that based on observations with Defl. II we have put 3.2, having in this last mean excluded the three first results. As total mean for the 11

Table LXXVI.

No.	Defl. I						Defl. II					
	b_a	a	t'	τ_h	τ_h	t	b_a	a	t'	τ_h	τ_h	t
	log	γ	°	log	γ	°	log	γ	°	log	γ	°
1	11.8	21.7	− 7.2	26.0	5.0	− 12.7	28.8	(60.9)	− 6.3	0.1	(0.0)	− 11.8
2	6.5	9.6	− 14.3	24.6	4.8	− 13.2	16.0	(31.4)	− 12.7	15.8	(− 3.1)	− 10.4
3	10.7	19.2	− 18.3	16.9	3.3	− 13.8	5.1	(6.3)	− 15.5	48.1	(9.3)	− 12.4
4	10.8	19.5	− 23.2	12.2	2.4	− 19.0	12.8	24.0	− 18.2	17.7	3.4	− 18.6
5	10.2	18.1	− 25.1	16.7	3.2	− 21.7	13.0	24.5	− 26.8	12.8	2.5	− 20.8
6	9.0	15.3	− 29.6	15.5	3.0	− 23.3	12.2	22.6	− 29.6	23.1	4.5	− 22.4
7	9.7	16.9	− 35.4	21.3	4.1	− 24.6	12.1	22.4	− 33.6	11.7	2.3	− 26.0

acceptable results we get thus: $\tau_h = 3.5$, which agrees well with the value we have actually used: $\tau_h = 3.3$. To see if τ_h might be a function of t, we have plotted the data for τ_h in relation to temperature with the result seen in Fig. 17, where data depending on observations with Defl. *I* and Defl. *II* are marked respectively with ∘ and ×. The location of the points seems to point in the direction that the value for τ_h increasse slightly with decreasing temperature readings.

On examining the results for the temperature coefficients of the two absolute magnets, we get, referred to the temperatures — 10° C and — 30° C, the following values:

Magnet	$a_{-10°}$	$a_{-30°}$
Defl. I	21.0	17.5
Defl. II . . .	25.0	23.1

Comparing these results with the values actually used (Table LXXIV, p. 117 we see that now we have got considerably lower values. There can be no doubt that these last results are more correct than those used, but this fact is of no consequence for the result of the reduction of the h-curves, as here only the correctness of τ_h is decisive, and for τ_h we found a very good agreement between the values used and those finally extracted in the test. The somewhat too large values we have used for a are naturally of some consequence for the absolute data, apart from the fact that probably we should have got better agreement between the values determined for B_h, depending on the correctnes of the absolute data for H.

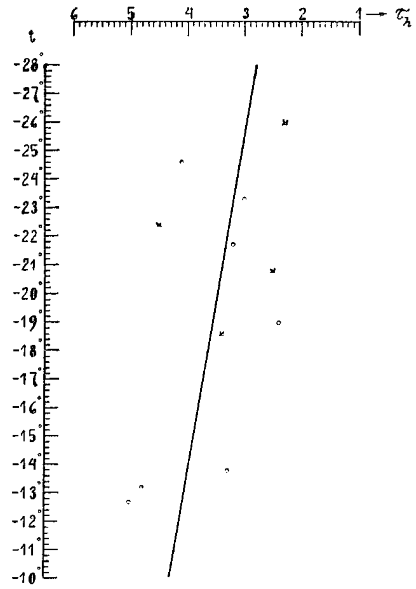


Fig. 17. Relation between the temperature coefficient of the h-curve τ_h and temperature t.

Determination of the Temperature Coefficient of the z-variometer. — From the Register Journal (page 37) we have seen that Lloyd's Balance had been rebalanced when it was mounted at Gjøahavn. Wiik states that this was done by aid of the vertical magnet placed under the Balance and he adds that nothing else was touched. This proceeding was of course wrong and may perhaps be due to some misunderstanding of the Instructions. Dr. Edler states (cf. page 18) that he has "communicated to Wiik the method by which compensation of Lloyd's Balance may be obtained", but Wiik does not seem to have made any attempt to ascertain whether or not compensation had been established after the instrument had been rebalanced at Gjøahavn. From a remark in the Register Journal, when he speaks about some trouble he had with Lloyd's Balance, we see that he believes that this instrument has a considerable temperature coefficient. He says: "The temperature coefficient of the z-curve seems to be very large".

Now, it is quite clear that the rebalancing of Lloyd's Balance ought to be done by aid of the weight regulators, e.g. by *mechanical* means, instead of *magnetic* means, as used by Wiik. A temperature test ought to have been made and the result of this test would have indicated the direction in which the compensation magnet should have been moved, and in this direction the moving of the vertical magnet ought to have taken place, even if the Balance was hereby thrown out of equilibrium. Afterwards the side weights should be moved until equilibrium between gravity and the combined magnetic forces had been established. In the Instructions (page 10) professor Schmidt writes: "A stronger contra working magnet (Rücklenkungsmagnet) must be put in, and perhaps you shall have to adjust the side weights, . . ., *the upper weight must not be touched*". There is reason to believe that Wiik may have had this last remark in his mind, when he mounted Lloyd's Balance, because he says: "nothing else was touched".

However this may be, there is every reason to suppose that the z-curve has been influenced by temperature variation, and the question is how to get this influence eliminated. We have already mentioned that Wiik had not collected any special material, by aid of which the coefficient τ_z might be properly determined. Neither had we here, as stated in the discussion of the temperature coefficient of the h-variometer, any special material, but fortunately means were found to get the coefficient determined, chiefly because of the excellent control afforded by the base-line values of the h-curve. Owing to the relation between Z and H and the before-mentioned abnormal magnetic conditions at Gjøahavn, the inexactness of the values for B'_z far exceeds any possible error caused by temperature variation, and the method of working must therefore in this case be quite different. The first thing was to look for material which might give us a hint regarding the direction in which the temperature influence worked. The records were examined for the purpose of selecting cases where a comparatively rapid change in temperature occurs, within the shortest possible time-interval. The records offering the most favourable conditions were those where deflection experiments had been made. The temperature on these occasions sometimes increased several degrees, but the result of the examination was negative, because during the experiments the z-instrument proved to have been instable, with the consequence that just here abrupt changes in the relation between curve and base-line took place. Our only chance was that we might discover other favourable cases with rapid changes of temperature and possibly also make use of the comparatively large range of the temperature variation between summer and winter, but this last method presupposed that we would be able to correct all abrupt changes and hereby produce a sufficiently homogeneous material. However, a simple comparison between the annual period of for example monthly means of the z-ordinates and temperature readings is a very doubtful material to build upon, because the temperature in the variation house has to be regarded more or less as a function of the temperature of the open air, and there may very well exist a natural relation between the temperature of the air and the variation of vertical intensity.

If an uncompensated vertical instrument is influenced by temperature changes, it ought during the winter to register too large values and during the summer too small. If, however, the instrument is provided with a temperature compensator, as is the case here, there is also the chance that the movement of the error in the values is just the opposite of that found for an uncompensated instrument, or that we have to do with an over-compensated instrument. Remembering that in our curves we find that raising ordinate corresponds to increasing vertical force and that the ordinates are usually nega-

Table LXXVII.

Year	Month	z	corr.	z'	t
		mm	mm	mm	°
1903	Nov.	56	− 2	54	− 10
»	Dec.	80	− 11	69	− 16
1904	Jan.	103	− 12	91	− 20
»	Feb.	108	− 12	96	− 22
»	March	108	− 15	93	− 24
»	April	92	− 15	87	− 20
»	May	84	− 15	69	− 13
»	June	72	− 15	57	− 5

Table LXXVIII.

From		To		Corr.
Year	Date	Year	Date	
				mm
1904	Nov. 1	1904	Dec. 6	− 1.3
»	Dec. 6	»	Dec. 29	− 4.5
»	Dec. 29	1905	May 1	0.0

Table LXXIX.

Year	Month	z'	z'	t
		mm	γ	°
1904	Nov.	54.3	1195	− 12
»	Dec.	57.0	1254	− 18
1905	Jan.	58.9	1296	− 22
»	Feb.	59.1	1299	− 24
»	March	59.1	1299	− 23
»	April	56.9	1252	− 17

Table LXXX.

Year	Month	z'	t
		γ	°
1903	Nov.	360	− 10
»	Dec.	420	− 16
1904	Jan.	435	− 20
»	Feb.	455	− 22
»	March	480	− 24
»	April	445	− 20
»	May	420	− 13
»	June	370	− 5

tive, we shall under the first supposition have too small ordinates (negative) during the winter and too large during the summer, and vice versa by the second supposition. Considering what has been said above, we may take a glance at the figures given in Table LXXVII, where some monthly means for z' for the season 1903—1904 have been tabulated. The figures headed z represent monthly means of directly read negative ordinates, while z' gives these ordinates when they are corrected for supposed abrupt changes in the relation between curve and base-line, these corrections being given under the heading "corr".

Comparing the corrected ordinates with corresponding means for temperature readings in the variation house, given under the heading t, we see that the ordinate means are large during the winter and small during the summer. If we may be allowed to judge at all, we may say that there seems to be little probability for an under-compensated instrument at Gjøahavn. Much more than this, however, we cannot conclude from this first attempt, because neither scale value, not abrupt changes were very well known when these data were tabulated. Let us, however, suppose that we may put the scale value of the z-curve at 5 γ per 1 mm and that the whole range in the figures under z' is due to temperature influence. The result would then be that the instrument was over-compensated during the stay at Gjøahavn, and that the coefficient was 11 γ per 1° C. Let us on the other hand say that compensation, in spite of all, happened to have been established when Lloyd's Balance was mounted at Gjøahavn. The whole range of the figures under z' would in this case be due to an annual period of the vertical intensity, the magnitude of which would amount to something like 275 γ, which seems to be considerably too large.

As a control we might now have a look at the data for z' and t during the season 1904—1905. During this season there only occurred two small abrupt changes, and these are fortunately situated in the middle of the photograms and can consequently be measured with great exactness. Data for these abrupt changes in the relation between curve and base-line are given in Table LXXVIII. As scale value we can for this interval put 22 γ per 1 mm and, expressed respectively in mm and γ, we get the monthly means for the ordinates z' and corresponding temperature readings in the variation house t, given in Table LXXIX. Under the same supposition as before we get a coefficient equal to 10 γ per 1° C, which value agrees very well with what we found by the figures in Table LXXVII. The material for the season 1904—1905 seems to be rather thrustworthy, but such is not the case with the first season. It will be seen from the graphical illustration of the abrupt changes in the relation between the base-line and the z-curve, Fig. 30, p. 152 that in December 1903 there were a number of small irregularities, discovered at a later date than when the figures of Table LXXVII were tabulated. Furthermore it may be remarked that the scale-value changes abruptly from 5 γ to 8 γ per 1 mm on the 20th of January 1904 and falls again to 4 γ per 1 mm on the 20th of February. Considering the mentioned errors in the ordinates z' and expressing them in γ, we should get fairly thrustworthy dates, which are given in Table LXXX. Calculating as before, we shall now get a smaller value for the coefficient. We get:

$$\tau_z = 6.6$$

Looking at the figures in the two tables LXXIX and LXXX, one will notice that the relation between z' and t is very clear, or rather that it seems to be so. This fact may perhaps be said to favour the supposition that the relation is due to an instrumental error, e.g. due to temperature variation in the room in question. Without further study, however, we cannot decide, and in order to produce further proof regarding the temperature influence of the z-curve, we have sought for records showing rapid change of temperature, within short time intervals, as mentioned above. However, this investigation brought to light some rather confusing cases, an example of which has been illustrated in Table LXXXI and Fig. 18. The data in this table are taken from the interval February 23rd—March 20th 1904. The temperature in the variation house will in this interval be seen to fall about three degrees towards the middle of the series and then rise again, which occurrence may seem favourable. Under the heading Z' we have given daily means of vertical intensity, obtained by reduction of the z-curve, where the temperature coefficient has been put equal to 0. Let us suppose that the vertical force has actually had an increase of one γ per day during this interval, but that the remaining variation are due to temperature influence. The gradual increase in Z is in Table LXXXI represented by the figures headed (Z), and taking the difference between Z' and (Z), we get the figures given under the heading $\triangle Z$, where we see that positive differences correspond to the lowest temperature readings. Looking at the matter as a whole we arrive at the astonishing result that the instrument had been under-compensated at Gjøahavn and that the coefficient must be put at something like — 6 γ per 1° C. This result is, as we see, just the opposite of what seemed to be gathered from Table LXXIX and Table LXXX, and that the annual period in the vertical force would exceed 500 γ between maximum and minimum, which of course cannot be right. In order to look a little closer into the matter, we have in Fig. 18 plotted the data given in Table LXXXI, and we find that if we look at the details of the two curves Z and t, there are several small movements in the opposite direction to that of the main track of the Z-curve.

Table LXXXI.

Date	Z'	(Z)	$\triangle Z$	t
1904	C. G. S.	C. G. S.	γ	°
Feb. 23	0.60326	0.60320	+ 6	— 22.6
» 24	321	321	0	— 23.1
» 25	313	322	— 9	— 23.7
» 26	327	323	— 6	— 23.5
» 27	325	324	+ 1	— 24.1
» 28	335	325	+ 10	— 24.4
» 29	336	326	+ 10	— 24.2
March 1	—	327	—	—
» 2	333	328	+ 5	— 25.3
» 3	336	329	+ 7	— 25.1
» 4	342	330	+ 12	— 25.1
» 5	(361)	331	—	— 24.7
» 6	342	332	+ 10	— 23.9
» 7	341	333	+ 8	— 24.0
» 8	348	334	+ 14	— 24.1
» 9	338	335	+ 3	— 24.3
» 10	336	336	0	— 24.0
» 11	(324)	337	—	— 22.6
» 12	339	338	+ 1	— 22.0
» 13	337	339	— 2	— 21.8
» 14	337	340	— 3	— 21.9
» 15	338	341	— 3	— 21.5
» 16	340	342	— 2	— 21.8
» 17	335	343	— 8	— 22.4
» 18	331	344	— 13	— 22.5
» 19	335	345	— 10	— 22.3
» 20	338	346	— 8	— 22.3

Before leaving the data given in Table LXXXI we shall have a look at the curves given in Fig. 19, where the curves Z, Z_1 and Z_2 are reductions of the z-records with use of the three temperature coefficients + 6.3, 0.0 and — 6.0 respectively. Below the two mentioned z-reductions to the right of Fig 19 we have, as the third curve, put one plotted with corresponding temperatures of the open air, while the fourth curve is the same curve as the one marked t in Fig. 18, but this time it has been put upside down. Looking at the three z-reductions Z, Z_1, Z_2 we see that there is a gradual development in the variation, which seems to point in the direction of greater agreement in the details, if we compare with the curve marked t, temperature in the variation house. Now looking at the left side of Fig. 19 we see that the curves represent daily means for D, I, H and Z. The values for D, H, and Z have been taken directly from the final tables, CVIII, CIX, CX, pages 221—277 in Obs., respectively for the three elements. It has already been mentioned that the data for Z have here, as also finally, been extracted from the z-curves with use of $\tau_z = + 6.3$. The values for I have been calculated

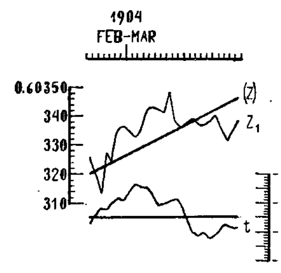


Fig. 18. Example of a rather confusing relation between data for Z, reduced with τ_z = 0, and corresponding data for t.

by aid of Z and H and we may in this connection remark that the result would have been practically the same, whether or not we had for this determination used values for z corrected for temperature variation.

Above we have discussed the problem by aid of figures and curves illustrating the effect of the various suppositions for the temperature coefficient of the z-curve. We have pointed out what might tell *for and against* the value we have finally chosen for reduction of the z-curve at Gjøahavn from a practical point of view, but before leaving the problem, we may also have a look at the matter from a theoretical point of view. In the following formulae M and M' denote respectively the magnetic moments of the Balance magnet and of the compensation magnet, μ and μ' the temperature coefficients of these magnets and r their central interdistance, while D_r signifies the mechanical moment of directive force and β and β_1, the coefficients of dilatation for steel and brass. The conditions for horizontal equilibrium will be:

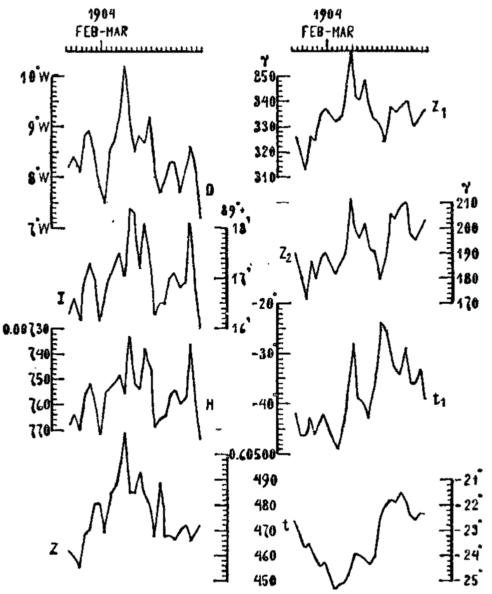


Fig. 19. *To the left:* Comparison between final data for D, I, H and Z.
To the right: Data for Z reduced respectively with $\tau_z = 0.°$ (Z_1) and $\tau_z = -6.0$ (Z_2), compared with corresponding data for temperature in the variation house (t) and in the open air (t_1).

$$\text{(I)} \qquad ZM\,(1-\mu t) = D_r\,(1+\beta t) + \frac{M\,(1-\mu t) \times M'\,(1-\mu' t)}{\tfrac{1}{2}\, r^3\,(1+3\,\beta_1 t)}\,(1+\Xi)$$

Z is as usual the vertical component of the magnetic force and $(1+\Xi)$ a shortened expression for correction depending on the magnet constellation. If we take this expression as a constant: $(1+\Xi) = k$, and the proportion between the mechanical and magnetic moments of directive force as another constant:

$$\text{(II)} \qquad \frac{D_r}{2\,M\,M'k\;1/r^3} = K$$

then we have:

$$\text{(III)} \qquad Z = \frac{2\,M'k}{r^3}\left(\frac{1-\mu' t}{1+3\beta_1 t} + K\,\frac{1+\beta t}{1-\mu t}\right)$$

In case of complete compensation, whatever may be the value of the temperature, the expression in brackets is equal to a constant and consequently we get:

$$\frac{1-\mu' t}{1+3\,\beta_1 t} + K\,\frac{1+\beta t}{1-\mu t} = \frac{1-\mu' t'}{1+3\beta_1 t'} + K\,\frac{1+\beta t'}{1-\mu t'}$$

Now putting $t' = 0$, we have:

$$\text{(IV)} \qquad \frac{1-\mu' t}{1+3\,\beta_1 t} + K\,\frac{1+\beta t}{1-\mu t} = (1+K)$$

and neglecting members of higher order we get:

$$\text{(V)} \qquad K = \frac{\mu' + 3\beta_1}{\mu + \beta}$$

Substituting for K the original expression (II), the final equation will be:

$$\text{(VI)} \qquad \frac{D_r}{2\,M\,M'k\,1/r^3} = \frac{\mu' + 3\beta_1}{\mu + \beta}$$

From this equation we can deduce the following:

a. For a certain vertical force and for an individual constant proportion between the mechanical and magnetic moment of directive force of the instrument we can obtain complete compensation for temperature.

b. If the interdistance between the magnets is diminished in comparison to the individual value we shall have an over-compensated instrument.

c. If the interdistance between the magnets is increased in comparison to the individual value we shall have an under-compensated instrument.

Let us now suppose that the compensation and the side weights were so regulated by Dr. Edler at Potsdam that it suited for that station and that the instrument arrived at Gjøahavn in the condition in which it had been working during the test at Potsdam. As the vertical intensity is much greater at Gjøahavn than at Potsdam, it is clear that Wiik must have reduced the distance r, when he, as he states, rebalanced the Balance by aid of the compensator. (Cf. *Wiiks* remark p. 37: "nothing else being touched"). The consequence of this is that *the instrument was over-compensated during the stay at Gjøahavn.* Now, there is no absolute proof for the supposition that Dr. Edler obtained complete compensation, but it is probable that compensation was attempted, and we may therefore conclude that the instrument at Gjøahavn was most probably over-compensated, which again means that the temperature coefficient was positive.

Taking this for granted, we might as final value for the coefficient τ_z take the mean between the two results derived from Table LXXIX and Table LXXX, p. 120, respectively: 8.2 and 6.0 per 1° C, but before deciding we have again made a final test. This test consisted in a series of alternate reduction with values for τ_z varying between the two mentioned values 10.0 and 6.6. Studying the various results, there seems to be no doubt that a value of about 6,0 gives the most natural picture, when monthly mean values of Z are plotted graphically. This value agrees well with what we have extracted from the data given in Table LXXX and seems thus to be fairly well founded. *As final value for the temperature coefficient of the z-curve at Gjøahavn we have actually used:*

$$\tau_z = 6.3.$$

Scale Values for the Variometers at Gjøahavn.

Before we start to discuss the material collected during the Expedition, intended to serve as data for determination of the scale values of the variometers, we shall deal with some observations which were found necessary as supplementary material for determination of the scale value of the z-curve. The necessity for this material will appear from the following explanation.

When the scale value of the d-variometer has been determined, we are also able to calculate the scale value of the h- and z-variometer by aid of the deflection data read from the photograms, because these deflections have been made with the same deflector, placed at the same distance as in case of the d-variometer. As the d- and h-variometer are of exactly the same construction and provided with the same kind of needles, the scale value of the h-curve can be had simply by multiplication of the scale value of the d-curve, expressed in γ per 1 mm. with the ratio of the deflections of the d- and h-curves. The construction of the z-instrument, however, requires, as we know, the deflecting magnet to be placed vertically above, to the N—S or E—W of the z-magnet and this arrangement is for the Eschenhagen Variometers obtained by fixing an additional piece to the deflection bar used for the two other instruments. This additional piece, shown in Fig. 12 p. 104. The method used for deflection on the d- and h-variometers is according to *the first main position of Gauss* (*I*), while *the second main position* (*II*) is used for the deflections on the z-variometer. Calling the deflective force in *case* (*I*) f_d and in *case* (*II*) f_z, we have:

(I) $$f_d/f_z = q$$

This ratio is independent of change in sensibility, weight and magnetic moment and depends on change in the size of the d- and z-magnets and change in the mutual position of deflector and needle, when deflection is made on the d- and z-instrument. As long as the same deflector distance has been used, q is therefore a constant and the value can, whatever distance is chosen, be determined by aid of data obtained through experiments. As to formula (I), we see that an exact reduction of the z-curve depends on the exactness with which we are able to compute the value for q.

The observations in question were made by Russeltvedt in 1909 and in 1913—1914, and consist in 5 large series of deflection experiments with the d- and z-magnets of the Expedition, besides the small deflector. The observations have been made with the utmost care and the observer has worked out a detailed report dealing with the theoretical as well as the experimental methods employed, besides stating the final data for determination of the required constants. As the scope of this report goes far beyond what is necessary for the present paper, we shall in the following pages give an summary of Russeltvedt's report.

The Observatory. — As observatory was used a cellar room in Russeltvedt's private house, situated in the country near Oslo. This observatory, being surrounded by the various iron articles usually belonging to a privat house, was far from non-magnetic. However, we may assume that the larger stationary iron parts of the house, such as water pipes, iron stoves, wash boiler, etc., would have no disturbing effect on the result of the observations in question. Concerning the smaller, movable things, however, they are of course of considerable consequence if moved, but as every care was taken in order to prevent movement of any iron article in the house during the time the experiments were made, we may probably suppose even these smaller movable articles to have had no disturbing influence. As to the variation of the temperature in the room in question, it may be remarked that the conditions were good.

Instrument. — As instrument for the observations was used the z-variometer belonging to the Expedition, and to adapt it to the purpose in question all unnecessary parts, such as the compensation magnet etc., were removed. To make room for a suspension tube the lifting handle, placed at the top of the magnet housing, was taken off and the opening was covered by a tube, specially made for the purpose. The mirror with which the z-magnet was provided was used as it was and a suitable suspension arrangement was secured. The angles of deflection were read by aid of a telescope with use of a paper scale fixed to a wooden bar. This scale was provided with a millimetre graduation, which on proper control measurement was found to require multiplication with the constant 1.0066 to give true value. In mounting the instrument, it was referred to the direction of the magnetic meridian of the place and was the whole time kept unaltered in the way it was put at the start of the observation series. The telescope and the scale were also the whole time kept at nearly the same height.

Deflections and Constants. — As already mentioned, the observations consisted in alternate deflection experiments with the d- and the z-magnet suspended by the same thread with use of the same deflector, placed at the same distance of the bar, whereby deflections were made according to the first and second main position of Gauss with both the d- and z-magnets. As during the Expedition there were adopted three different deflection distances, the corresponding value for q had to be determined for these distances. As the observations made with the deflector at distance 18.27 cm. has only been taken with the magnets placed according to the second position of Gauss, this series could not be used for direct determination of the constant q.

The torsional effect of the thread is expressed through:

$$\text{Coefficient of } \frac{\text{z-needle}}{\text{d-needle}} = \frac{1 + \theta_z}{1 + \theta_d} = \frac{1.000426}{1.009585}$$

The deflection readings e are stated in Table LXXXII, where under the headings R and r the scale- and deflection- distances are given.

Table LXXXII.

Year	Month	R cm.	r cm.	d-needle e_d I	d-needle e_d II	z-needle e_z I	z-needle e_z II
1909	June	24.9	18.27	—	4.625	—	6.065
1913	November	38.5	12.93	5.355	2.770	4.150	4.680
»	»	38.5	14.93	3.508	1.759	2.850	2.685
»	»	38.5	19.93	1.460	0.744	1.313	0.928
1914	April	50.9	14.93	4.950	2.535	4.089	3.808

Here, as elsewhere, I and II stand for 1st and 2nd main position of Gauss. For indirect determination of q we shall first have to determine the polar distance of the z-magnet. The polar distance of the two small magnets, the d-needle and the deflector, may with sufficient exactness be had simply by putting it equal to $^5/_6$ of the length of the magnet.[1] When the polar distances have been determined, the values are introduced in the following formula, by aid of which q can be determined. We have for the indirect determination of q the formula:

$$\text{(II)} \qquad q_z = \frac{1}{2} \frac{1 + \Xi_1}{1 + \Xi_2}$$

For direct determination of the constant q we have the formula:

$$\text{(III)} \qquad q_z = \frac{e_z}{e_d} \cdot \frac{4R^2 - e_z^2}{4R^2 - e_d^2} \cdot \frac{1 + \theta_z}{1 + \theta_d}$$

For this direct determination we have selected the following data, taken from Table LXXXII, and copied in Table LXXXIII, where the result of the calculation with formula (III) has been added under the heading q_z. Regarding the constant Ξ, depending on the individual distribution of magnetism in the magnets employed, we may remark that we may with sufficient exactness, reckon with the shortened expression:

$$\text{(IV)} \qquad A\frac{L^2}{r^2} + B\frac{L^4}{r^4} + C\frac{l^2}{r^2} + D\frac{l^4}{r^4} + E\frac{L^2 l^2}{r^4} = \Xi,$$

[1] Friedrich Kohlrausch: Lehrbuch der Praktischen Physik, 12. Aufl. 1914. Magnetismus. Page 389.

where L denotes the polar distance of the deflector, which, as mentioned, may with sufficient exactness be put equal to $5/6\ \lambda = 2.0$ cm, λ being the length of the magnet, which both for the deflector and for the d-needle is 2.44 cm. Regarding the determination of the polar distance of the z-magnet, l_z, is to remark that it has been determined in two different ways, one giving $l_z = 8.31 \pm 0,1$ cm. and $l_z = 8.309 \pm 0.06$ cm. The value of the letters A, B, C, D, E, has been determined for both the 1st and 2nd position of Gauss,[1] in the common way.

Table LXXXIII.

r	d-needle I	z-needle II	q_z
12.93	5.355	4.680	0.87237
14.93	3.508	2.685	.76399
19.93	1.460	0.928	.63388

Table LXXXIV.

Position of Gauss	Mgt.	North-end
I	W	W
	E	E
	E	W
	W	E
II	N	W
	S	E
	S	W
	N	E

Table LXXXV.

r	A q_z	A q_z	B q_z
12.93	0.87237	—	0.86987
13.93	—	—	—
14.93	.76399	0.76481	.76432
15.93	—	—	—
16.93	—	—	.69868
17.93	—	—	—
18.93	—	—	.65518
19.93	.63388	—	.63865
20.93	—	—	.62469

Table LXXXVI.

r	q_z
15.87	0.72920
17.85	.67430
19.97	.63560

Regarding the system according to which the deflections were made, this will be seen from Table LXXXIV. The passage of the light ray through glass and mirror and the angle at which the mirror has been placed have of course been taken into account.

The final results for the constant q_z, extracted from the observations taken by Russeltvedt, are tabulated in Table LXXXV, where the values obtained according to direct determination will be found under the heading A, while those obtained according to the indirect method are headed B. The differences in the results obtained from the direct and indirect determination of q_z are not greater than the probable error of the determinations. It will also be noticed that the deflection distances used by Russeltvedt are not exactly equal to those used at Gjøahavn. This is, however, of no consequence, as the values corresponding to the distances actually used at Gjøahavn, can with the necessary exactness be derived from the curve given in Fig. 20. The values for q_z, corresponding to the distances used at Gjøahavn, read from this curve, are given in Table LXXXVI. Regarding the curve in Fig. 20, it will be understood to have been drawn through the points plotted from the data given in Table LXXXV, where the figures under the headings A and B are marked respectively by $\times$ and $\circ$.

Determination of ε_z. — For the scale value of the z-curve we have:

$$\text{(V)} \qquad \varepsilon_z = q_z \cdot \frac{a_d}{a_z} \quad \varepsilon_d$$

where a_d and a_z denote the mean distance between the points recorded on the photograms, representing respectively the deflections made on the d- and z-variometers. Those distances are measured out in millimetres, duly corrected for shrinkage of the paper. By ε_d we mean the corresponding scale value for the d-curve, expressed in γ per millimetre, while the value for q_z, corresponding to the deflection distance used, is taken from Table LXXXVI. Deflection experiments have been made 13 times during the 19 months

[1] Dr. J. Lamont: Handbuch des Erdmagnetismus page 42.

the register was kept at Gjøahavn, and values for ε_z will be found tabulated under this heading in Table XCV, (p. 134), where also corresponding data for a_d, a_z and ε_d are represented.

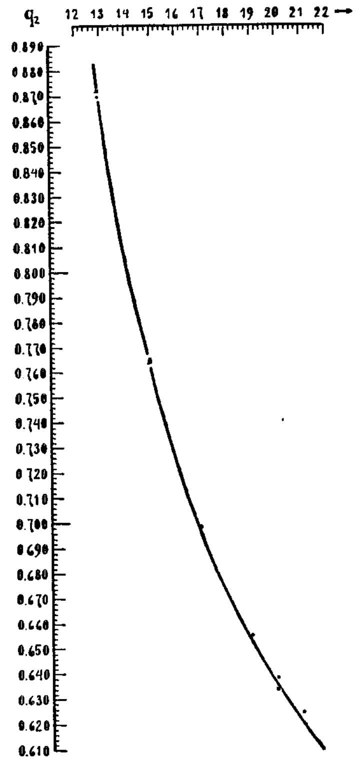


Fig. 20. Curve by aid of which the constant q_z can be found for a chosen distance.

Determination of ε_d and ε_h. — For torsionless suspension we have for the d-instrument the following formula, expressed in absolute measure:

$$\text{(VI)} \qquad \omega = \frac{1}{2R},$$

where as usual R represents the distance between the mirror of the magnet and the drum of the register, expressed in millimetres. If we want the scale value for the d-curve expressed in minutes of arc per millimetre, we must multiply R in formula (VI) by $K = tg\ 1'$, and as torsionless suspension does not exist, correction for the ratio of torsion has to be introduced. As final formula for the scale value of the d-curve we shall then have:

$$\text{(VII)} \qquad \omega' = \frac{1}{2RK}(1+\theta)$$

The directing force is, as mentioned, very small at Gjøahavn, and the torsional effect will therefore be of decisive importance in the determination of the scale value.

For determination of the torsion value θ there were made, as is usually the case in connection with the experiments for sensibility, some torsion tests on the variometer. In the tests made at Gjøahavn the torsion head was turned 15 or 20 division units, which corresponds to 45′ or 60′, and for the determination we have the formula:

$$\text{(VIII)} \qquad \theta = \frac{a_\tau}{2RK\alpha - a_\tau}$$

where α means the number of minutes the torsion head has been turned, a_τ the mean deflection, measured on the photogram in millimetres, corrected for eventual shrinkage of the paper, K the reduction constant, equal to 0.000291, and R the register distance, equal to 1023 mm. The expression for θ is under ordinary conditions: $\theta = \frac{HM}{D}$, where D is the specific torsional moment of the thread, which in this case will be practically constant. If H, as here is the case, has a small value, we see that θ will variate strongly with H. If H decreases towards zero, θ will increase towards infinite, which indicates that the formula can not be used for very small values. Ordinarely we may put:

$$\text{(IX)} \qquad \theta = \theta_o + \triangle\theta$$

where θ_0 means the torsion coefficient when the horizontal intensity has its mean value H_o. During the torsion experiment made on the 30th of November 1903 it happened that the value of the horizontal intensity H was equal to the mean value $H_o = 0.00750$ C. G. S. The torsion head was on this occasion turned 45′, according to the statement of the observer, and the deflection, reproduced on the photogram a_τ, was measured to be 25.15 mm., when it was duly corrected for shrinkage, which in this case amounted to 0.78 per cent. Computation according to formula (VIII) gave: $\theta = 15.43$, which value introduced in formula (VII) resulted in the following scale value for the d-variometer:

$$\omega' = 27'.61 = 0^\circ.46$$

This result differred very much from the scale value found at Potsdam in 1903, as well as from the value Steen had obtained, when he tried to obtain an approximate scale value by aid of direct comparison between absolute measurements and ordinates read from the curves. The values found were:

At Potsdam . . . . $\omega' = 1.12$ pr, 1 mm.
» Gjøahavn. . . . . . . $\omega' = 1.25$ » » »

The instrument constants had at both stations been the same.

Various unsuccessful attempts were made to get a reasonable value for θ by means of the torsion experiments reproduced on the photograms, but this proved to be impossible. It had therefore to be concluded that the extraordinary arrangements with which the variation instruments had been provided were far from being accurate enough. As already mentioned, the torsion head of the d- and h-instrument had been provided with a reading arrangement which allowed an accuracy of 3′ in the readings of the scale, but it will be shown that these readings ought to have had an accuracy of at least 30″. Besides the insufficient exactness of the readings of the torsion head, investigation has also shown that the tangent screw with which the head was provided had a zero point correction which even proved to be inconstant. From what has been said, it is clear that the value for θ could not be extracted in the ordinary manner.

To get the scale value of the d-curve, expressed in γ per 1 mm., we have:

$$\text{(X)} \qquad \varepsilon_d = \frac{1+\theta}{2R} H = \frac{MH + D}{2R \cdot M}$$

The scale value found by Steen, expressed in minutes, was 75′ and this value multiplied by $K.H$ gives: $\varepsilon_d = 16.4$, and for the h-curve we have:

$$\text{(XI)} \qquad \varepsilon_h = \frac{a_d}{a_h} \varepsilon_{d'} = \frac{a_d}{a_h} \cdot \frac{MH + D}{2RM}$$

where a_d and a_h mean the distances between the black spots produced on the photograms by deflection respectively of the d- and h-variometer, when these deflections in both cases are made with the same deflector, placed at the same deflector distance. For the before-mentioned date, on the 30th of November 1903, we have according to measurements:

$$a_d = 30.73 \text{ mm. and } a_h = 38.80 \text{ mm.}$$

These values, introduced in formula (XI), give as scale value for the h-curve: $\varepsilon_h = 13.0$. To control this result there was made a direct comparison between absolute data for H and ordinates read on the h-curve. There were on this occasion selected 7 series of corresponding data for H and h, and we found the values stated in Table LXXXVII, which must be said to show a fairly good agreement. We see, however, that the *Mean*, 12.01, does not agree very well with the result we got by aid of formula (XI).

Table LXXXVII.

No.	ε_h
1	12.37
2	11.74
3	12.25
4	12.58
5	11.55
6	11.43
7	12.16
Mean	12.01

To get a general view of the material there was made an approximate determination for the base-line values of the d- and h-curve, with use of the scale walues ω' and ε_h, obtained through direct comparisons between absolute data and ordinate readings. — It may in this connection be remarked that there occurred some abrupt changes in the relation between the curve and the base-line of the photograms, but these irregularities could more or less be corrected. — The value of B_h being known, approximate values for H could now be calculated for the point of time when the deflection experiments had been taken, and it appeared that the value for H could approximately be put equal to H_o for February the 22nd and for April the 28th 1904, besides for November the 30th 1903, as already mentioned. Introducing for ε_d in formula (XI), the right side of the equation (X), we get:

Table LXXXVIII.

Year	Date	a_d	a_h	θ_o
1903	Nov. 30	30.73	38.80	40.3
1904	Feb. 22	21.91	27.52	40.1
»	April 28	21.87	27.62	40.3

$$\text{(XII)} \qquad (1 + \theta) = \frac{2 R \varepsilon_h}{H} \frac{a_h}{a_d}$$

Putting for the three mentioned cases $H_o = 0.00750$ and $\varepsilon_h = 12.0$, we get for θ the values given in the last column to the right in Table LXXXVIII, which show a very good agreement, and we may therefore conclude that the data for magnetic deflection on the curves are exact enough, while, as already mentioned, the data for determination of the torsional effect of the suspension are too inexact to be of direct use.

The approximate determinations for the base-line value of the h-curve B_h showed that the value changed considerably in relation to time, and we therefore could not consider ε_h as constant. Furthermore, there was on the 10th of September 1904 put in a new magnet mirror on the h-variometer (cf. Register Journal, page 39). In order to get a *constant* quantity as foundation for an approximate judgment of the complete material of the deflection experiments at Gjøahavn, it was decided to make use of the deflective force of the small magnet used as deflector for these experiments. As neither the magnetic moment nor the temperature coefficient of this magnet was known, these data had to be determined through experiments, and this was done by Russeltvedt in 1918.

When these experiments were to be made, the deflection bar belonging to the variation instruments of the Expedition was taken out of the box, and on the bar a small magnet was found to be placed. Besides this small magnet, there were, however, in the box also several other small, similarly shaped magnets, and it has later on become probable that the magnet found placed on the bar was not the one which had been used as deflector for the experiments during the Expedition. However this might be, it was taken for granted that the magnet found fixed to the bar was the right one, but uncertainty regarding the magnet with which the mentioned experiments have been made certainly reduces the importance of the results of the observation, which in the first place gave means for determining the temperature coefficient, and resulted in: $\mu = 0.0004$. The method used for determination of the magnetic moment consisted in observing the ratio m_o/m_g, where m_g means the known magnetic moment of another magnet, m_0 being that of the small deflector. The known magnet was the Zschau magnet No. 9, which according to Table XXVII (p. 73) had in 1903 a magnetic moment equal to 99.42, while in 1907 the value had gone down to 98.66.

As result of two series of observations taken in 1918 we found:

$$(1)\ \frac{m_o}{m_g} = 0.14802, \quad (2)\ \frac{m_o}{m_g} = 0.14905$$

Now supposing the Zschau magnet No. 9 not to have met with any accident, we may for 1918 put $m_9 = 98.35$, by which the following values for m_o are obtained:

$$(1)\ m_o = 14.56, \qquad (2)\ m_o = 14.66$$

In the deflection experiments of the d-variometer there were, as we know, employed magnets placed according to the *1st main position of Gauss*, and we have:

$$\text{(XIII)} \qquad m_o = \frac{H\, r^3\, a_d\, (1 + 3\,\beta t)\,(1 + \theta)}{2\, R\, c\, (1 - \mu t)},$$

where r means the deflector distance, β dilatation of brass, μ the temperature coefficient, t the temperature in the variation house during the experiment, c a constant depending on the magnet constellation, for which we put: $c = g\ (1 + \Xi)$, where for Ξ, *the moment correction*, we have, (cf. page 126):

$$\Xi = \frac{L^2}{r^2}(A + C),$$

where $L = 2.0$ cm., $g = 2$, $A = \frac{1}{2}$ and $C = -\frac{3}{4}$,[1] which introduced into the formula makes $\Xi = 1/r^2$. For the distance r, used for the three first deflection experiments at Gjøahavn, we have according to Wiik, and controled by measurements made by Russeltvedt, 17.87 cm., and for the later experiments 19.97 cm. Calculating with these values for r, we get for the constant c the data given in Table LXXXIX. Now computing the value for $(1 + \theta)$ by aid of formula (XIII), putting for H, a_d, t and r the data for November the 30th 1903, stated on page 128, we get: (1) 44.22 and (2) 45.43. Putting for θ in formula (XII), p. 130, the mean value 44.8, we get for the scale value of the h-curve $\varepsilon_h = 12.7$. The mean value in Table LXXXVII (p. 129) was 12.0, and as this value may be considered rather reliable, we see that no satisfactory result has been obtained. As a possible explanation of this unsatisfactory result serves, as mentioned, the uncertainty regarding the magnet, concerning which we may remark that an exchange may have taken place in connection with the experiments Russeltvedt made in 1909—1914 for determination of the constant q.

Table LXXXIX.

No.	r	c
1	17.87	0.29967
2	19.97	.29994

Having failed to solve the problem regarding the data for the torsinal effect of the suspension thread in such a way that we could make direct use of the deflection experiments, there seems to be nothing left to be done for final determination of the scale value of these curves than accept to extract values for ω' and ε_h through direct comparison between absolute data for D and H respectively with corresponding ordinates on the d- and h-records. As to H there seems to be no reason for not getting quite satisfactory data by aid of this method, but as regards D the matter becomes considerably more complicated. As mentioned, the deflection we get by turning the torsion head of the d-variometer over a certain angle is dependent on the value the horizontal intensity happens to have, and we had for the torsion to reckon with formula (IX), p. 128. Just for the same reason the scale value of the *d*-curve cannot be considered constant, and we shall here have to put:

$$\text{(XIV)} \qquad \omega' = \omega_o' + \triangle\,\omega',$$

where $\triangle\omega'$ is a function of H, which is equal to zero when $H = H_o$. The consequence of this is that the more H differs from H_o, the more will ω' differ from ω_o', and the larger

[1] These values refer to all the small magnets.

the range of the data for D, used in the comparison method, the more unreliable will be the values for ω'. In other words: *We cannot expect to arrive at an acceptable result for the scale value for the d-curve through direct comparison between D and d.*

From what has been said, we see that in one way or other we shall have to secure reliable values for θ, and there seems to be no other means at disposal than the method mentioned above, indirect determination of θ by aid of the material available. For this purpose, however, we need to know the magnetic moment of the small deflector, but regarding this we have seen that uncertainty about the identity of same has made the result of determination through observation doubtful. The idea of making use of the moment of this magnet must not, however, be abandoned, and after the failure with the results of the observations in 1918 we have proceeded as follows.

For the interval November the 30th 1903—April the 28th 1904 we shall accept a constant scale value of 12.0 for the h-curve, and for H_o we may, as before, put 0.00750 C. G. S. On the basis of these values we have already found three values for θ_o, and if we now calculate the magnetic moment m_o by aid of formula (XIII) with use of the same data as before (cf. page 131), and if for θ_o we introduce 40.2, the mean of the three values in Table LXXXVIII (p. 130), we ought to get the value of the magnetic moment of the magnet with which the deflection experiments have actually been made at Gjøahavn. The results of these calculations are given in Table XC, and accepting the *Mean*, $m_o = 13.2$, as constant as long as the Expedition lasted, we can calculate the value for $(1 + \theta)$ for each time deflections have been made, putting for H an approximate value based on reductions from the register curves. The only unknown quantity is the temperature coefficient of the small deflector and for this coefficient we may either put zero, or still better, the value found for the small magnet with which Russeltvedt took observations in 1918. The value found was, as mentioned, 0.0004 and for the calculation we have:

Table XC.

Year	Date	m_o
1903	Nov. 30	13.29
1904	Feb. 22	13.14
»	April 28	13.17
Mean		13.20

$$(1 + \theta) = \frac{m_o\, 2\, R\, c\, (1 - \mu t)}{a_d\, H\, r^3\, (1 + 3\beta t)}$$

The result of the calculation will be found in Table XCI under the heading θ_0. Regarding the data given in Table XCI we may remark that we did not get exactly these figures in the first calculation, because several small irregularities in the material had to be corrected after the first approximations for H were made. In analogy with formula (IX) (p. 128), we may put $H = H_o + \triangle H$, and we have:

$$\frac{\triangle \theta}{\triangle H} = \frac{\theta - \theta_o}{H - H_o} = \frac{\theta_1 - \theta_2}{H_1 - H_2} = \lambda, \text{ or:}$$

(XV) $$\theta = \theta_o + \lambda (H - H_o).$$

Again using the data for the interval November the 30th 1903—April the 28th 1904 we get by aid of graphical plotting:

$$\lambda = -0.051$$

This value appears to be appliable till August the 5th, when there is a change. The final data for the constant λ and θ_o will be found in Table XCI. As supplement to the date for θ_o, given in the table, we may for the interval before November the 30th 1903 state that for the 2nd of November we got $\theta_o = 41.3$, which value seems to undergo a gradual change until the 30th.

With the data for θ, given in Table XCI, we may now calculate scale values for the d-curve according to formula (VII), (p. 128), and get, for the three dates where H could be put equal to H_o, the values for ω_0' given in Table XCII, and having determined λ we can also calculate θ, and consequently also ω' for the cases where H is different

Table XCI.

From		To		λ	θ_0
Year	Date	Year	Date		
1903	Nov. 30	1904	Aug. 5	− 0.051	40.2
1904	Aug. 5	»	Nov. 27	− .056	42.2
»	Nov. 27	1905	June 1	− .062	45.5

Table XCII.

Year	Date	ω_o'
1903	Nov. 30	1.15
1904	Feb. 22	1.16
»	April 28	1.16

from H_o. These values will be found in the main table Table XCV, where all the reduction constants for the scale values of the variometers are tabulated. With use of the data given in this table we can also determine the relation between ω' and H, and we have:

(XVI) $$\omega' = \omega_o' + \eta\,(H - H_o)$$

For the same intervals as before we find the resulting data for η and ω_o' stated in Table XCIII, where we have also added data for the scale value of the d-curve expres-

Table XCIII.

From		To		ω_o'	η	ε_{do}
Year	Date	Year	Date			
1903	Nov. 30	1904	Aug. 5	1.16	− 0.00157	15.13
1904	Aug. 5	»	Nov. 27	1.21	− .00161	15.84
»	Nov. 27	1905	June 1	1.31	− .00170	16.38

sed in γ per mm. For this quantity we have: $\varepsilon_d = \omega'\,K\,H$, and a little reflection will show that we can put:

(XVII) $$\varepsilon_d = \varepsilon_{do}\,(1 + \delta),\ \text{where:}$$

(XVIII) $$\varepsilon_{do} = \omega'\,H_0\,K \text{ and } \delta = \frac{H - H_o}{H_o},$$

Before giving the main table in which all the data concerning the scale values of the curves at Gjøahavn are assembled, we shall state the result of some measurements for shrinkage of the paper for the cases when deflections were made. These data are in Table XCIV given in per centage.

Table XCIV.

1903			1904							1905		
3/11	30/11	21/12	20/1	22/2	21/3	21/4	28/4	13/9	30/9	2/2	10/5	28/5
%	%	%	%	%	%	%	%	%	%	%	%	%
1.36	0.78	0.56	1.07	0.62	0.84	0.84	0.99	0.51	0.56	0.84	0.90	1.18

Table XCV.

No.	Year	Date	t	H	r	q	a_d	a_h	a_z	ε_h	ε_{ho}	ω'	ω_o'	η	θ	θ_o	λ	a_τ	α	p	ε_{do}	ε_z
			°	C. G. S.	cm		mm	mm	mm	γ	γ	°	°	°				mm	′		γ	γ
1	1903	Nov. 3	− 6.4	0.00695	17.87	0.67430	30.02	39.76	63.09	11.09	11.86	1.26	1.17	0.0016	44.2	41.3	0.051	34.00	58.4	19.5	15.13	4.94
2	»	» 30	− 8.5	750	»	»	30.73	38.80	61.36	11.93	11.91	1.15	1.15	»	39.9	39.9	»	25.15	43.3	14.4	»	5.08
3	»	Dec. 21	− 14.2	729	»	»	30.62	38.74	46.90	11.68	11.95	1.19	1.16	»	41.4	40.3	»	24.28	41.8	13.8	»	5.29
4	1904	Jan. 20	− 20.0	759	19.97	0.63560	22.16	27.74	32.35	12.13	11.96	1.13	1.14	»	39.4	39.9	»	24.60	42.4	14.1	»	5.20
5	»	Feb. 22	− 21.3	750	»	»	21.91	27.52	26.78	12.02	12.08	1.16	1.16	»	40.4	40.4	»	24.55	42.3	14.1	»	7.92
6	»	March 21	− 22.2	797	»	»	21.88	27.53	55.50	12.70	12.03	1.09	1.17	»	38.0	40.4	»	24.42	42.1	14.0	»	3.82
7	»	Apr. 21	− 16.8	726	»	»	21.91	27.55	52.82	11.71	12.03	1.19	1.15	»	41.6	40.4	»	—	—	—	»	4.00
8	»	» 28	− 13.0	747	»	»	21.87	27.62	60.54	12.01	11.99	1.16	1.16	»	40.4	40.3	»	24.05	41.4	13.8	»	3.49
9	»	Sep. 13	+ 0.3	743	»	»	20.79	26.83	7.79	12.17	12.28	1.22	1.21	»	42.6	42.2	0.056	31.70	54.5	18.2	15.84	26.96
10	»	» 30	− 4.3	751	»	»	20.79	26.87	9.83	12.28	12.27	1.21	1.21	»	42.2	42.3	»	32.05	55.1	18.4	»	21.41
11	1905	Feb. 2	− 22.2	720	»	»	19.63	27.07	9.73	11.74	12.31	1.35	1.30	0.0017	47.1	45.2	0.062	29.78	51.1	17.0	16.38	21.81
12	»	May 10	− 10.5	779	»	»	19.30	26.99	9.46	12.70	12.23	1.26	1.31	»	44.0	45.5	»	—	—	—	»	22.31
13	»	» 28	− 5.2	606	»	»	20.00	27.02	9.59	10.24	12.32	1.56	1.32	»	54.7	45.8	»	30.80	75.9	25.3	»	21.96

$R = 1023$ mm, $K = 0.000291$, $m_o = 13.2$, $\mu = 0.0004$, $\varkappa = 0.0001$.

It may in this connection also be remarked that the distance between the deflection points on the photograms are sometimes misleading because of the fact that the instrument has been unstable during the experiment. This is specially the case with the z-instrument. The measurements given in Table XCV are corrected for errors due to instability of instrument and shrinkage of the photographic paper.

In Table XCV:

t means temperature in the variation house, standard $t_o = -10°$ C,
H » horizontal intensity, H_o average value: 0.00750,
r » deflection distance,
q » constant in the formula for determination of the scale value of the z-curve,
a_d » mean distance between the deflection points of the d-record,
a_h » » » » » » » » » h- »
a_z » » » » » » » » » z- »
ε_h » scale value of the h-curve: . . $\varepsilon_h = \varepsilon_{ho} + \varkappa\,(H - H_o)$,
ω' » » » » » d- » : . . $\omega' = \omega_o' + \eta\,(H - H_o)$,
η » equal to the ratio: $\dfrac{\omega' - \omega_o'}{H - H_o}$, (cf. page 137),
θ » torsion coefficient: . . . . . $\theta = \theta_o + \lambda\,(H - H_o)$,
λ » equal to the ratio: $\dfrac{\theta - \theta_o}{H - H_o}$,
a_τ » mean distance between the deflection points of torsion,
α » torsion angle equal to: $\dfrac{a_\tau\,(1 + \theta)}{2\,R\,K\,\theta}$
p » unit of the scale division of the torsion head, $p = 3'$
ε_d » scale value of the d-curve, expressed in γ per mm.

$$\varepsilon_d = \varepsilon_{do}\,(1 + \delta) \text{ when: } \varepsilon_{do} = \omega'\,H_0 . K \text{ and } \delta = \frac{H - H_o}{H_o}$$

ε_z » scale value of the z-curve,
R » distance between the mirror of the d-magnet and the drum of the registrator,
m_o » magnetic moment of the deflection magnet,
μ » temperature coefficient of the deflection magnet.

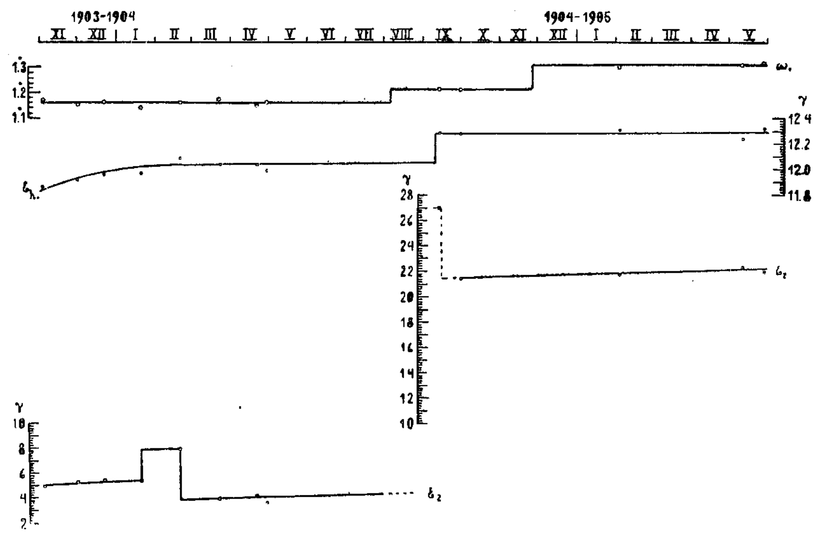


Fig. 21. Curves representing the final scale values of the d-, h-, and z-curve at Gjøahavn.

By aid of the data for scale value of the three variation curves given in Table XCV the three curves given in Fig. 21 have been drawn.

The Zero Point Correction of the Tangent Screw of the Torsion Head of the d-Variometer. — We have in the preceding pages seen that it has been possible to determine the value of the torsional effect of the thread without use of the torsion experiments, the data obtained through these experiments being too inexact. As it will be of interest to get a general view of the nature of this inexactness, we shall by aid of formula (VIII), page 128, compute the value of the angle at which the torsion head of the instrument has actually been turned in each special case. We have:

$$\alpha = \frac{a_\tau\,(1+\theta)}{2\,R\,K\,\theta}$$

The result of the calculations will be seen in Table XCVI, where α' and α mean the results of the calculation when for a_τ we put respectively the value emerging from measurement on the photograms and those given in Table XCV, which answer to p, being the point of the division corresponding to the torsion actually given to the thread, while p' answers to the point of the division indicated by the pointer and read by the observer. The last column to the right, Diff., gives the difference between p and p', and by aid of the figures given in this column we have plotted the relation between time and the value of the zero point correction of the tangent screw with which the torsion head of the d-variometer was provided. The result will be seen in Fig. 22, where the line through the points shows that this correction was very large and even inconstant. We can also see that the division has been too roughly made and that there must have been made a mistake in the setting of the pointer for the observations of December 21 1903, and May 28 1905. Especially in the last case the pointer must have stood at

Table XCVI.

Year	Date	α'	α	p'	p	Diff.
1903	Nov. 3	60.00	58.43	20.0	19.5	— 0.5
»	» 30	45.00	43.32	15.0	14.4	— 0.6
»	Dec. 21	»	41.78	»	13.8	— 1.2
1904	Jan. 20	»	42.39	»	14.1	— 0.9
»	Feb. 22	»	42.27	»	14.1	— 0.9
»	Mar. 21	»	42.11	»	14.0	— 1.0
»	April 21	—	—	—	—	—
»	» 28	45.00	41.41	15.0	13.8	— 1.2
»	Sep. 13	60.00	54.52	20.0	18.2	— 1.8
»	» 30	»	55.13	»	18.4	— 1.6
1905	Feb. 2	»	51.10	»	17.0	— 3.0
»	May 10	—	—	—	—	—
»	» 28	60.00	75.88	20.0	25.3	?

quite another place than noted. It seems as if the observer has in this case put the pointer at something like 25p instead of 20p, as noted, though this value will not give a satisfactory result either.

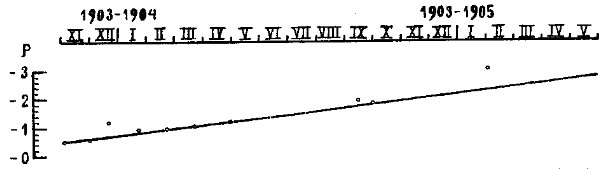


Fig. 22. Curve showing the zero point correction of the tangent screw of the torsion head of the d-instrument.

Further Information concerning the Scale Values of the h- and d-Curve. — Table XCV, p. 134, will be seen to contain two volums for the scalevalue of the *h*-curve. The values given under the heading $\varepsilon_{h\,o}$ are calculated by aid of formula XI, p. 129, using for a_d, a_h and ε_{do} the data given in said table. By aid of these data for ε_h the curve in Fig. 21 has been constructed, and for the actual reduction of the *h*-curve we have derived data for ε_h from this curve. Reflection will, however, show that these nearly constant data for ε_h do not give correct values for H, unless the absolute value happen to be more or less in agreement with the average, $H_o = 0.00750$. To get a more correct reduction for the case, where H is different from H_o, we have that:

(a) $$\varepsilon_h = \varepsilon_{h\,o} + \varkappa\,(H - H_o)$$

where $\varkappa$ is found to be 0.016. According to formula X and XVIII (to be found p. 133) we have:

(b) $$\varepsilon_h = \frac{a_d}{a_h} \cdot \frac{1 + \theta}{2\,R} \cdot H$$

and introducing for a_d, a_h and θ_o the values given for the case No. 10 and No. 13, in Table XCV, where H reads 751 and 606, we get respectively: $\varepsilon_h = 9.80$ and $\varepsilon_h = \varepsilon_{h\,o} = 12.27$. Hence we have:

(c) $$\varkappa = \frac{\varepsilon_h - \varepsilon_{h\,o}}{H - H_o} = 0.016$$

and using this value for $\varkappa$ in formula (a) we could calculate the data given under the heading ε_h in Table XCV.

From what is said, it is clear, that by special studies of perturbations we shall also by the *h*-curve have to proceed analogous with what has been described below for correct reduction of the *d*-curve. *In both cases it may be remarked, that very extreme values cannot be reduced correctly unless rectangular co-ordinates are introduced.*

As the scale value for the d-curve has proved to be a function of $\triangle H$ it will have to be determined in each special case. The formula was, as we remember:

$$\omega' = \omega'_o + \eta\,(H - H_o),$$

where the value for η can be computed as soon as $\triangle H$ and $\triangle\omega'$ are known. For calculations of the values for ω', given in Table XCV, this was the case and here we have considered η as a constant, equal to 0.0016 (0.0017). When it came to practical use, viz., when the base-line values of the d-curves were to be computed by aid of formula:

(XIX) $$B_d = d\,\omega' + D$$

it was soon discovered that the formula hitherto used for determination of the scale value was not exact enough, the data we got for B_d varying too much. Especially was the error large when there were used observations taken at high and low stand of declination, and this seemed to indicate that ω' also was a function of D. That this really is the case will be seen from Fig. 23, by aid of which the nature of this function can be seen.

The variation magnet has in the figure been indicated by the double pointed arrow suspended at the point m, and the drum of the registrator is given by the line $x' - x$.

The declination is indicated by the angle D between the direction N—S and the line marked H, which means the direction in which the variation needle would have pointed if the magnet had been suspended torsionless. On account of the torsion of the thread the needle cannot point along the direction m—H, but will point along the dotted line, which with the N—S direction forms the angle a. From what has been indicated by the two force arrows above, H and θ' (cp. pag. 57), we see that:

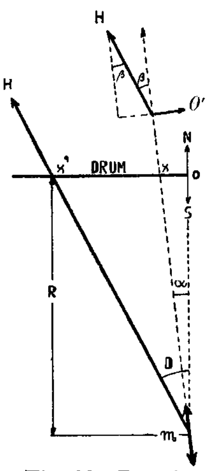


Fig. 23. Drawing illustrating the relation between ω' and D.

$$\text{(XX)} \qquad \frac{\theta'}{H} = \sin \beta = \sin (D - a)$$

According to formula (VII), p. 128, we find that:

$$\omega' = \frac{1 + \theta}{2\,R\,K} \text{ and } \omega'_o = \frac{1 + \theta_o}{2\,R\,K}, \text{ and we may put: } \triangle\omega' = \frac{\theta - \theta_o}{2\,R\,K},$$

and furthermore, according to formula (XX):

$$\theta' = H \sin (D - a)$$

$$\theta'_o = H_o \sin (D - a_o)$$

Putting $a_o = a$, and $(D - a) = D'$, we have: $\theta' - \theta'_o = (H - H_o) \sin D'$ and for the difference $\omega' - \omega'_o = \triangle\omega'$ we have thus:

$$\text{(XXI)} \qquad \triangle\omega' = \eta\,(H - H_o) = \frac{\sin D'}{2\,R\,K}\,(H - H_o)$$

Formula (XXI) is applicable under the assumption that the suspension thread is torsionless when the needle points in the direction N—S.

Having now shown that η in formula (XVI), p. 133, is a function of sin D', we may have a look at the result we got by the approximate determination for the base-line values of the d-curve. Let us suppose that for an interval we have calculated values for B_d by aid of formula (XVI), and that the scale values used had been correct. Let us further suppose that no abrupt changes occurred in the relation between curve and base-line and that we have good absolute data. The result should than be more or less identical data for the computed quantity B_d. Supposing we exclude all values for B_d computed with data for declination showing higher figure for the diffrence $(D - D_o) = \triangle D$ than a certain selected lower limit, these data for B_d will more or less cover what is demanded above, and if we take the mean of a larger number of such data for B_d we shall get a comparatively reliable figure for B_{dm}. This enables us to put:

$$\omega' = \frac{B_{dm} + D}{d}$$

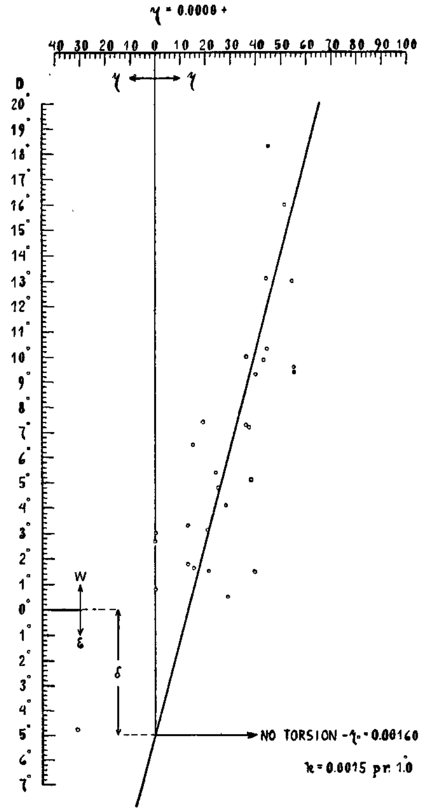


Fig. 24. Relation between η and D for the interval Nov. 27 1904 — June 1. 1905.

Having computed ω' for the largest possible range of D, we introduce these values in the formula:

$$\eta = \frac{\omega' - \omega_o'}{H - H_o} = \frac{\triangle \omega'}{\triangle H}$$

and get thus the corresponding values for η and D, plotted in Fig. 24, which refer to the period November 27 1904 to June 1 1905. The line through the points will then represent a fairly reliable value for the coefficient $k = \eta / D$, and we see that $\eta = 0$ in a declination equal to 5° E, which means that with the stand the instrument had during the mentioned interval the thread was torsionless when the declination happened to be 5° E. As long as the stand of the instrument is unaltered, the relation between η and D remains constant, but as the stand was changed three times during the stay at Gjøahavn, we shall have four intervals with different values for the relation between η and D. In the following pages we shall refer to these four intervals as I, II, III, IV, and the interval mentioned above corresponds to *interval IV*. If, as mentioned, we let k indicate the ratio η / D and δ the number of degrees between 0° and the figure for D for which the suspension thread is torsionless, we shall, for the four mentioned intervals, have the data given in Table XCVII.

Table XCVII.

No.	From		Till		δ	k
	Year	Date	Year	Date		
I	1903	Nov. 1	1904	Aug. 2	0°.8 E	0.0049
II	1904	Aug. 5	»	Sep. 14	1°.3 »	.0051
III	»	Sep. 14	»	Nov. 27	1°.0 W	.0036
IV	»	Nov. 27	1905	June 1	5°.0 E	.0015

As long as the value of D keeps between the limits 10° E and 20° W we may, with sufficient exactness, obtain the value for η from graphs corresponding to the one given in Fig. 24, and as the data for D, emerging from the absolute observations, never go above this limit, we may for the determination of ω' in connection with the calculations for the base-line values of the d-curve make use of such graphs. In these calculations we shall then make use of the two formulae (XIV), p. 131, and (XIX), p. 136, and the result of the calculation will be found in Table XCIX, page 141, where we see that the result is fairly satisfactory. In the reduction of the d-curves, however, it often happened that the variation was so large that the mentioned limit, 10° E — 20° W, was considerably exceeded. The curves from which the coefficient η is to be derived had therefore to be extended. To procure data for construction of curves for the relation between η and D, which cover the required interval, we shall have to make use of the result of the discussion on page 137, which showed that η was a function of sin D, whereby we shall have to consider the small quantity δ, the disparity between 0° and the figure of D

for which the suspension thread is torsionless. The formula with which we shall have to calculate must thus have the form:

(XXII) $\eta = k \sin (D + \delta)$

Calculations according to this formula have to be made for the four mentioned intervals, with use of the data for k and δ given in Table XCVII, while for D we successively put the necessary values between 40° E and 90° W, so as to be able to construct the four curves I, II, III, IV, given in Fig. 25.

The values for k, given in Table XCVII, were, as we remember, found by putting:

$$k = \frac{\eta}{D - \delta} = \frac{\triangle\omega'}{\triangle H} \times \frac{1}{D \div \delta}$$

and here $\triangle\omega'$ was expressed in degrees per millimetre and $\triangle H$ in γ. In Table XCVIII we have expressed the values for k in C.G.S. and computed these values with the corresponding scale values for the d-curve, expressed in degrees and in minutes per millimetre. A glance at these data show that k is a function of ω_0'.

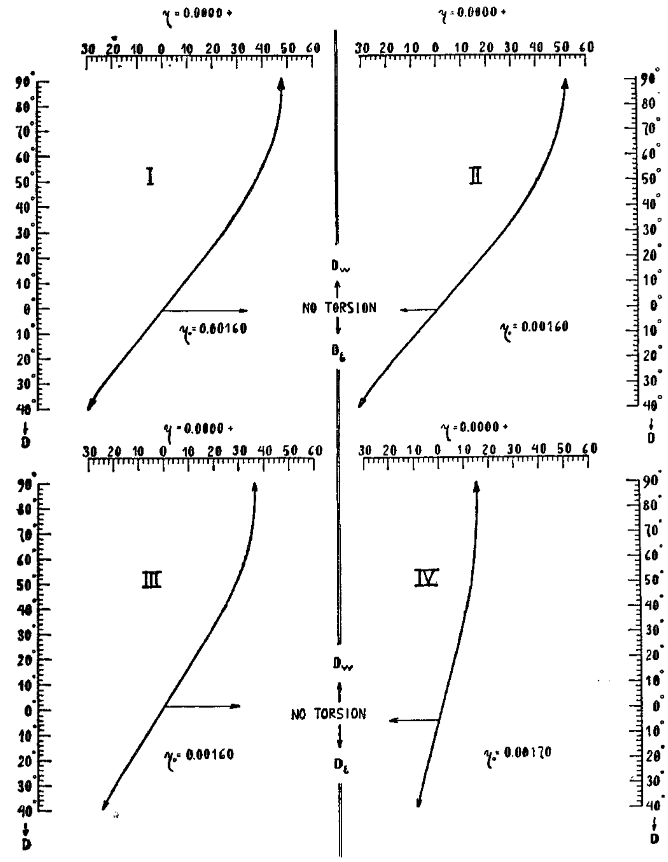


Fig. 25. Curves from which the value of η can be obtained when D is known.

Practical Remarks for the Reduction of the d-Curves. — To be able to obtain the value for η by aid of the curves given in Fig. 25, we must, as we see, know the value of D. As long as it was a question of determination of the base-line values of the d-curve, the required values for D were furnished by the absolute observations, but when η is wanted for reduction of the d-curves, we have not any corresponding value for D, before this quantity has been determined. It is clear that this is very inconvenient, but it is far from being so complicated as it seems, because only in comparatively few cases the value of $\triangle D$ is so large that η will be materially influenced, and consequently in most cases the right scale value can be found without much trouble. In all cases, however, we shall have to make an approximate calculation for D by aid of the formula:

Table XCVIII.

No.	ω'		k
I	1.16	69.6	0.00238
II	1.21	72.6	.00247
III	1.21	72.6	.00175
IV	1.31	78.6	.00075

$$D = d\,\omega' - B_d,$$

whereby the computer will soon learn to judge by the ordinate reading whether he can put $\omega' = \omega_0'$, or, if not, what value ought to be chosen to get as close as possible to the right value for D. Experience shows that also in this case one approximation is usually enough, but it is clear that the final value for D must not be so far from that found by the approximation that η does not get the same value in both cases[1]).

[1]) Regarding eventual perturbation studies we refer to what has already been said p. 136.

Determination of the Base-Line Values of the Variometers at Gjøahavn.

The Base-Line Value of the d-Curve. — For the d-variometer we see that rising ordinate means increasing westerly declination and for determination of the base-line value we have:

$$\text{(I)} \qquad B_d = d\,\omega' - D$$

whereby d always is positive and D mostly so, but sometimes negative, which means easterly. The scale value, which on account of the extraordinary conditions cannot be considered constant, has the form:

$$\text{(II)} \qquad \omega' = \omega_o' + \triangle,$$

where the value of the constant member ω_o' emerges from what is given in Table XCV, p. 134, while the variable $\triangle$ is found by aid of the formula:

$$\text{(III)} \qquad \begin{aligned} \triangle &= \eta\,(H - H_o) \\ &= k \sin\,(D + \delta).\,(H - H_o) \end{aligned}$$

The quantity $(H - H_o)$ is in each case to be found by subtracting the value for H, found by reduction of the h-curve, from the mean value H_o equal to 0.00750, while the value of the factor η may be derived from the graphical curves given in Fig. 25 in accordance with the observed value for D.

The work connected with the determination of reduction constants for the d-curve was rendered very troublesome by the instability of the instrument, which repeatedly led to changes in the relation between base-line and curve. Under ordinary circumstances it is not difficult to ascertain such abrupt changes, if only there is sufficient absolute data. At Gjøahavn, however, the abnormal magnetic conditions made things extremely difficult in spite of a very large number of absolute observations. In the preliminary determination of base-line value for the d-curve, it must be remembered that both d and ω' had unknown corrections and, beside this, even the absolute value D was sometimes uncertain on account of torsion in the thread, (cf. pp. 57—60). The result of the first attempts at determination of values for B_d were therefore very little satisfactory; they varied very much and little was known regarding the nature of these irregularities.

To give a general view of the numerous abrupt changes in B_d we have worked out Fig. 26, p. 143, where the date and the hour when the changes took place can be read from the tables added. In Table XCIX we give the complete material and resulting data for the base-line values.

Table XCIX.

Year	Date	Gr. M. T.	B_{do}	I	O	Year	Date	Gr. M. T.	B_{do}	I	O
		h. m.	°					h. m.	°		
1903	Nov. 11	4 54 p	30.0 E	Z	W	1904	April 29	5 33 p	30.3 E	S	W
»	» 16	7 3 »	30.4 »	»	»	»	May 5	5 12 »	30.0 »	»	»
»	» 20	6 49 »	30.1 »	»	A	»	» 6	7 12 »	29.7 »	»	»
»	» 24	5 39 »	29.9 »	»	»	»	» 7	7 13 »	29.4 »	»	»
»	» 28	5 21 »	30.8 »	»	»	»	» 10	5 12 »	29.9 »	»	»
»	Dec. 1	5 37 »	29.1 »	»	»	»	» 11	5 10 »	30.1 »	»	»
»	» 3	5 56 »	29.8 »	»	» [1]	»	» 12	7 18 »	30.0 »	»	»
»	» 7	10 16 »	29.9 »	»	»	»	» 14	7 13 »	30.2 »	»	»
»	» 8	5 31 »	30.6 »	»	»	»	» 20	0 15 a	29.6 »	»	»
»	» 9	4 58 »	29.9 »	»	»	»	» 20	5 20 p	30.0 »	»	»
»	» 9	10 56 »	29.8 »	»	»	»	» 20	11 47 »	30.4 »	»	»
»	» 10	5 49 »	29.9 »	»	»	»	» 21	5 30 »	29.4 »	»	» [5]
»	» 12	3 21 »	29.8 »	»	»	»	» 26	11 57 »	30.4 »	»	»
»	» 15	9 32 »	30.5 »	»	»	»	» 30	4 14 »	30.2 »	Z	»
»	» 16	6 30 »	30.9 »	»	»	»	» 31	4 3 »	30.5 »	»	»
»	» 17	6 21 »	30.1 »	»	»	»	June 1	4 15 »	29.3 »	»	»
»	» 18	4 38 »	30.8 »	»	»	»	» 2	11 21 »	29.8 »	S	»
»	» 19	4 54 »	29.9 »	»	»	»	» 3	5 9 »	29.9 »	»	»
»	» 21	4 21 »	29.2 »	»	»	»	» 8	5 30 »	30.1 »	»	»
»	» 23	4 21 »	29.5 »	»	»	»	» 11	0 3 a	30.4 »	»	»
»	» 29	4 38 »	29.6 »	»	»	»	» 11	11 41 p	29.8 »	»	»
»	» 31	4 50 »	30.4 »	»	»	»	» 13	11 59 »	29.8 »	»	»
1904	Jan. 4	6 34 »	29.2 »	»	»	»	» 20	4 53 »	30.6 »	»	»
»	» 6	4 26 »	29.9 »	»	»	»	» 21	5 31 »	30.6 »	»	»
»	» 7	4 12 »	29.6 »	»	»	»	» 22	11 39 »	30.4 »	»	»
»	» 9	4 29 »	29.9 »	»	»	»	» 24	5 11 »	30.6 »	»	»
»	» 13	4 11 »	29.8 »	»	»	»	» 25	4 32 »	29.6 »	»	»
»	» 15	6 20 »	30.1 »	»	»	»	» 29	5 1 »	29.0 »	»	»
»	» 17	9 53 »	30.6 »	S	»	»	» 30	4 16 »	30.3 »	»	»
»	» 17	10 35 »	30.5 »	»	» [2]	»	July 1	10 7 »	29.6 »	»	»
»	» 25	10 29 »	30.0 »	Z	»	»	» 2	4 26 »	29.4 »	»	» [6]
»	» 26	4 20 »	30.3 »	»	»	»	» 4	4 30 »	29.5 »	»	»
»	» 26	5 12 »	30.8 »	S	»	»	» 5	4 35 »	29.7 »	»	»
»	» 28	6 12 »	29.4 »	Z	»	»	» 6	4 19 »	30.0 »	»	»
»	Feb. 4	9 54 »	30.9 »	»	»	»	» 7	4 10 »	30.2 »	»	»
»	» 5	10 34 »	29.9 »	»	»	»	» 8	6 56 »	30.5 »	»	»
»	» 5	11 34 »	30.9 »	»	»	»	» 9	4 13 »	30.1 »	»	»
»	» 6	11 59 »	29.8 »	»	»	»	» 12	4 33 »	30.7 »	»	»
»	» 17	10 24 »	30.1 »	»	»	»	» 13	4 27 »	—	»	»
»	» 17	11 7 »	29.9 »	»	»	»	» 14	4 10 »	30.4 »	»	»
»	» 17	11 50 »	29.9 »	»	W	»	» 15	10 4 »	30.7 »	»	»
»	» 18	0 22 a	29.6 »	»	A	»	» 16	5 43 »	29.6 »	»	»
»	» 19	5 20 p	29.2 »	S	»	»	» 17	5 49 »	29.8 »	»	»
»	» 19	5 24 »	30.2 »	»	»	»	» 19	4 41 »	30.4 »	»	»
»	» 19	10 28 »	29.8 »	Z	»	»	» 20	10 0 »	29.2 »	»	»
»	» 20	4 55 »	30.0 »	S	»	»	» 21	4 0 »	29.4 »	»	»
»	» 20	4 36 »	29.4 »	Z	» [3]	»	» 22	3 55 »	29.9 »	»	»
»	» 23	5 25 »	30.3 »	S	W	»	» 23	4 5 »	29.4 »	»	»
»	Mar. 7	4 56 »	29.4 »	»	»	»	» 25	9 56 »	30.3 »	»	» [7]
»	» 7	5 31 »	29.9 »	»	»	»	» 30	4 33 »	29.6 »	»	»
»	» 8	9 53 »	30.2 »	»	»	»	Aug. 1	4 21 »	30.5 »	»	»
»	» 10	5 9 »	30.1 »	»	»	»	» 2	4 14 »	—	»	» [8]
»	» 11	5 24 »	29.6 »	»	»	»	» 3	4 1 »	30.0 »	»	»
»	» 12	5 29 »	29.2 »	»	»	»	» 4	3 56 »	29.6 »	»	»
»	» 14	4 28 »	30.1 »	»	»	»	» 5	5 32 »	30.5 »	»	» [9]
»	» 15	4 34 »	29.8	»	»	»	» 6	4 10 »	—	»	»
»	» 16	5 4 »	29.7 »	»	»	»	» 8	4 4 »	31.1 »	»	»
»	» 17	4 35 »	29.9 »	»	»	»	» 9	4 10 »	31.6 »	»	»
»	» 18	7 9 »	30.0 »	Z	»	»	» 10	4 0 »	31.8 »	»	» [10]
»	» 22	7 6 »	30.2 »	»	»	»	» 11	4 37 »	31.3 »	»	»
»	» 23	6 59 »	30.4 »	»	»	»	» 12	4 23 »	31.4 »	»	»
»	» 29	5 15 »	30.4 »	»	»	»	» 13	3 52 »	31.6 »	»	»
»	April 12	5 49 »	30.3 »	S	» [4]	»	» 15	4 46 »	—	»	»
»	» 14	5 35 »	30.4 »	»	»	»	» 17	4 31 »	—	»	»
»	» 15	5 11 »	30.1 »	»	»	»	» 18	5 0 »	31.7 »	»	» [11]
»	» 18	7 20 »	30.4 »	»	»	»	» 19	4 32 »	31.6 »	»	»
»	» 20	5 49 »	29.8 »	»	»	»	» 20	5 11 »	31.9 »	»	»
»	» 20	11 53 »	29.8 »	»	»	»	» 22	4 18 »	31.9 »	»	»
»	» 23	5 47 »	30.1 »	»	»	»	» 23	4 5 »	31.7 »	»	»

Abrupt changes (cf. Fig. 26, p. 143): 1) $^{4}/_{12}$, 18^{10}. 2) $^{20}/_{1}$, 17^{30}. 3) $^{22}/_{2}$, 17^{25}. 4) $^{13}/_{4}$, 18^{10}. 5) $^{24}/_{5}$, 18^{15}. 6) $^{2}/_{7}$. 18^{25}. 7) $^{28}/_{7}$, 18^{0}. 8) $^{2}/_{8}$, 17^{50}. 9) $^{5}/_{8}$, 18^{30}. 10) $^{10}/_{8}$, 18^{20}. 11) $^{18}/_{8}$, 18^{5}.

Table XCIX (continued).

Year	Date	Gr. M. T.	B'_{do}	I	O	Year	Date	Gr. M. T.	B'_{do}	I	O
		h. m.	°					h. m.	°		
1904	Aug. 24	4 4 p	31.4 E	S	W	1904	Nov. 17	11 41 p	31.4 E	S	A
»	» 25	4 3 »	31.2 »	»	»	»	» 18	6 35 »	31.4 »	»	»
»	» 26	4 12 »	30.5 »	»	»	»	» 19	10 30 »	31.7 »	»	»
»	» 27	4 57 »	31.8 »	»	» 1)	»	» 21	5 22 »	31.2 »	»	»
»	» 29	4 4 »	30.6 »	»	»	»	» 22	6 12 »	31.7 »	»	»
»	» 30	4 6 »	31.5 »	»	»	»	» 23	5 43 »	31.9 »	»	»
»	» 31	3 44 »	—	Z	»	»	» 24	6 34 »	—	»	»
»	Sep. 2	4 12 »	31.6 »	»	»	»	» 25	6 44 »	31.1 »	»	»
»	» 3	5 51 »	—	»	»	»	» 26	5 22 »	31.0 »	»	» 5)
»	» 5	4 4 »	31.9 »	»	»	»	» 28	6 18 »	34.7 »	»	»
»	» 6	3 59 »	31.2 »	»	»	»	» 28	11 56 »	35.3 »	»	»
»	» 7	4 0 »	31.3 »	»	»	»	» 29	4 41 »	35.3 »	»	»
»	» 8	4 21 »	31.7 »	S	»	»	» 30	6 9 »	35.5 »	»	»
»	» 9	4 2 »	—	»	»	»	Dec. 1	4 37 »	35.7 »	»	»
»	» 10	4 41 »	31.5 »	»	»	»	» 1	11 55 »	35.2 »	»	»
»	» 12	4 11 »	31.5 »	»	»	»	» 2	6 43 »	35.2 »	»	»
»	» 13	3 56 »	31.4 »	»	»	»	» 2	11 49 »	35.1 »	»	»
»	» 14	4 2 »	30.9 »	»	» 2)	»	» 3	0 14 a	35.3 »	»	»
»	» 15	3 56 »	31.3 »	»	»	»	» 3	4 45 p	35.4 »	»	»
»	» 16	4 7 »	31.5 »	»	»	»	» 3	5 32 »	34.8 »	»	»
»	» 17	4 5 »	30.9 »	»	»	»	» 3	6 23 »	36.0 »	»	»
»	» 19	5 33 »	—	»	»	»	» 5	6 16 »	34.5 »	»	»
»	» 20	4 2 »	31.6 »	»	»	»	» 6	0 2 a	35.3 »	»	»
»	» 21	4 1 »	30.6 »	»	»	»	» 6	6 21 p	34.2	»	»
»	» 22	4 12 »	31.8 »	»	»	»	» 6	11 46 »	35.4 »	»	»
»	» 23	9 54 »	31.5 »	»	»	»	» 7	6 6 »	35.1 »	»	»
»	» 26	3 57 »	31.6 »	»	»	»	» 7	11 47 »	35.6 »	»	»
»	» 27	3 47 »	31.7 »	»	»	»	» 8	4 22 »	35.0 »	»	»
»	» 28	3 42 »	31.8 »	»	»	»	» 8	11 42 »	35.2 »	»	»
»	» 29	4 0 »	32.1 »	»	»	»	» 9	4 37 »	35.0 »	»	»
»	» 30	3 48 »	32.1 »	»	»	»	» 9	5 17 »	35.0 »	»	»
»	Oct. 1	3 54 »	31.3 »	»	» 3)	»	» 9	10 37 »	35.0 »	»	»
»	» 3	3 51 »	31.3 »	»	»	»	» 10	6 7 »	35.1 »	»	»
»	» 4	3 58 »	31.4 »	»	»	»	» 12	4 32 »	35.1 »	»	»
»	» 5	3 55 »	31.6 »	»	»	»	» 13	0 7 a	35.0 »	»	»
»	» 6	4 3 »	31.5 »	»	»	»	» 13	6 12 p	35.2 »	»	»
»	» 7	4 8 »	31.3 »	»	»	»	» 14	0 17 a	35.4 »	»	»
»	» 8	5 19 »	31.1 »	»	»	»	» 14	6 22 p	35.5 »	»	»
»	» 10	3 55 »	—	»	»	»	» 14	10 48 »	35.1 »	»	»
»	» 11	3 52 »	—	»	»	»	» 15	4 38 »	35.4 »	»	»
»	» 12	3 58 »	—	»	»	»	» 15	5 18 »	35.4 »	»	»
»	» 13	4 40 »	30.8 »	»	»	»	» 16	0 18 a	35.1 »	»	»
»	» 14	4 1 »	30.9 »	»	»	»	» 16	4 28 p	34.7 »	»	»
»	» 15	3 55 »	31.8 »	»	»	»	» 16	5 18 »	35.5 »	»	»
»	» 17	3 56 »	32.1 »	»	»	»	» 16	5 48 »	35.1 »	»	»
»	» 18	3 56 »	31.9 »	»	»	»	» 17	6 33 »	34.4 »	»	»
»	» 19	3 46 »	31.7 »	»	»	»	» 19	6 48 »	34.6 »	»	»
»	» 20	3 39 »	31.5 »	»	»	»	» 20	6 28 »	34.9 »	»	»
»	» 21	4 14 »	30.9 »	»	»	»	» 21	6 23 »	35.2 »	»	»
»	» 22	4 1 »	31.9 »	»	»	»	» 22	6 13 »	34.8 »	»	»
»	» 24	5 34 »	31.8 »	»	»	»	» 23	6 19 »	34.9 »	»	»
»	» 25	5 14 »	—	»	»	»	» 27	6 4 »	35.0 »	»	»
»	» 26	5 20 »	32.1 »	»	»	»	» 28	7 29 »	35.6 »	»	»
»	» 27	4 0 »	31.8 »	»	»	»	» 30	6 34 »	35.0 »	»	»
»	» 28	3 53 »	31.4 »	»	»	1905	Jan. 2	6 35 »	35.5 »	»	» 6)
»	» 29	4 28 »	31.1 »	»	»	»	» 3	6 20 »	35.1 »	»	»
»	» 31	4 3 »	32.0 »	»	»	»	» 3	11 45 »	35.2 »	»	»
»	Nov. 1	4 0 »	32.1 »	»	»	»	» 4	6 10 »	34.7 »	»	»
»	» 2	4 22 »	—	»	»	»	» 5	4 40 »	34.6 »	»	»
»	» 3	4 1 »	31.9 »	»	»	»	» 5	5 20 »	35.4 »	»	»
»	» 5	4 16 »	31.9 »	»	» 4)	»	» 5	10 55 »	34.9 »	»	»
»	» 7	4 5 »	31.9 »	»	»	»	» 5	11 35 »	35.2 »	»	»
»	» 8	3 54 »	32.0 »	»	»	»	» 6	0 15 a	36.0 »	»	»
»	» 9	4 7 »	31.9 »	»	»	»	» 6	5 35 p	35.2 »	»	»
»	» 10	3 55 »	32.2 »	»	»	»	» 7	6 10 »	34.7 »	»	»
»	» 12	3 47 »	32.2 »	»	»	»	» 9	5 21 »	—	»	»
»	» 14	4 34 »	31.6 »	»	»	»	» 9	11 56 »	35.2 »	»	»
»	» 15	4 46 »	31.0 »	»	A	»	» 10	6 16 »	35.3 »	»	»
»	» 17	5 25 »	31.7 »	»	»	»	» 10	10 36 »	35.4 »	»	»

Abrupt changes: 1) 27/8, 18^{15}. 2) 14/9, 24^{0}. 3) 1/10, 24^{0}. 4) 6/11, 18^{0}. 5) 27/11, 18^{20}. 6) 2/1, 18^{10}.

Table XCIX (continued).

Year	Date	Gr. M. T.	B'_{do}	I	O	Year	Date	Gr. M. T.	B'_{do}	I	O
		h. m.	°					h. m.	°		
1905	Jan. 11	4 36 p	35.5 E	S	A	1905	Feb. 16	5 13 p	35.3 E	S	A
»	» 11	11 53 »	34.9 »	»	»	»	Mar. 3	4 43 »	34.7 »	»	H
»	» 12	4 46 »	35.4 »	»	»	»	» 7	10 20 »	35.0 »	»	A
»	» 12	6 35 »	35.5 »	»	»	»	» 8	4 28 »	34.7 »	»	»
»	» 12	11 46 »	34.8 »	»	»	»	» 10	4 36 »	34.8 »	»	»
»	» 13	5 6 »	35.1 »	Z	»	»	» 22	4 35 »	35.2 »	»	»
»	» 13	6 11 »	34.3 »[1]	S	»	»	» 22	5 15 »	35.2 »	»	»
»	» 13	6 55 »	34.6 »	»	»	»	» 23	5 30 »	34.9 »	»	»
»	» 14	5 46 »	34.9 »	»	»	»	» 30	4 39 »	35.1 »	»	»
»	» 14	6 6 »	35.4 »	»	»	»	» 30	10 54 »	—	»	»
»	» 14	6 26 »	34.9 »	»	»	»	» 31	4 49 »	35.1 »	»	»
»	» 16	5 52 »	35.4 »	»	»	»	April 3	4 44 »	35.8 »	»	»
»	» 16	6 37 »	—	»	»	»	» 3	11 44 »	—	»	»
»	» 16	10 47 »	34.8 »	»	»	»	» 4	4 44 »	35.8 »	»	W
»	» 16	11 27 »	—	»	»	»	» 4	11 44 »	35.2 »	»	»
»	» 18	4 57 »	34.7 »	»	»	»	May 1	9 47 »	34.9 »	»	»
»	» 18	10 47 »	34.5 »	»	»	»	» 2	10 5 »	35.3 »	»	»
»	» 18	11 27 »	34.9 »	»	»	»	» 4	3 59 »	35.1 »	»	»
»	» 19	0 9 a	34.6 »	»	»	»	» 4	11 31 »	34.7 »	»	»
»	» 19	5 7 p	35.2 »	»	»	»	» 5	10 5 »	—	»	»
»	» 19	5 47 »	35.5 »	»	»	»	» 8	5 8 »	34.9 »	»	»
»	» 20	4 27 »	35.0 »	»	»	»	» 8	11 10 »	34.5 »	»	»
»	» 20	10 22 »	—	»	»	»	» 9	3 49 »	35.3 »	»	»[3]
»	» 20	11 2 »	35.6 »	»	»	»	» 24	4 14 »	34.9 »	»	»
»	» 23	4 7 »	35.1 »	»	»	»	» 24	4 40 »	35.3 »	»	»
»	» 28	5 58 »	34.1 »	»	H	»	» 25	6 44 »	35.2 »	»	»
»	Feb. 3	10 16 »	35.6 »	»	A[2]	»	» 25	11 34 »	35.2 »	»	»
»	» 4	5 39 »	34.1 »	»	»	»	» 26	6 42 »	34.9 »	»	»
»	» 6	6 34 »	35.8 »	»	»	»	» 26	11 28 »	34.9 »	»	»[4]
»	» 14	9 40 »	35.3 »	»	»	»	» 29	6 56 »	34.9 »	»	»
»	» 15	4 38 »	35.8 »	»	»	»	» 30	6 50 »	34.2 »	»	»
»	» 15	5 22 »	35.6 »	»	»	»	» 30	11 30 »	36.1 »	»	»

The contents of the three first columns in Table XCIX will be understood by the headings of the columns, while the meaning of the fourth column, headed B_{do}, needs some explanation. Calculating according to formulae I, II and III we get a base-line

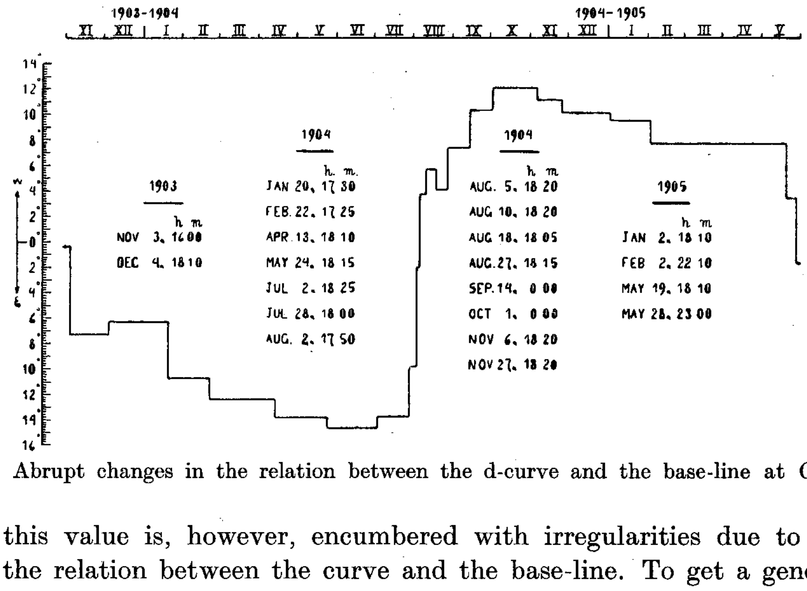


Fig. 26. Abrupt changes in the relation between the d-curve and the base-line at Gjøahavn.

value B_{do}, this value is, however, encumbered with irregularities due to the abrupt changes in the relation between the curve and the base-line. To get a general view of the base-line values when these data have been corrected for the said abrupt changes, we put:

(IV) $$B'_{do} = B_{do} + c,$$

[1] Iglu (snow hut). [2] Abrupt change, $^{2}/_{2}$, 22^{10}. [3] Abr. ch., $^{19}/_{5}$, 18^{10}. [4] Abr. ch. $^{28}/_{5}$, 23^{0}.

where B'_{do} means a chosen standard, which is constant as long as ω_o' is constant. The curve in Fig. 26, is based on these c-data and by aid of the data B'_d we have plotted the black points in Fig. 27, representing monthly means for B'_{do}, and through these points the line giving the final base-line value has been drawn.

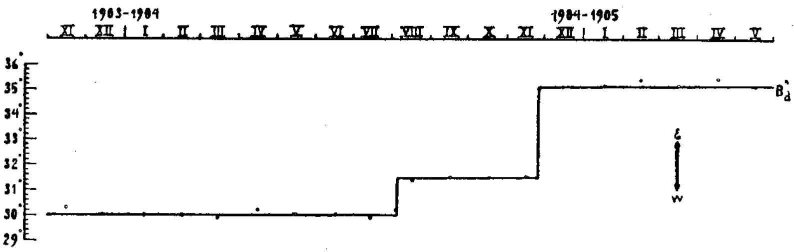


Fig. 27. The mean value for the base-line of the d-curve at Gjøahavn, B'_d.

Finally in the two last columns, I and O, are given the signs used to indicate which instrument has been used, Zschau (Z) or Seemann (S), and the initial of the observer, Amundsen (A), Hansen (H) and Wiik (W).

The Base-Line Value of the h-Curve. — For the h-variometer we see that rising ordinate means increasing horizontal intensity and for the determination of the base-line value we have:

$$\text{(I)} \qquad B_h = H - \varepsilon_h h,$$

where B_h and H are assumed to be expressed in γ and h in millimetres. The preliminary determination of the base-line value for the h-curve at Gjøahavn has already been discussed in connection with calculations for reduction constants of the absolute instruments (cf. page 66), and the result will be seen in Fig. 6. Details of the calculation will be found in Table XX, p. 65, where for H in formula (I) absolute data emerging from observations with the Zschau deflector No. 4 were used, while the directly read ordinate h was corrected for abrupt changes in the relation between curve and base-line in accordance with what shall later on be shown in Fig. 29, p. 150. As the temperature coefficient of the h-instrument was unknown at the time this preliminary result for B_h was obtained, it had to be put equal to zero. The preliminary determination for B_h, based on absolute observations with the Zschau magnet No. 4 will be seen to cover the interval November the 1st 1903 — April the 1st 1904, but the value could from this date be accepted as constant up to the 10th of September, where an abrupt change in the scale value brought about a corresponding change in B_h.

We have already seen that there has not been collected any special material for determination of the temperature coefficients of the intensity variometers. It seems that the observer thought that both instruments had been compensated for temperature influence. However this might be, we had to expect temperature influence, and consequently the directly read ordinate h had to be corrected according to the formula:

$$\text{(II)} \qquad h_o = h + \frac{\tau_h (t - t_o)}{\varepsilon_h},$$

where for the standard temperature we have chosen $t_o = \div 10°$ C. Regarding determination of the temperature coefficient τ_h we have already seen that it could not be found before the unknown reduction constants of the two Seemann magnets had been determined and that this determination had to be based on the King Point material. Regarding details of this rather complicated investigation we refer to pp. 112—119, where the final result of the temperature coefficient α for these magnets is given in Table LXXIV, p. 117.

From this table we see that the coefficient is different for the two temperatures — 10° C and — 30° C, which shows that a is a function of t, and we get:

$$a_1 = \mu' + \lambda' t_1$$
$$a_2 = \mu' + \lambda' t_2,$$

where:

$$\lambda' = \frac{a_2 - a_1}{t_2 - t_1}$$

and:

$$\mu' = a_1 - \lambda' t$$

Putting $t_1 = -10°$ and $t_2 = -30°$, and for a_1 and a_2 using the values designated as *Mean* in Table LXXIV, we get the values stated in Table C. On the basis of these values for μ' and λ' data for a could be calculated and finally final data for b_a and b_s could be determined. Such data for every 10 degree between + 40° C and — 50° C are already given in Table XXX, p. 74.

Table C.

Const.	Defl. I	Defl. II
μ'	0.0003290	0.0004230
λ'	.0000027	.0000031

As soon as the temperature coefficients of the two Seemann magnets had been fixed, the base-line value of the h-curve could be calculated both for King Point and for Gjøahavn. Still putting τ_h equal to zero and correcting for abrupt changes in the relation between curve and base-line, as far as this was possible, the value of the coefficient τ_h could be got from the formula:

$$\tau_h = \frac{B_1 - B_2}{t_1 - t_2}$$

but as there still was some uncertainty regarding the fall in the magnetic moment of the two absolute magnets, a more indirect determination of τ_h was preferred, namely, the method described on pp. 114—115, where values for H' were reduced from the h-curve with use of a preliminary base-line value uncorrected for temperature variation and then introduced in formula: $C'_a = \log H' + \log \sin \varphi_o$, where φ_o is obtained from the absolute observation. The advantage of this method is that the error arising from the temperature variation has now been transmitted to C'_a, instead of being represented in the data for B_h, while we are nearly independent of the unknown fall in C_a. In case we should get different values for τ_h if we used data for φ_o, obtained from absolute observations with Defl. I and Defl. II respectively, we have calculated two series of data for

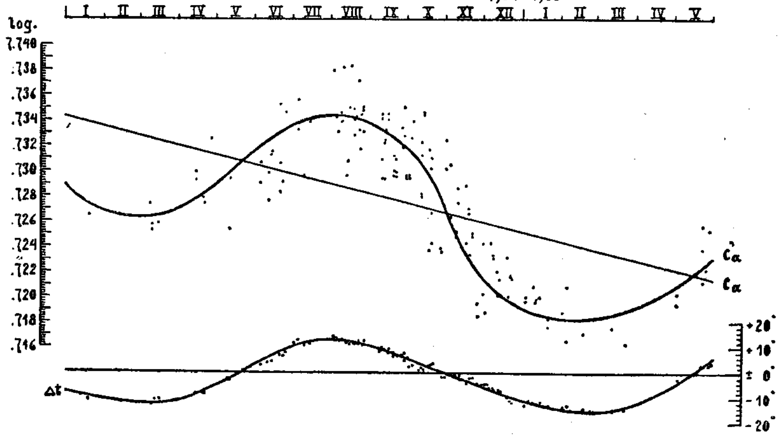


Fig. 28. The temperature influence on the h-curve at Gjøahavn illustrated by the effect uncorrected ordinates would have on the curve for C'_a, derived from calculations based on data for φ_o obtained with Defl. II.

C'_a, and the series we got in the last case will be seen in Fig. 28. The separate data for C'_a are, as we see, plotted in relation to time and below are entered corresponding data for temperature readings in the variation house. We see that the curves designated by C'_a and C_a may here be drawn with comparatively great accuracy. Taking the value for: $C_a - C'_a = \triangle C_a$ and $t - t_\circ = \Delta t$ directly from the curves in Fig. 28 we get:

$$\frac{\triangle C}{\Delta t} = 0.00047$$

As, however, C_a is a logarithmical value, we had to transform above value so that it was expressed in γ per 1° C, and we got, when φ_o was taken respectively from observations with Defl. I and Defl. II, 0.4 and 0.5. According to this we may put the temperature coefficient of the h-curve at Gjøahavn at:

$$\tau_h = 0.45\ \gamma \text{ per } 1^\circ \text{ C}$$

which result shows, that the h-variometer had been over-compensated at Gjøahavn, while at King Point it was under-compensated.

Concerning the above final result for τ_h at Gjøahavn we may remark that some small irregularities have later on been found in the material used for the determination. For instance some of the abrupt changes in the relation between curve and base-line were wrongly located, and B'_h, which from March 1904 had been accepted as constant, proved to have a slightly rising progress. Beside this it was on a later investigation of the King Point material found that the adopted values for the temperature coefficients of the two Seemann magnets had a lower value than those used in the above determination, (cf. page 119). In spite of this, however, the value $\tau_h = 0.45$ has been retained for the final reduction of the h-curve at Gjøahavn.

To control how much influence the above-mentioned irregularities in material might have on the resulting value of the temperature coefficient, we have made a test with use of the now corrected material and found: $\tau_h = 0.65$ per 1° C, which seems to point in the direction that we have reduced the h-curve of Gjøahavn with a somewhat too small coefficient. Now a difference of 0.2 γ per 1° C does not seem to be a very serious error, but we must remember that the temperature in the variation house had a range of about 25° C during the year, which means that the amplitude of the annual wave of H is 5 γ too large, if the last found value for τ_h is really correct. As the only consequence of the somewhat too small temperature coefficient, used in the reduction of the h-curve at Gjøahavn, affects the amplitude of the annual wave, we have not found it necessary to make any recalculation, but in case this annual wave of H is to be used for comparison with corresponding data for other stations, it will be very easy to apply the necessary correction to the monthly means by aid of the temperature means given in Table LXX, p. 113.

In Table CI the material for calculation of the base-line values of the h-curve at Gjøahavn has been given. Corrections for abrupt changes in the relation between curve and base-line will be seen in Fig. 29, p. 150, and the resulting data will be found under the heading $B'_{h\,o}$. The signs used for the instrument employed, besides the number of the magnet, have been stated in the columns headed I and M respectively, while the initials W, A and H refer to the three observers Wiik, Amundsen and Hansen.

To get a general view of the data for $B'_{h\,o}$, given in Table CI, we have in Fig. 29, p. 150, plotted monthly means for the base-line values in relation to time and drawn the curve representing the final values used in the reduction of the h-curve at Gjøahavn. We may remark that the values represented by the plottings are far from being equally accurate, because the number of data is very unequal. The mean for April 1905 will thus be composed

Table CI.

Year	Date	Gr. M. T.	B'_{ho}	I	M.	O.	Year	Date	Gr. M. T.	B'_{ho}	I	M	O.
		h. m.	C. G. S.						h. m.	C. G. S.			
1903	Nov. 13	6 15 p	0.00452 456	Z	5	W	1904	April 23	10 59 p	0.00468 467	S	I	W
»	» 16	4 27 »	0.00438 448	»	»	»	»	» 29	11 10 »	0.00476 474	»	I	»
»	» 23	6 8 »	0.00469 452	»	4	»	»	May 4	11 33 »	0.00480 487	»	II	»
»	» 24	7 8 »	0.00454 452	»	»	A	»	» 10	10 56 »	0.00498 479	»	I	»
»	Dec. 1	7 34 »	0.00458 454	»	»	»	»	» 11	10 51 »	0.00477 470	»	II	»
»	» 11	5 47 »	0.00470 477	»	»	»	»	» 13	10 55 »	0.00498 519	»	I	»
»	» 11	10 43 »	0.00470 463	»	5	»	»	» 19	11 3 »	0.00478 484	»	II	»
»	» 15	5 59 »	0.00451 456	»	»	»	»	» 20	10 47 »	0.00480 462	»	I	»
»	» 17	11 34 »	0.00463 467	»	8	»	»	» 26	10 57 »	0.00477 470	»	II	»
»	» 18	10 27 »	0.00463 461	»	9	»	»	» 27	11 13 »	0.00498 499	»	I	»
»	» 21	11 3 »	0.00475 464	»	8	»	»	» 31	5 2 »	0.00465 463	Z	9	»
»	» 29	10 21 »	0.00440 449	»	9	»	»	» 31	9 49 »	0.00460 449	»	8	»
1904	Jan. 5	5 49 »	0.00462 470	»	4	»	»	» 31	11 28 »	0.00474 473	»	5	»
»	» 16	5 22 »	0.00445 464	»	8	»	»	June 8	10 45 »	0.00474 472	S	II	»
»	» 19	6 10 »	0.00464 469	S	I	»	»	» 9	5 0 »	0.00473 469	»	I	»
»	» 19	11 18 »	0.00468 471	»	II	»	»	» 11	10 52 »	0.00476 472	»	II	»
»	» 29	5 42 »	0.00473 479	Z	8	»	»	» 13	5 13 »	0.00473 479	»	I	»
»	» 30	10 35 »	0.00481 469	»	9	»	»	» 13	10 59 »	0.00469 470	»	II	»
»	Feb. 8	10 58 »	0.00483 492	»	8	»	»	» 20	5 53 »	0.00477 473	»	I	»
»	» 9	10 46 »	0.00475 481	»	9	»	»	» 20	11 6 »	0.00472 476	»	II	»
»	» 15	5 34 »	0.00454 444	»	8	»	»	» 22	5 27 »	0.00475 464	»	II	»
»	» 15	10 49 »	0.00476 466	»	9	»	»	» 24	11 10 »	0.00481 490	»	I	»
»	Mar. 8	11 1 »	0.00473 468	S	II	W	»	» 25	5 19 »	0.00466 456	»	II	»
»	» 10	10 48 »	0.00478 474	»	I	»	»	» 30	5 10 »	0.00487 485	»	I	»
»	» 12	10 51 »	0.00471 472	»	II	»	»	July 2	5 25 »	0.00452 452	»	II	»
»	» 15	9 56 »	0.00471 475	»	II	»	»	» 4	5 13 »	0.00466 476	»	I	»
»	» 17	10 6 »	0.00472 474	Z	4	»	»	» 4	10 52 »	0.00471 466	»	II	»
»	» 18	4 46 »	0.00464 458	»	5	»	»	» 5	10 30 »	0.00467 468	»	I	»
»	» 18	10 1 »	0.00476 467	»	8	»	»	» 8	11 2 »	0.00486 491	»	I	»
»	» 22	5 0 »	0.00476 475	»	9	»	»	» 9	10 57 »	0.00457 475	»	II	»
»	April 12	10 56 »	0.00480 483	S	I	»	»	» 12	10 20 »	0.00466 470	»	I	»
»	» 14	11 11 »	0.00466 467	»	II	»	»	» 14	5 23 »	0.00443 465	»	II	»
»	» 18	11 9 »	0.00500 509	»	I	»	»	» 15	11 7 »	0.00468 476	»	I	»
»	» 20	10 55 »	0.00472 471	»	II	»	»	» 20	10 53 »	0.00486 484	»	I	»

Table CI (continued).

Year	Date	Gr. M. T.	B'_{ho}	I	M.	O.	Year	Date	Gr. M. T.	B'_{ho}	I	M	O.
		h. m.	C. G. S.						h. m.	C. G. S.			
1904	July 21	0 9 a	0.00480 483	S	II	W	1904	Sept. 9	4 56 p	0.00472 472	S	II	W
»	» 21	9 59 p	0.00478 488	»	I	»	»	» 9	10 44 »	0.00478 487	»	I	»
»	» 22	4 51 »	0.00479 479	»	II	»	»	» 10	10 1 »	0.00478 476	»	II	»
»	» 22	10 16 »	0.00490 494	»	I	»	»	» 12	5 6 »	0.00465 465	»	I	»
»	» 30	10 56 »	0.00481 477	»	I	»	»	» 12	10 34 »	0.00474 478	»	II	»
»	Aug. 2	10 7 »	0.00469 461	»	II	»	»	» 13	4 43 »	0.00472 477	»	I	»
»	» 4	10 42 »	0.00472 483	»	I	»	»	» 13	9 44 »	0.00471 472	»	II	»
»	» 5	10 17 »	0.00478 476	»	II	»	»	» 14	4 51 »	0.00473 464	»	I	»
»	» 6	10 47 »	0.00486 471	»	I	»	»	» 15	10 24 »	0.00470 469	»	II	»
»	» 8	10 32 »	0.00468 474	»	II	»	»	» 17	4 55 »	0.00467 463	»	I	»
»	» 9	5 3 »	0.00479 477	»	I	»	»	» 19	9 37 »	0.00467 467	»	II	»
»	» 9	10 21 »	0.00467 465	»	II	»	»	» 19	10 33 »	0.00467 467	»	I	»
»	» 11	10 47 »	0.00481 478	»	I	»	»	» 20	5 7 »	0.00464 467	»	II	»
»	» 12	10 29 »	0.00479 482	»	II	»	»	» 20	10 54 »	0.00477 474	»	I	»
»	» 13	10 11 »	0.00480 471	»	I	»	»	» 21	4 54 »	0.00465 466	»	II	»
»	» 15	10 40 »	0.00467 473	»	II	»	»	» 21	10 19 »	0.00477 480	»	I	»
»	» 17	10 42 »	0.00478 506	»	I	»	»	» 22	10 58»	0.00476 478	»	II	»
»	» 18	10 37 »	0.00477 474	»	II	»	»	» 26	9 45 »	0.00462 472	»	I	»
»	» 19	10 53 »	0.00468 474	»	I	»	»	» 27	4 36 »	0.00463 461	»	II	»
»	» 19	11 33 »	0.00478 474	»	II	»	»	» 27	10 0 »	0.00472 471	»	I	»
»	» 20	10 43 »	0.00481 484	»	I	»	»	» 28	9 31 »	0.00457 461	»	II	»
»	» 22	10 59 »	0.00471 462	»	II	»	»	» 29	9 37 »	0.00471 468	»	I	»
»	» 23	4 8 »	0.00457 463	»	I	»	»	» 30	9 56 »	0.00465 465	»	II	»
»	» 23	10 5 »	0.00477 479	»	II	»	»	Oct. 1	4 51 »	0.00459 465	»	I	»
»	» 24	5 3 »	0.00482 473	»	I	»	»	» 1	10 6 »	0.00465 465	»	II	»
»	» 25	5 1 »	0.00475 475	»	II	»	»	» 3	9 53 »	0.00463 462	»	I	»
»	» 25	11 3 »	0.00484 484	»	I	»	»	» 4	4 45 »	0.00459 456	»	II	»
»	» 26	5 6 »	0.00474 475	»	II	»	»	» 4	10 8 »	0.00461 462	»	I	»
»	» 27	10 30 »	0.00483 485	»	I	»	»	» 5	9 30 »	0.00449 443	»	II	»
»	» 27	10 50 »	0.00476 —	»	II	»	»	» 6	10 16 »	0.00460 459	»	I	»
»	» 30	5 9 »	0.00464 466	»	I	»	»	» 11	4 39 »	0.00467 468	»	II	»
»	Sep. 5	4 59 »	0.00475 478	Z	9	»	»	» 11	10 20 »	0.00466 463	»	I	»
»	» 5	10 37 »	0.00477 486	»	8	»	»	» 12	4 50 »	0.00462 459	»	II	»
»	» 6	4 58 »	0.00470 462	»	5	»	»	» 12	9 38 »	0.00462 465	»	I	»
»	» 8	10 13 »	0.00483 486	S	I	»							

Table CI (continued).

Year	Date	Gr. M. T.	B'_{ho}	I	M	O.	Year	Date	Gr. M. T.	B'_{ho}	I	M	O.
		h. m.	C. G. S.						h. m.	C. G. S.			
1904	Okt. 14	4 47 p	0.00458 456	S	II	W	1904	Dec. 2	10 52 p	0.00475 471	S	I	A
»	» 15	4 40 »	0.00459 462	»	I	»	»	» 5	5 10 »	0.00465 462	»	II	»
»	» 18	4 41 »	0.00476 462	»	II	»	»	» 5	10 58 »	0.00473 471	»	I	»
»	» 18	9 34 »	0.00465 463	»	I	»	»	» 6	5 11 »	0.00455 470	»	II	»
»	» 19	4 34 »	0.00464 464	»	II	»	»	» 6	10 50 »	0.00477 467	»	I	»
»	» 20	4 23 »	0.00459 459	»	I	»	»	» 7	5 5 »	0.00475 469	»	I	»
»	» 20	9 14 »	0.00471 474	»	II	»	»	» 7	10 54 »	0.00467 464	»	II	»
»	» 24	9 15 »	0.00465 471	»	I	»	»	» 8	5 17 »	0.00462 467	»	I	»
»	» 27	9 38 »	0.00473 472	»	II	»	»	» 8	10 40 »	0.00473 473	»	II	»
»	» 28	4 58 »	0.00465 472	»	I	»	»	» 9	11 37 »	0.00476 476	»	I	»
»	» 31	4 48 »	0.00453 456	»	II	»	»	» 10	4 59 »	0.00474 471	»	II	»
»	Nov. 1	4 53 »	0.00456 453	»	I	»	»	» 12	5 46 »	0.00470 481	»	I	»
»	» 3	5 2 »	0.00463 470	»	II	»	»	» 12	10 53 »	0.00475 477	»	II	»
»	» 7	4 55 »	0.00468 471	»	I	»	»	» 13	11 11 »	0.00469 468	»	II	»
»	» 8	4 49 »	0.00472 471	»	II	»	»	» 14	11 52 »	0.00483 499	»	I	»
»	» 9	4 59 »	0.00460 475	»	I	»	»	» 15	11 7 »	0.00459 462	»	I	»
»	» 10	4 51 »	0.00467 465	»	II	»	»	» 17	5 30 »	0.00482 472	»	I	»
»	» 12	4 35 »	0.00469 473	»	I	»	»	» 19	5 29 »	0.00472 476	»	II	»
»	» 15	10 59 »	0.00467 470	»	I	A	»	» 20	5 18 »	0.00475 479	»	I	»
»	» 16	5 46 »	0.00462 471	»	II	»	»	» 21	5 9 »	0.00466 467	»	II	»
»	» 17	3 44 »	0.00481 480	»	I	»	»	» 22	5 11 »	0.00461 464	»	I	»
»	» 18	5 22 »	0.00467 468	»	II	»	»	» 23	5 9 »	0.00473 474	»	II	»
»	» 18	10 45 »	0.00470 469	»	I	»	»	» 28	6 22 »	0.00470 473	»	II	»
»	» 21	10 50 »	0.00473 473	»	II	»	1905	Jan. 3	5 11 »	0.00467 468	»	I	»
»	» 22	10 43 »	0.00476 474	»	I	»	»	» 3	10 46 »	0.00475 479	»	II	»
»	» 23	10 58 »	0.00471 471	»	II	»	»	» 4	5 1 »	0.00465 460	»	I	»
»	» 24	5 36 »	0.00458 472	»	I	»	»	» 4	10 37 »	0.00486 488	»	II	»
»	» 25	5 34 »	0.00480 479	»	II	»	»	» 7	4 59 »	0.00455 457	»	I	»
»	» 28	10 57 »	0.00478 474	»	I	»	»	» 9	10 58 »	0.00474 475	»	II	»
»	» 29	6 2 »	0.00471 470	»	II	»	»	» 10	5 12 »	0.00460 468	»	I	»
»	» 30	5 6 »	0.00461 471	»	I	»	»	» 11	5 50 »	0.00458 464	»	I	»
»	» 30	10 59 »	0.00480 477	»	II	»	»	» 11	11 10 »	0.00476 475	»	II	»
»	Dec. 1	10 57 »	0.00469 463	»	I	»	»	» 12	10 46 »	0.00467 477	»	I	»
»	» 2	5 29 »	0.00466 467	»	II	»	»	» 13	10 49 »	0.00476 473	»	II	»

Table CI (continued).

Year	Date	Gr. M. T.	B'_{ho}	I	M.	O.	Year	Date	Gr. M. T.	B'_{ho}	I	M	O.
		h. m.	C. G. S.						h. m.	C. G. S.			
1905	Jan. 17	5 20 p	0.00464 463	S	II	A	1905	Mar. 21	5 4 p	0.00483 464	S	II	A
»	» 18	5 58 »	0.00461 464	»	I	»	»	» 23	4 34 »	0.00480 482	»	I	»
»	» 19	10 48 »	0.00478 478	»	II	»	»	April 4	10 29 »	0.00493 477	»	I	W
»	» 20	5 40 »	0.00459 498	»	I	»	»	» 28	10 28 »	0.00479 499	»	I	»
»	» 31	5 28 »	0.00453 469	»	I	H	»	May 5	10 27 »	0.00484 483	»	II	»
»	Feb. 1	5 35 »	0.00471 476	»	II	»	»	» 8	10 26 »	0.00482 488	»	I	»
»	» 3	5 4 »	0.00481 501	»	I	»	»	» 24	10 45 »	0.00475 486	»	II	»
»	» 4	10 39 »	0.00479 472	»	II	A	»	» 25	4 34 »	0.00471 465	»	I	»
»	» 6	5 18 »	0.00471 461	»	I	»	»	» 25	10 32 »	0.00478 499	»	II	»
»	» 6	10 35 »	0.00503 487	»	II	»	»	» 26	4 42 »	0.00478 459	»	I	»
»	» 15	9 46 »	0.00473 485	»	I	»	»	» 26	10 29 »	0.00488 483	»	II	»
»	» 16	9 52 »	0.00486 477	»	II	»	»	» 29	4 43 »	0.00458 469	»	I	»
»	Mar. 3	7 50 »	0.00465 487	»	II	H	»	» 30	4 50 »	0.00472 479	»	II	»
»	» 8	5 14 »	0.00476 —	»	I	A	»	» 30	10 25 »	0.00505 488	»	I	»
»	» 10	5 17 »	0.00482 —	»	II	»	»	» 31	4 15 »	0.00474 476	»	II	»
»	» 15	4 51 »	0.00470 478	»	I	»							

of only two observations and as these observations seem to be especially inexact, the mean for this month has been omitted.

The curve for B'_{ho} will be seen to have a curved form in the beginning, apparently due to the fact that the instrument needs some time for the setting of the torsion of the

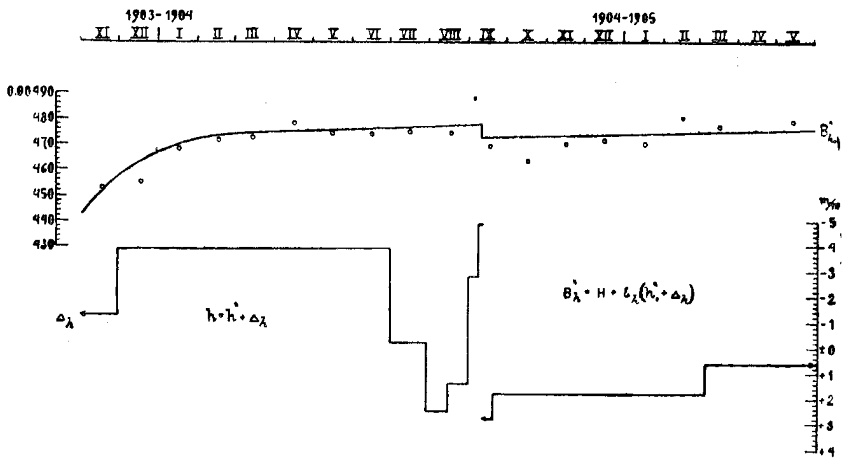


Fig. 29. The value for the base-line of the h-curve at Gjøahavn B'_{ho}, and the curve $\triangle_h$ representing the corrections for abrupt changes in the relation between curve and base-line, expressed in millimetres.

suspension thread. After the comparatively rapid increase in the value during the three first months, B'_{ho} keeps practically constant for the rest of the stay at Gjøahavn, the break, occuring the 10th of September 1904, being due to the change in the scale value.

In Table CII we have added the point of time when the abrupt changes occurred.

Table CII.

Year	Date	Hour	Year	Date	Hour
		h. m.			h. m.
1903	Nov. 30	17 45	1904	Sep. 8	18 20
1904	June 30	18 20	»	» 10	17 40
»	July 28	18 15	»	» 19	18 15
»	Aug. 15	18 15	1905	Mar. 15	17 50
»	» 31	18 15	—	—	—

The Base-Line Value of the z-Curve.— For the z-variometer we see that rising ordinate means increasing vertical force, and as the photographic line of reference lies along the upper border of the photogram, we almost always get a negative ordinate for the *z*-curve. For the determination of the base-line value we have:

(I) $$B_z = Z + \varepsilon_z z$$

where B and Z are assumed to be expressed in γ and z in millimetres. As mentioned, the observer of the Expedition had omitted to collect material for determination of the temperature coefficient, but, on referring to pp. 119—124, we see that there is every reason to believe that the z-variometer was over-compensated at Gjøahavn and that $\tau_z = 6.3\ \gamma$ per 1° C. We have thus:

(II) $$z' = z + \frac{\tau_z (t - t_0)}{\varepsilon_z}$$

For the absolute data for vertical intensity we have:

(III) $$Z = H\,tg\,I$$

where the value for I is supposed to be observed, while the value for H is obtained by reduction from the h-curve. As the ordinate readings of the *z*-curve almost always are negative we might omit the sign, but shall in this case have to change the sign + to — in formula (I).

From the graphical curve, representing the scale value of the z-curve at Gjøahavn, Fig. 21, p. 135, we see that ε_z during the first period November 1903 — September 1904 keeps between 4 γ and 8 γ per 1 mm. but after this date ε_z goes up to about 22 γ per 1 mm. The fact that the sensibility is great at the beginning is very fortunate, as during this time the instrument has been very instable. Various abrupt changes in the relation between curve and base-line occur during the time when the photographic paper was being changed and these displacements cannot be directly measured and, neither can we, owing to the abnormal magnetic conditions at Gjøahavn, control the displacements in the absolute observations, but shall in most cases have to correct only by simple judgement. During the time when the scale value was large there occurred only two displacements, but as these irregularities took place during the time when the register was working, corrections could be measured out on the photograms with sufficient exactness.

As to how the partly hidden displacements could be ascertained, we may remark that, after having corrected all displacements which could be measured directly on the photogram, we made out daily means for the ordinates, expressed in γ. These daily means were now plotted graphically and the curve they gave was closely studied. It will be understood that the larger unknown jumps were by aid of this curve comparatively easy to distinguish, while the smaller irregularities were more dubious. However, little by little the curve was put into shape and the hidden displacements this curve seemed to contain, together with the above-mentioned measurable changes, have been used for construction of the curve given in Fig. 30. The exact point of time when the changes took place will be seen from the table.

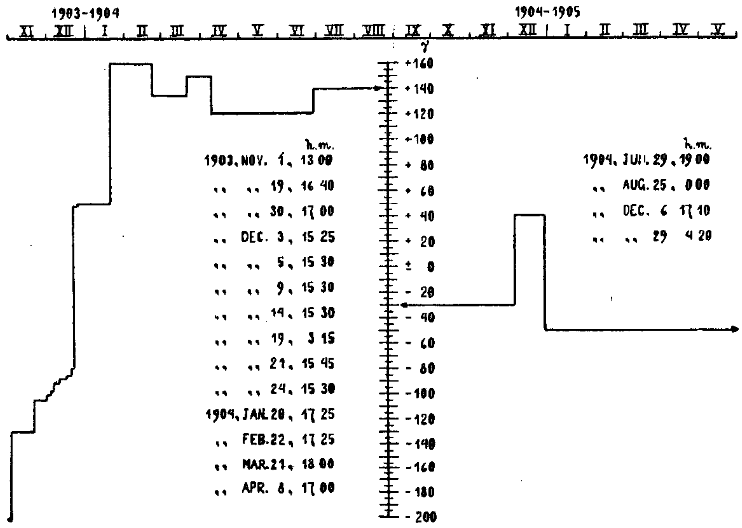


Fig. 30. Curve representing the abrupt changes in the relation between curve and base-line of the vertical intensity, expressed in γ.

It will of course be understood that the curve given in Fig. 30 may still be incomplete, but judging from Table CXVI, p. 162, Summary of the Daily Means of Z, reduced from the records, it seems that we have succeeded in overcoming the difficulties also in this case.

The exactness with which we can measure the variation of the vertical intensity is in the first place dependent on the scale value of the z-instrument. We may assume that we can read the ordinates with an accuracy of $\pm$ 0.3 millimetre and consequently the ordinates, for the part where $\varepsilon_z = 22\ \gamma$ per 1 mm. can be got with an exactness of $\pm\ 7\ \gamma$. On account of uncertainty in the corrections for abrupt changes and possible inaccuracy in the temperature coefficient we can hardly put the exactness of the reductions of the z-curve at more than $\pm\ 25\gamma$, when it is a question of relative data. However, when absolute data for Z, obtained through reduction according to formulae (I) and (III) above, are concerned the conditions are considerably less favourable. From formula (III) we see that Z is dependent on H, and if we suppose that the value of this element can be had with an accuracy of 2.5 γ, this will, when transferred to Z, give an accuracy of $\pm\ 200\ \gamma$. If therefore we can get absolute data for I with corresponding accuracy we shall have to be content. Referring to page 97, we have, however, seen that the highest possible exactitude for separate data for Z and B_z cannot be put higher than at 1000 γ, which again corresponds to an accuracy of about 0.7′ in the absolute observations for inclination.

In Table CIII and Table CIV we have given details of the calculations for the base-line values of the z-curve at Gjøahavn. Table CIII contains data for B_z based on absolute observations of inclination with the Earth Inductor, while Table CIV contains corresponding data for B_z, based on absolute observations of inclination with the Dover No. 154, Needle I and II.

Table CIII. — Referring to page 49, formula (40), we see that the angle of inclination I' was obtained indirectly, whereby we get one value for I_W where the division of the vertical circle of the inductor faced west, and another I_E, where the division faced east.

Table CIII.

Year	Date	Gr. M. T.	B'_{z_0}	p	I	O	Year	Date	Gr. M. T.	B'_{z_0}	p	I	O.
		h. m.	C. G. S.						h. m.	C. G. S.			
1904	July 27	10 20 p 11 5 »	0.58024 .58205	W E	E.I.	W	1904	Sep. 22	9 26 p 9 59 »	0.60876 .62040	W E	E.I. »	W
»	» 29	10 7 » 11 8 »	0.61335 .63094	E W	»	»	»	» 26	4 47 » 5 23 »	0.58194 .60573	E W	»	»
»	Aug. 4	4 42 » 5 24 »	0.60957 .59819	W E	»	»	»	» 28	4 16 » 4 54 »	0.64899 .61879	W E	»	»
»	» 5	11 17 » 11 51 »	0.60997 .63341	E W	»	»	»	» 30	4 22 » 5 1 »	0.61354 .62127	E W	»	»
»	» 8	4 44 » 5 16 »	0.60351 .60622	W E	»	»	»	Oct. 3	4 25 » 5 0 »	0.61966 .61839	W E	»	»
»	» 13	4 45 » 5 20 »	0.61205 .59634	W E	»	»	»	» 5	4 34 » 5 8 »	0.62147 .62266	E W	»	»
»	Sep. 20	9 33 » 10 5 »	0.61357 .61065	E W	» »	» »							

Theoretically there is usually a constant difference between I_W and I_E, but we have nevertheless carried out the calculation for B_z separately for each value. On account of consistent reference to a fixed location of the instrument during the observation we shall have to correct according to formula: $tg\, I = tg\, I' \cos \triangle D$, and the value for vertical force has thus been calculated by aid of data for $tg\, I$, duly corrected according to what is stated above, and final values for H.

The resulting data for the base-line values of the z-curve, calculated by aid of formula (I), p. 151, will be found under the heading B'_{zo}, and in the last two columns is the sign E. I. (Earth Inductor) and the initial of the observer, W (Wiik), added.

Table CIV. — The discussion of absolute data for inclination (pp. 76—97) shows how we have divided each observation taken with the Dover No. 154 so that the data I_a, I_b, I_c, I_d, corrected for index error, each gives a value for inclination. The method adopted allowed us to make a selection of the most accurate separate data for I_a, I_b, I_c, I_d and furthermore, by aid of these data and corresponding data for H, we were able to correct the more dubious observed angles, so that finally a very large number of comparatively exact data for inclination have been obtained. The data for I (a, b, c, d) are, for Needle I and Needle II respectively, taken from Table XLVII and Table XLVIII pp. 88—91, as mean of the two figures headed W and E (*a*, *b*, *c*, *d*).

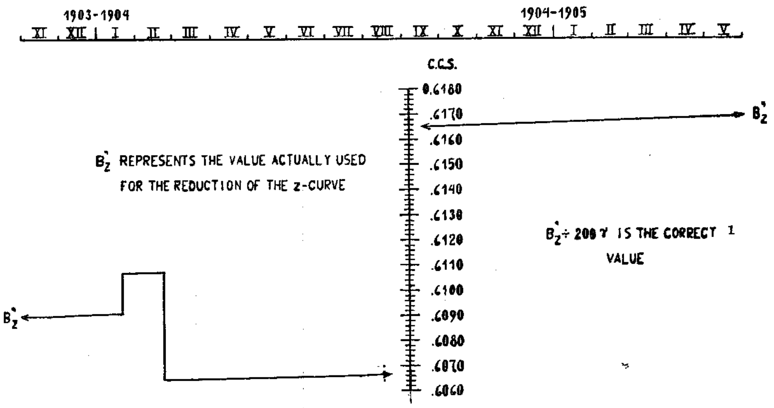


Fig. 31. Graph representing the base-line value of the z-curve at Gjøahavn.

[1] According to page 158.

Table CIV.

Year	Date	Gr. M. T.	B'_{z_0}	p	I	N.	O.	Year	Date	Gr. M. T.	B'_{z_0}	p	I	N	O
		h. m.	C. G. S.							h. m.	C. G. S.				
1903	Nov. 23	9 35 p	0.60611	c	D	I	A	1904	Jan. 6	5 40 p	0.60163	a	D	I	A
		9 47 »	**.60879**	d	»	»	»			6 3 »	.60716	b	»	»	»
		10 5 »	.60861	a	»	»	»			6 27 »	**.60307**	c	»	»	»
		10 17 »	**.60013**	b	»	»	»			6 42 »	.60841	d	»	»	»
»	» 23	10 45 »	**0.60741**	c	»	II	»	»	» 6	6 56 »	0.60489	a	»	II	»
		10 57 »	**.61239**	d	»	»	»			7 7 »	.60373	b	»	»	»
		11 15 »	.60524	a	»	»	»			7 23 »	.60128	c	»	»	»
		11 27 »	**.60727**	b	»	»	»			7 36 »	.60558	d	»	»	»
»	Dec. 1	10 56 »	0.59914	b	»	I	»	»	» 9	5 22 »	0.60719	c	»	I	»
		11 8 »	.60554	a	»	»	»			5 36 »	.60450	d	»	»	»
		11 25 »	**.61487**	c	»	»	»			5 49 »	.60387	a	»	»	»
		11 34 »	**.60656**	d	»	»	»			6 2 »	.60773	b	»	»	»
»	» 1	11 49 »	**0.61324**	a	»	II	»	»	» 9	6 30 »	0.60944	c	»	II	»
		11 58 »	.60207	b	»	»	»			6 44 »	.59947	d	»	»	»
		12 12 »	.60601	c	»	»	»			7 0 »	.60286	a	»	»	»
		12 20 »	.60971	d	»	»	»			7 13 »	.60987	b	»	»	»
»	» 8	10 19 »	**0.60245**	c	»	I	»	»	» 13	5 20 »	0.60639	a	»	I	»
		10 32 »	.60696	d	»	»	»			5 34 »	.59917	b	»	»	»
		10 42 »	.60308	a	»	»	»			5 50 »	**.60812**	c	»	»	»
		10 54 »	.60428	b	»	»	»			6 4 »	.61090	d	»	»	»
»	» 8	11 9 »	0.60252	c	»	II	»	»	» 13	6 18 »	**0.60770**	a	»	II	»
		11 20 »	**.60018**	d	»	»	»			6 32 »	**.59999**	b	»	»	»
		11 38 »	.60463	a	»	»	»			6 48 »	.60709	c	»	»	»
		11 50 »	.59950	b	»	»	»			7 0 »	.61309	d	»	»	»
»	» 15	10 30 »	0.60706	a	»	I	»	»	» 22	4 45 »	0.60935	c	»	I	»
		10 47 »	.60645	b	»	»	»			5 2 »	.60510	d	»	»	»
		11 22 »	.60674	c	»	»	»			5 16 »	.60401	a	»	»	»
		11 33 »	.60493	d	»	»	»			5 30 »	.61079	b	»	»	»
»	» 15	11 50 »	**0.59614**	a	»	II	»	»	» 22	5 48 »	0.60641	c	»	II	»
		12 0 »	**.59630**	b	»	»	»			6 2 »	**.60478**	d	»	»	»
		12 20 »	.60168	c	»	»	»			6 16 »	**.60158**	a	»	»	»
		12 36 »	.60789	d	»	»	»			6 26 »	**.59974**	b	»	»	»
»	» 18	5 26 »	0.60548	c	»	I	»	»	» 27	3 56 »	0.60560	a	»	I	»
		5 42 »	**.59714**	d	»	»	»			4 16 »	.60499	b	»	»	»
		6 2 »	.59899	a	»	»	»			4 32 »	**.61627**	c	»	»	»
		6 13 »	.60745	b	»	»	»			4 44 »	.60728	d	»	»	»
»	» 18	6 28 »	0.60335	c	»	II	»	»	» 27	4 55 »	**0.60850**	a	»	II	»
		6 38 »	.60207	d	»	»	»			5 8 »	.60687	b	»	»	»
		6 50 »	.60427	a	»	»	»			5 18 »	**.60416**	c	»	»	»
		7 1 »	**.60034**	b	»	»	»			5 28 »	.60907	d	»	»	»
»	» 22	5 18 »	0.60800	a	»	I	»	»	Feb. 4	11 0 »	0.60308	c	»	I	»
		5 32 »	.60510	b	»	»	»			11 12 »	**.61142**	d	»	»	»
		5 48 »	.60629	c	»	»	»			11 27 »	**.59917**	a	»	»	»
		6 6 »	.60212	d	»	»	»			11 40 »	.61189	b	»	»	»
»	» 22	6 22 »	**0.60645**	a	»	II	»	»	» 4	11 55 »	**0.60298**	c	»	II	»
		6 34 »	.60683	b	»	»	»			12 7 »	**.60760**	d	»	»	»
		6 48 »	.60227	c	»	»	»			12 20 »	.60699	a	»	»	»
		6 55 »	**.60513**	d	»	»	»			12 34 »	.60241	b	»	»	»
»	» 29	5 52 »	0.60468	c	»	I	»	»	» 12	4 24 »	**0.60740**	a	»	I	W
		6 7 »	.60429	d	»	»	»			4 38 »	.60749	b	»	»	»
		6 34 »	**.60866**	a	»	»	»			5 1 »	.60682	c	»	»	»
		6 50 »	**.60296**	b	»	»	»			5 17 »	.60830	d	»	»	»
»	» 29	7 6 »	0.60660	c	»	II	»	»	» 12	8 34 »	0.60552	a	»	II	»
		7 20 »	**.61197**	d	»	»	»			8 50 »	.60712	b	»	»	»
		7 38 »	.60235	a	»	»	»			9 17 »	**.59901**	c	»	»	»
		7 50 »	.60078	b	»	»	»			9 32 »	**.61121**	d	»	»	»

Table CIV (continued).

Year	Date	Gr. M. T.	B'_{z_0}	p	I	N.	O.	Year	Date	Gr. M. T.	B'_{z_0}	p	I	N	O
		h. m.	C. G. S.							h. m.	C. G. S.				
1904	Feb. 17	3 43 p	**0.61447**	c	D	I	W	1904	Mar. 14	10 36 p	**0.60189**	a	D	I	A
		3 59 »	**.60893**	d	»	»	»			10 46 »	**.61059**	b	»	»	»
		4 16 »	.60730	a	»	»	»			10 56 »	.60652	c	»	»	»
		4 28 »	.60468	b	»	»	»			11 6 »	.60594	d	»	»	»
»	» 17	4 44 »	**0.60299**	c	»	II	»	»	» 14	11 20 »	0.60441	a	»	II	»
		4 54 »	.60823	d	»	»	»			11 30 »	.60737	b	»	»	»
		5 11 »	**.60102**	a	»	»	»			11 46 »	.60171	c	»	»	»
		5 22 »	**.61225**	b	»	»	»			11 56 »	.60647	d	»	»	»
»	» 26	4 9 »	0.60386	a	»	I	»	»	June 1	4 26 »	0.60216	b	»	I	W
		4 22 »	.60547	b	»	»	»			4 42 »	.60617	a	»	»	»
		4 40 »	.60493	c	»	»	»			5 1 »	.59792	c	»	»	»
		4 58 »	.60813	d	»	»	»			5 18 »	.59976	d	»	»	»
»	» 26	6 27 »	**0.60702**	a	»	II	»	»	» 1	5 37 »	0.60803	a	»	II	»
		6 40 »	.61007	b	»	»	»			5 49 »	.60416	b	»	»	»
		6 56 »	.60330	c	»	»	»			6 10 »	.60656	c	»	»	»
		7 6 »	.59847	d	»	»	»			6 22 »	.60042	d	»	»	»
»	Mar. 10	5 4 »	0.60754	c	»	I	A	»	» 30	11 34 »	0.60807	c	»	I	»
		5 23 »	.60176	d	»	»	»			11 46 »	.60132	d	»	»	»
		5 47 »	.60107	a	»	»	»			12 0 »	**.59986**	a	»	»	»
		6 7 »	.60861	b	»	»	»			12 12 »	.60151	b	»	»	»
»	» 10	9 54 »	0.60130	c	»	II	»	»	» 30	1 54 »	**0.60761**	c	»	II	»
		10 4 »	**.60725**	d	»	»	»			2 6 »	**.60882**	d	»	»	»
		10 20 »	.60344	a	»	»	»			2 16 »	**.60770**	a	»	»	»
		10 42 »	**.60282**	b	»	»	»			2 28 »	.60889	b	»	»	»
»	» 11	5 38 »	**0.59800**	a	»	I	»	»	July 1	4 8 »	0.60191	a	»	I	»
		5 54 »	.60564	b	»	»	»			4 16 »	.60816	b	»	»	»
		6 10 »	**.59702**	c	»	»	»			4 51 »	.60221	c	»	»	»
		6 24 »	**.60018**	d	»	»	»			5 4 »	**.60382**	d	»	»	»
»	» 11	10 8 »	**0.60595**	a	»	II	»	»	» 1	5 13 »	0.60621	a	»	II	»
		10 22 »	**.60182**	b	»	»	»			5 22 »	.60489	b	»	»	»
		10 40 »	.60403	c	»	»	»			5 34 »	.59848	c	»	»	»
		10 54 »	.60778	d	»	»	»			5 42 »	.60932	d	»	»	»
»	» 12	4 40 »	**0.59752**	a	»	I	»	»	» 7	9 58 »	**0.59265**	c	»	I	»
		4 58 »	.60767	d	»	»	»			10 8 »	.60857	d	»	»	»
		5 20 »	.60485	a	»	»	»			10 22 »	.59294	a	»	»	»
		5 38 »	**.60068**	b	»	»	»			10 33 »	.60524	b	»	»	»
»	» 12	5 56 »	0.60455	c	»	II	»	»	» 7	10 44 »	0.60132	c	»	II	»
		6 14 »	**.60704**	d	»	»	»			10 54 »	**.59628**	d	»	»	»
		6 34 »	**.60157**	a	»	»	»			11 8 »	**.59439**	a	»	»	»
		6 52 »	**.59687**	b	»	»	»			11 19 »	.59518	b	»	»	»
»	» 12	9 34 »	0.60495	a	»	I	»	»	» 8	4 6 »	**0.60084**	a	»	I	»
		9 44 »	.60588	b	»	»	»			4 15 »	**.59757**	b	»	»	»
		9 54 »	60764	c	»	»	»			4 27 »	**.60922**	c	»	»	»
		10 4 »	**.60463**	d	»	»	»			4 37 »	.60380	d	»	»	»
»	» 12	10 22 »	**0.60439**	a	»	II	»	»	» 8	4 48 »	0.60086	a	»	II	»
		10 36 »	**.59603**	b	»	»	»			4 58 »	**.61059**	b	»	»	»
		10 52 »	.60373	c	»	»	»			5 52 »	.59887	c	»	»	»
		11 6 »	**.61101**	d	»	»	»			5 22 »	.59673	d	»	»	»
»	» 14	5 38 »	**0.60233**	c	»	II	»	»	» 18	1 51 a	0.60606	c	»	I	»
		5 52 »	.60736	d	»	»	»			2 1 »	.60713	d	»	»	»
		6 8 »	**.59983**	a	»	»	»			2 11 »	.59822	a	»	»	»
		6 24 »	**.60058**	b	»	»	»			2 23 »	**.60202**	b	»	»	»
»	» 14	6 38 »	0.60431	c	»	I	»	»	» 18	2 32 »	0.60174	c	»	II	»
		6 52 »	**.60554**	d	»	»	»			2 41 »	**.59461**	d	»	»	»
		7 10 »	.60375	a	»	»	»			2 52 »	.59614	a	»	»	»
		7 24 »	.60020	b	»	»	»			3 2 »	.59468	b	»	»	»

Table CIV (continued).

Year	Date	Gr. M. T.	B'_{z_0}	p	I	N.	O.	Year	Date	Gr. M. T.	B'_{z_0}	p	I	N	O
		h. m.	C. G. S.							h. m.	C. G. S.				
1904	Oct. 31	8 24 p	**0.61764**	c	D	I	W	1905	Jan. 16	10 25 p	**0.61367**	a	D	I	A
		8 37 »	.61417	d	»	»	»			10 42 »	.61602	b	»	»	»
		9 52 »	.61785	a	»	»	»			11 1 »	.60840	c	»	»	»
		10 4 »	**.60207**	b	»	»	»			11 24 »	**.60464**	d	»	»	»
»	» 31	10 17 »	**0.60697**	c	»	II	»	»	» 16	11 40 »	**0.60893**	a	»	II	»
		10 31 »	.61708	d	»	»	»			11 52 »	**.61647**	b	»	»	»
		10 46 »	.61353	a	»	»	»			12 11 »	**.61190**	c	»	»	»
		10 57 »	**.60500**	b	»	»	»			12 28 »	.61171	d	»	»	»
»	Nov. 3	8 40 »	0.61808	c	»	I	»	»	Feb. 9	3 56 »	**0.61033**	c	»	I	W
		8 52 »	.61684	d	»	»	»			4 22 »	**.61952**	d	»	»	»
		9 6 »	**.60611**	a	»	»	»			4 32 »	.61141	a	»	»	»
		9 18 »	.61526	b	»	»	»			4 46 »	.61601	b	»	»	»
»	» 3	9 30 »	**0.60243**	c	»	II	»	»	» 9	4 58 »	**0.60732**	c	»	II	»
		9 42 »	**.62182**	d	»	»	»			5 8 »	**.60559**	d	»	»	»
		9 56 »	.61911	a	»	»	»			5 22 »	.61657	a	»	»	»
		10 8 »	.61518	b	»	»	»			5 33 »	.60696	b	»	»	»
»	» 8	8 34 »	0.61162	a	»	I	A	»	Mar. 14	3 40 »	**0.61817**	a	»	I	»
		8 45 »	.61258	b	»	»	»			3 55 »	.60968	b	»	»	»
		8 56 »	.61242	c	»	»	»			4 13 »	**.61094**	c	»	»	»
		9 6 »	**.61433**	d	»	»	»			4 28 »	.61307	d	»	»	»
»	» 8	9 16 »	0.61674	a	»	II	»	»	» 14	4 45 »	**0.61561**	a	»	II	»
		9 26 »	**.60706**	b	»	»	»			4 56 »	**.61009**	b	»	»	»
		9 39 »	.60776	c	»	»	»			5 12 »	.61662	c	»	»	»
		9 51 »	**.61855**	d	»	»	»			5 23 »	.60839	d	»	»	»
»	» 29	10 30 »	0.61386	c	»	I	»	»	Apr. 25	10 6 »	**0.60401**	c	»	I	»
		10 44 »	**.60412**	d	»	»	»			10 20 »	.60685	d	»	»	»
		11 8 »	.61028	a	»	»	»			10 32 »	.61030	a	»	»	»
		11 22 »	.60865	b	»	»	»			10 41 »	.60976	b	»	»	»
»	» 29	11 35 »	0.60957	c	»	II	»	»	25	10 51 »	0.61182	c	»	II	»
		11 48 »	.61774	d	»	»	»			10 59 »	.61863	d	»	»	»
		12 10 »	.61645	a	»	»	»			11 12 »	.60558	a	»	»	»
		12 22 »	.60444	b	»	»	»			11 24 »	.61287	b	»	»	»
»	Dec. 16	10 31 »	0.60951	a	»	I	A	»	May 23	9 52 »	0.61118	a	»	I	»
		10 48 »	**.62065**	b	»	»	»			10 4 »	**.61784**	b	»	»	»
		11 8 »	**.61222**	c	»	»	»			10 22 »	**.60674**	c	»	»	»
		11 22 »	**.60511**	d	»	»	»			10 38 »	**.61968**	d	»	»	»
»	» 16	11 34 »	**0.60686**	a	»	II	»	»	» 23	10 56 »	**0.61309**	a	»	II	»
		11 44 »	**.61268**	b	»	»	»			11 10 »	**.60848**	b	»	»	»
		12 8 »	**.61026**	c	»	»	»			11 26 »	.61455	c	»	»	»
		12 20 »	**.61549**	d	»	»	»			11 38 »	**.61301**	d	»	»	»
»	» 29	5 28 »	**0.61918**	c	»	I	»	»	» 29	10 0 »	0.60513	c	»	I	»
		5 49 »	.60819	d	»	»	»			10 20 »	.60981	d	»	»	»
		6 10 »	**.60286**	a	»	»	»			10 51 »	.61579	a	»	»	»
		6 25 »	.60911	b	»	»	»			11 6 »	.60775	b	»	»	»
»	» 29	6 42 »	0.60919	c	»	II	»	»	» 29	11 23 »	0.61532	c	»	II	»
		7 2 »	**.61456**	d	»	»	»			11 38 »	.60821	d	»	»	»
		7 18 »	**.60856**	a	»	»	»			11 54 »	.61715	a	»	»	»
		7 31 »	.61425	b	»	»	»			12 10 »	.61260	b	»	»	»

The figures under B'_{zo} printed in heavy type represent values derived by aid of data for inclination accepted as they were observed, while the data printed in ordinary type refer to data which have been changed according to the method explained on pp. 78—97. The rest of the table being arranged in the same manner as Table CIII, no futher explanation is necessary.

In Fig. 31, p. 153, we have given a graph representing the base-line values of the z-curve actually used for the reduction of this element.

Final Remarks regarding the Absolute Value of the Base-Line of the z-Curve. — According to the method fully discussed on pp. 78—97 it was found possible to determine the index error of the two needles of the Dover Dip Circle so that the angles I_a, I_b, I_c, I_d, of which a complete dip observation is composed, may be taken as single values for inclination. The study brought to light the fact that the accuracy of the dip observations depended considerably more on the meteorological conditions at the place in question than on the division of the scale from which the observed angles were read. The reason why the meteorological conditions reduced the accuracy of the dip observation was that they strongly influenced the friction between the axis of the needle and the agate edges on which it rested.

The exactness of the absolute data for I obtained with the Earth Inductor proved to be about 0.7′, which corresponds to an exactness in the values calculated for Z of about 1000 γ. Taking the separate values I_a, I_b, I_c, I_d, obtained with the Dover corrected for the mentioned index error, as representing observed inclination, it was found that only about 40 per cent of the observed data had the above mentioned accuracy, but we came to the result, that the inexactness of most of the separate values I_a, I_b, I_c, I_d, could be so much reduced by introducing corrections that the thus partly corrected values of the complete observations acquired an exactitude equal to the results obtained with the Earth Inductor.

What has been summed up above was more or less the result arrived at when we discussed the absolute data for inclination at Gjøahavn, and in this place we shall only state how we finally established the absolute value of the base-line of the z-curve. The absolute data for I were introduced in formula (III), p. 151, and the obtained value for Z was used in formula: $B'_z = Z + \varepsilon_z z'$, where z' means the ordinate of the z-curve corrected for abrupt changes and for temperature variation. As the scale value of the z-curve changes several times (cf. Fig. 21, p. 135) the separate data for B'_z are not always comparable, but if we correct them so that they correspond to certain unaltered conditions of the instrument, it is clear that comparison is possible. Let us, in order to obtain such conditions, introduce a standard value B'_{zm} corresponding to a scale value equal to 4.5, being the sensibility the instrument had when it was mounted at Gjøahavn, a temperature of —10° C and a relation between curve and base-line corresponding to a base-line position lying 37.8 millimetres nearer to the curve than the one recorded on the photogram for the 1st of November 1903.

As mentioned, the base-line values in the tables CIII and CIV are calculated from observations accepted as they were observed, printed in heavy type and only these data shall count in the calculation of the value for B'_{zm}. With the Earth Inductor observations were made during the interval July the 18th—October the 31st 1904, and 13 observations were taken. Referring to page 251 we see that direct use has been made of the two values, I_W and I_E, for each observation and we thus get 26 data for B'_{zm} based on observations taken with the inductor. As, however, 7 of these data came out with a doubtful value, they are excluded, and we had therefore only 19 values by aid of which we might obtain a mean and got: $B'_{zm} = 0.60800$. The Dover was used for observations before and after the said interval, and there were collected 40 full observations with each of the two needles I and II, by which we get $40 \times 2 \times 4 = 320$ data for I, of which, however, only 38 per cent have been accepted as sufficiently accurate for calculation of base-line values. For the interval November 1903 — July 1904 we have thus 78 data for B'_{zm}, which give the mean: $B'_{zm} = 0.60715$ and for the interval November 1904—May 1905 we have 44 data giving a mean: $B'_{zm} = 0.60615$. Putting these results together in chronological order, as is done in Table CV, we get as total value: $B'_{zm} = 0.60710$. The grouping of 78, 19 and 44 separate data for obtaining the mean has of course been done only to compare the results based respectively on observations taken with the Dover Dip Circle and the Earth Inductor, but it is clear that a grouping with such a different numbers of data for each mean is very incorrect in a case like this, where the exactness of the means shall more or less be a function of the number of data used in each case. In order to group the material more satisfactorily we have made out Table CVI, where each of the 14 means comprises of 10 separate data. The means obtained in this way will be seen to have an average accuracy of $\pm$ 105 and the total mean is found to be:

Table CV.

No.	B'_{zm}	Number of data	Instr.
1	0.60715	78	D
2	0.60800	19	E. I.
3	0.60615	44	D
—	0.60710	141	—

Table CVI.

No.	B'_{zm}	Diff.
1	0.60933	− 237
2	482	+ 214
3	718	− 22
4	598	+ 98
5	726	− 30
6	714	− 18
7	961	− 265
8	563	+ 133
9	655	+ 41
10	814	− 118
11	620	+ 76
12	584	+ 112
13	744	− 48
14	634	+ 62
Mean	0.60698	± 105

$$B'_{zm} = 0.60698$$

If now we reckon with $B'_{zm} = 0.60700$, this may probably be deemed a rather reliable base for the reduction of the z-curve. However, the values for B'_{zm} used in our reduction did not correspond to 0.60700 but to 0.60900, which will be seen from the graph given in Fig. 31, p. 153. The reason why the reduction of the z-curve apparently is based on a base-line value which is 200 γ higher than it ought to be according to the total mean in Table CVI, is that the reduction was made before we had ascertained all the errors dealt with in the final discussion. As agreement between our reduction and the result obtained by a recalculation based on $B'_{zm} = 0.60700$ can be attained only by subtracting 200 γ from the result for Z given in this paper we have not found it necessary to rewrite Table CX, pp. 259—277 in Obs.

The entire material used for calculation of the data for B'_{zm} given in Table CVI will be found in Table CVII, where the data acquired through calculation with data for I obtained with the Earth Inductor are printed in heavy type, while the data based the observations with the Dover Dip Circle are printed in ordinary type.

Table CVII.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
0.61079	0.59814	0.61012	0.59967	0.61275	0.60538	0.60528	0.60098	**0.61267**	**0.61175**	0.60107	0.60182	0.60389	0.60505
.60213	.59830	.60970	.60348	.61172	.61174	.61024	.59909	**.60621**	**.60650**	.59739	.60764	.61143	.59897
.60941	.59914	.60199	.60810	.61195	.60627	.60659	.60554	**.60892**	**.61423**	.61677	.60522	.60686	.61280
.61439	.60234	.60528	.60790	.60752	.60157	.61529	,60227	**.61475**	**.61262**	.60929	.61045	.60529	.60170
.60927	.60845	.68208	.59951	.60270	.60933	.60456	.61392	**.59904**	**.61135**	.60202	.61414	.61448	.61464
.61687	.60713	.60024	.61171	.60172	.60909	.61231	.61529	**.60653**	**.61443**	.61351	.59782	.60228	.60805
.60856	.61066	.61677	.61497	.60488	.60073	.61352	.60672	**.60361**	.61260	.59908	.60952	.60055	.60344
.61524	.60496	.60900	.60943	.61065	.61571	.61240	.59931	**.60172**	.59703	.61561	.60352	.61313	.60797
.60445	.61397	.60466	.60349	.60652	.60703	.60852	**.61227**	**.61336**	.60193	.60718	.60863	.60590	.60317
60.218	.60507	.61192	.60152	.60222	.60453	.60735	**.60089**	**.59869**	.59996	.60007	.59960	.61059	.60756
0.60933	0.60482	0.60718	0.60598	0.60726	0.60714	0.60961	0.60563	0.60655	0.60814	0.60620	0.60584	0.60744	0.60634

Hourly Values for D. H, Z, Emerging from Reductions of the Variation Curves at Gjøahavn.

The hourly values emerging from reductions of the variation curves at Gjøahavn cover 19 months, November 1903—May 1905, and are given in the three tables CVIII. CIX, CX, respectively for *D*, *H*, and *Z*, pp. 221—277.

From Table CX it will be seen that the series of hourly values for *Z* are broken by a larger gap during the interval August 25th—September the 20th 1904. Referring to page 38, we see that during this interval there had been a lot of trouble with Lloyd's Balance with the consequence that no rèliable reduction can be had. Excepting this gap in the records of *Z*, the series of the three elements are nearly unbroken and regarding the few cases where interpolated values have been entered we refer to page 110. As regards the character designations we refer to page 110, where also the meaning of the mean figures (1), (2), (3) has been stated.

Quick-Run Records.

There were during the stay at Gjøahavn, beside the three presupposed term-days (cf. Table B, page 39) taken nine quick-run records (cf. Table C, page 39). These records have been read, but we have not found it necessary to reduce the readings. The readings for the three elements *D*, *H*, *Z* will be found in Table CXI, term-days, and in Table CXII the other cases. The values represent ordinate expressed in m. m.

Table CXI.

1903 Nov. 15, p				1903 December 1, p				1904 December 15, p.			
Hour	*D*	*H*	*Z*	Hour	*D*	*H*	*Z*	Hour	*D*	*H*	*Z*
h m				h m				h m			
0–5	26.3	26.3	54.1	7 30–35	26.9	22.9	66.5	8 30–35	27.5	21.7	71.3
5–10	27.1	26.8	54.5	35–40	26.7	22.5	66.3	35–40	26.9	22.9	72.0
10–15	27.0	27.1	54.0	40–45	26.7	22.6	64.9	40–45	27.2	23.8	71.9
15–20	26.9	26.9	54.0	45–50	26.6	23.0	64.3	45–50	28.9	23.0	76.9
20–25	27.2	27.5	53.8	50–55	26.8	23.9	64.0	50–55	28.0	21.7	78.5
25–30	27.4	27.4	53.3	55–60	26.8	25.1	64.4	55–60	27.3	22.4	75.2
30–35	27.0	27.2	53.3	8 0–5	27.0	24.4	63.8	9 0–5	27.0	23.0	73.6
35–40	27.3	26.9	54.4	5–10	26.9	23.4	62.5	5–10	27.2	23.7	74.1
40–45	27.3	26.8	54.5	10–15	26.7	22.3	62.1	10–15	27.4	24.4	75.5
45–50	27.3	26.7	54.1	15–20	26.5	22.4	61.9	15–20	28.1	23.6	75.8
50–55	27.3	26.7	54.4	20–25	27.7	23.3	62.7	20–25	28.5	22.6	76.9
55–60	27.1	26.9	55.7	25–30	28.3	21.7	61.0	25–30	28.1	22.5	79.8
8 0–5	27.1	27.0	56.0	30–35	27.4	21.4	60.6	30–35	28.2	22.8	78.1
5–10	27.2	26.8	55.6	35–40	27.4	22.7	61.1	35–40	28.9	21.0	77.9
10–15	27.2	26.8	55.8	40–45	27.9	22.9	60.7	40–45	28.0	20.7	77.4
15–20	27.2	26.9	56.1	45–50	27.8	21.8	61.0	45–50	28.0	22.0	77.5
20–25	27.1	27.0	57.4	50–55	27.3	21.9	62.7	50–55	27.7	22.1	76.2
25–30	27.2	27.0	56.9	55–60	27.0	23.2	63.4	55–60	27.7	23.1	76.0
30–35	27.3	26.9	56.0	9 0–5	26.9	22.3	63.5	10 0–5	28.5	23.0	76.2
35–40	27.2	27.1	56.6	5–10	26.7	22.6	64.2	5–10	28.3	22.8	77.0
40–45	27.2	27.2	56.4	10–15	26.2	23.7	66.0	10–15	28.8	22.8	77.3
45–50	27.2	27.1	56.1	15–20	26.6	23.1	65.9	15–20	28.5	22.3	77.0
				20–25	26.7	23.3	67.0	20–25	27.4	23.5	77.1

Table CXII.

1904 July 28, p.			
Hour	*D*	*H*	*Z*
h m			
7 5–10	19.0	28.8	48.8
10–15	21.6	26.5	56.6
15–20	22.7	23.4	64.2
20–25	23.8	21.3	67.9
25–30	24.0	19.8	68.8
30–35	24.6	18.3	68.6
35–40	25.0	17.2	66.4
40–45	24.8	16.5	64.9
45–50	23.7	17.9	65.9
50–55	21.8	20.0	62.4
55–60	20.9	21.6	56.0
8 0– 5	21.0	22.0	50.2
5–10	17.6	23.9	44.5
10–15	15.0	27.2	43.2
15–20	13.1	28.2	48.7
20–25	14.1	29.1	54.6
25–30	15.2	32.1	56.4
30–35	17.2	34.2	51.3
35–40	19.2	35.3	44.6
40–45	18.5	33.9	39.1
45–50	17.1	32.0	39.8
50–55	17.1	28.9	41.6
55–60	17.4	26.6	46.5

1904 August 2, p.			
Hour	*D*	*H*	*Z*
h m			
7 5–10	18.1	31.2	42.0
10–15	18.0	29.0	43.7
15–20	19.2	29.1	46.1
20–25	20.1	31.4	46.2
25–30	19.4	33.5	44.4
30–35	20.1	32.9	43.3
35–40	20.4	31.7	43.9
40–45	21.4	30.0	45.8
45–50	21.6	29.5	46.0
50–55	21.1	30.8	45.6
55–60	20.1	30.4	45.0
8 0– 5	19.8	31.5	45.2
5–10	18.5	34.0	42.6
10–15	18.1	35.4	42.3
15–20	18.9	33.0	44.1
20–25	19.0	31.5	44.1
25–30	19.9	29.0	46.5
30–35	20.5	28.6	50.9
35–40	21.9	28.7	51.0
40–45	22.9	27.5	50.6
45–50	22.8	26.8	49.9
50–55	23.8	27.0	50.5
55–60	*23.6*	*27.3*	*51.3*

1904 August 17, p.			
Hour	*D*	*H*	*Z*
h m			
7 10–15	38.0	22.3	(64.5)
15–20	37.9	21.7	(64.0)
20–25	38.0	22.0	(63.0)
25–30	37.7	22.6	64.4
30–35	37.4	22.6	64.6
35–40	37.4	22.5	64.0
40–45	37.7	22.5	63.8
45–50	37.8	22.3	64.2
50–55	38.3	21.7	64.3
55–60	38.4	21.9	63.9
8 0– 5	38.3	21.4	63.8
5–10	38.2	21.5	63.9
10–15	38.0	21.6	64.0
15–20	37.7	21.6	63.7
20–25	36.6	22.1	62.7
25–30	35.3	21.9	61.9
30–35	34.5	22.9	62.1
35–40	34.4	23.5	62.0
40–45	33.3	24.0	61.1
45–50	33.5	24.4	60.1
50–55	33.1	24.9	59.5
55–60	33.6	25.4	60.4
9 0– 5	33.7	25.4	60.7
5–10	33.8	25.6	61.6

1904 October 7, p.			
Hour	*D*	*H*	*Z*
h m			
4 35–40	33.5	21.4	54.3
40–45	33.8	21.6	54.2
45–50	34.4	21.4	54.0
50–55	34.9	21.2	54.0
55–60	36.5	19.8	54.0
5 0– 5	37.0	18.7	54.6
5–10	36.9	18.6	56.2
10–15	35.7	20.5	56.9
15–20	34.5	22.8	56.0
20–25	33.4	23.6	56.2
25–30	34.0	23.8	56.8
35–40	34.1	23.9	56.7
40–45	34.5	24.1	56.5
45–50	35.5	22.9	56.5
50–55	35.5	23.0	56.7
55–60	35.4	24.1	57.9
6 0– 5	35.0	25.5	57.6
5–10	34.8	25.8	57.9
10–15	34.5	25.9	57.8
15–20	34.5	25.7	58.0
20–25	34.6	25.6	58.1
25–30	35.3	24.8	57.9

Table CXII (continued).

1904 October 17, p.			
Hour	*D*	*H*	*Z*
h m			
5 15–20	41.3	20.7	52.4
20–25	41.2	20.1	52.4
25–30	41.5	18.9	52.1
30–35	42.2	19.3	51.8
35–40	42.5	20.0	52.0
40–45	42.4	19.5	52.4
45–50	42.2	21.0	51.9
50–55	42.5	21.3	52.2
55–60	41.6	19.9	52.8
6 0– 5	42.1	21.1	52.6
5–10	42.5	21.9	53.1
10–15	41.6	20.0	52.5
15–20	42.4	19.6	53.7
20–25	41.4	21.4	54.5
25–30	40.5	21.1	52.5
30–35	42.0	18.4	52.1
35–40	41.9	19.0	53.5
40–45	42.4	19.5	53.4
45–50	42.4	20.0	53.4
50–55	42.5	20.3	53.0
55–60	43.1	20.3	52.8
7 0– 5	43.3	20.2	53.0
5–10	43.1	19.8	53.1

1904 October 27, p.			
Hour	*D*	*H*	*Z*
h m			
4 50–55	38.7	21.2	55.0
55–60	39.0	19.7	55.5
5 0– 5	39.0	20.9	56.1
5–10	39.0	22.2	56.8
10–15	39.3	22.8	57.2
15–20	39.3	22.0	57.5
20–25	39.4	21.8	58.2
25–30	39.5	21.5	58.2
30–35	39.7	20.7	57.0
35–40	41.4	19.8	55.8
40–45	42.0	16.8	55.3
45–50	42.4	13.8	53.6
50–55	42.7	17.1	53.8
55–60	42.0	16.8	53.9
6 0– 5	41.5	16.6	53.4
5–10	42.2	16.7	53.3
10–15	42.2	16.1	53.7
15–20	42.4	17.5	53.5
20–25	42.2	19.0	53.2
25–30	41.0	18.8	53.2
30–35	40.7	19.5	53.0
35–40	39.5	19.4	53.7

1904 October 31, p.			
Hour	*D*	*H*	*Z*
h m			
5 0–5	36.8	24.5	52.4
5–10	37.7	25.4	53.4
10–15	37.7	28.7	53.6
15–20	37.8	28.0	52.7
20–25	38.0	27.0	53.0
25–30	38.2	27.1	53.8
30–35	38.5	26.8	53.9
35–40	38.5	27.5	54.5
40–45	38.6	27.3	54.1
45–50	38.6	26.6	54.6
50–55	37.4	27.0	55.1
55–60	37.4	26.7	55.1
6 0– 5	37.3	27.3	55.0
5–10	37.2	27.0	54.7
10–15	36.8	26.3	54.5
15–20	37.3	27.4	55.1
20–25	36.3	27.0	55.0
25–30	36.7	26.4	55.1
30–35	37.1	25.5	55.1
35–40	37.1	25.5	55.9
40–45	37.2	25.3	56.3
45–50	37.1	25.8	56.1
50–55	37.5	24.6	56.3

1905 March 2, p.			
Hour	*D*	*H*	*Z*
h m			
6 25–30	(*15.0*)	02.2	87.6
30–35	(*2.0*)	20.0	91.8
35–40	(*5.5*)	14.5	86.5
40–45	(*5.5*)	13.4	53.8
45–50	11.6	17.7	45.8
50–55	10.1	18.8	44.4
55–60	11.4	22.0	41.0
7 0– 5	21.4	15.0	38.1
5–10	22.0	18.3	35.5
10–15	16.5	22.7	35.4
15–20	10.3	29.9	39.1
20–25	(*7.0*)	25.0	45.0
25–30	10.8	12.8	41.3
30–35	14.8	4.2	39.8
35–40	36.8	14.7	37.2
40–45	32.9	9.7	45.0
45–50	29.2	1.2	48.7
50–55	33.0	–10.2	53.4
55–60	36.3	–16.8	53.0
8 0– 5	33.6	–19.3	46.2
5–10	39.7	–15.3	47.2
10–15	46.2	–17.0	47.6
15–20	30.0	–18.9	42.2

Table CXIII. — **Summary of Daily Means. D_W.**

Date	1903 XI	1903 XII	1904 I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	1905 I	II	III	IV	V
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1	11.4	7.6	10.4	8.7	7.5	9.2	9.0	7.8	3.8	8.2	5.7	5.1	6.1	6.6	6.3	6.9	4.2	4.0	7.5
2	10.8	9.5	8.5	7.9	8.5	10.3	9.5	8.7	5.5	5.5	6.5	6.2	7.7	7.1	6.9	7.5	1.0	5.9	6.5
3	11.3	9.0	7.5	8.9	8.7	9.1	8.2	7.2	5.0	4.1	5.7	6.4	7.9	6.3	7.4	8.5	7.4	7.9	6.4
4	12.4	7.0	8.8	9.5	9.2	9.3	8.8	7.5	5.8	6.0	8.2	6.5	4.5	7.1	7.1	5.6	7.2	7.3	7.0
5	11.0	6.6	9.1	10.0	10.2	8.5	8.9	5.6	5.3	6.9	5.0	6.3	6.5	6.9	7.4	7.0	4.1	6.0	7.4
6	9.4	7.7	9.1	9.4	8.9	8.3	8.6	4.9	5.1	4.8	6.7	6.9	7.3	7.1	7.0	8.9	6.7	7.2	6.9
7	9.6	7.4	8.0	9.0	8.5	6.4	8.7	6.2	8.3	6.9	8.2	4.6	7.1	6.8	7.0	7.4	5.0	7.5	5.9
8	9.1	8.2	8.1	8.5	8.8	7.3	6.2	8.0	8.0	6.5	7.4	5.9	6.9	7.0	7.6	8.9	5.7	7.3	6.6
9	9.2	8.8	8.6	9.0	8.7	9.0	7.6	7.3	9.2	7.0	5.2	5.3	7.2	6.5	7.6	7.5	5.6	5.3	5.0
10	9.2	8.3	12.1	10.3	9.2	8.8	7.5	6.7	8.9	5.3	5.9	6.4	7.3	7.1	7.2	8.8	6.0	6.3	5.5
11	9.7	8.4	8.9	9.1	8.0	9.6	7.0	8.1	9.1	4.7	4.9	6.4	7.4	6.9	6.8	8.3	4.9	5.5	4.8
12	9.3	8.3	8.1	9.7	7.7	6.1	6.9	7.0	7.7	6.1	6.4	5.2	7.8	7.1	7.3	7.5	5.1	6.2	3.8
13	9.2	7.2	8.2	9.2	7.9	6.9	5.8	7.6	5.6	5.9	6.9	5.2	7.8	7.2	7.3	9.0	5.7	6.8	2.5
14	8.9	9.2	8.1	9.2	8.3	7.5	11.0	6.9	2.7	8.5	5.7	6.8	7.3	7.3	6.3	8.1	5.0	6.8	4.0
15	9.2	8.2	7.8	10.5	8.3	7.5	9.7	8.9	6.3	4.6	5.5	8.0	7.0	7.5	7.3	7.6	6.3	5.9	5.1
16	8.9	8.8	8.0	9.5	7.7	8.1	7.0	4.8	7.4	4.8	7.5	8.3	7.2	6.6	7.1	6.7	6.7	4.8	5.1
17	9.3	8.6	7.6	8.5	8.1	7.3	6.5	7.2	5.5	6.6	6.7	7.7	7.6	6.8	8.1	8.7	6.0	5.7	1.7
18	10.5	8.6	7.7	7.0	8.6	8.1	7.3	7.2	6.5	7.9	6.2	7.4	5.7	6.9	6.7	7.5	6.3	5.4	1.9
19	11.0	8.5	8.3	8.9	8.2	5.2	7.0	7.2	6.3	8.4	5.3	7.5	7.3	6.7	6.8	7.0	4.9	4.1	3.4
20	9.7	7.1	7.8	9.0	7.2	7.7	6.4	6.5	5.2	7.5	7.4	7.2	7.1	7.1	8.1	7.0	6.0	3.9	3.7
21	10.8	7.9	9.3	8.9	8.1	7.8	6.2	6.6	5.8	6.2	6.9	6.5	6.9	6.8	7.2	6.2	5.7	4.1	5.1
22	9.6	6.7	9.6	8.5	8.4	8.3	5.4	7.5	7.7	8.1	6.8	9.2	8.2	7.3	6.4	7.1	5.5	4.9	6.3
23	8.4	8.0	9.1	8.2	7.5	7.7	6.1	6.2	8.8	8.0	7.6	7.8	7.8	7.4	7.0	5.8	4.7	5.5	4.2
24	8.8	7.9	8.9	8.4	7.7	8.7	7.0	7.2	7.8	6.8	7.4	7.3	6.7	6.9	6.0	7.2	5.3	5.2	4.8
25	9.0	7.9	8.9	8.1	8.3	6.6	6.9	5.8	6.9	6.7	5.6	8.8	5.7	6.5	6.4	5.6	5.3	5.3	7.5
26	9.3	8.2	9.4	8.8	6.6	7.5	7.5	7.4	8.9	6.0	6.2	8.3	5.3	6.0	7.0	6.3	5.1	4.9	5.0
27	9.2	7.6	8.9	8.9	7.4	7.5	6.7	6.5	8.7	5.5	6.7	5.8	5.0	7.3	6.5	5.9	2.9	5.3	4.6
28	9.2	8.3	8.0	8.4	7.7	7.2	11.7	6.6	6.6	4.1	7.2	5.6	7.2	6.8	6.0	6.6	5.7	5.8	5.6
29	10.0	8.0	9.9	7.8	7.7	7.0	5.9	6.7	4.7	4.0	7.1	6.2	6.4	6.2	6.6	—	4.4	6.1	5.5
30	8.8	7.6	8.1	—	7.7	8.4	7.3	6.7	6.0	4.2	7.8	6.3	7.3	6.8	6.2	—	3.9	6.4	5.0
31	—	10.5	9.0	—	8.3	—	9.1	—	6.7	5.2	—	6.8	—	6.9	5.5	—	5.9	—	4.4
Mean	9.7	8.1	8.7	8.9	8.2	7.9	7.7	7.0	6.6	6.2	6.5	6.7	6.9	6.9	6.9	7.3	5.3	5.8	5.1

I = 89° +

Table CXIV. — **Summary of Daily Means. I.**

Date	1903 XI	1903 XII	1904 I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	1905 I	II	III	IV	V
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	19.8	18.9	19.9	16.9	17.0	18.8	19.5	17.5	12.7	17.0	15.2	16.4	15.7	16.4	16.8	17.9	15.2	15.8	18.8
2	19.6	18.6	19.0	17.1	17.1	19.1	18.8	16.4	14.6	12.7	14.8	16.3	17.3	16.9	17.0	18.3	16.4	15.7	16.8
3	19.3	19.3	18.2	17.2	17.3	18.6	19.3	16.3	15.2	15.3	14.6	16.0	17.1	17.2	16.8	19.4	21.5	18.5	18.1
4	19.2	19.5	18.1	17.7	17.4	17.6	19.8	16.4	16.0	15.6	17.3	15.9	16.9	17.0	18.3	17.9	17.2	19.6	18.0
5	17.6	18.7	18.5	18.3	17.1	17.6	17.2	13.5	14.3	15.3	16.2	16.0	17.4	17.3	18.8	18.5	15.7	18.6	18.6
6	17.9	17.7	18.6	18.8	18.4	18.1	17.7	12.4	16.5	18.7	15.9	15.8	16.4	16.5	17.6	18.4	16.6	19.3	18.2
7	17.3	18.6	17.8	18.5	17.3	18.5	18.4	13.3	18.8	17.8	17.7	15.1	16.1	16.8	17.3	19.2	16.1	17.9	18.9
8	16.9	18.2	17.6	17.7	17.2	17.0	12.9	17.0	17.1	17.5	16.7	16.2	16.6	16.3	17.3	18.0	17.9	18.0	17.9
9	16.7	18.1	18.4	18.2	18.1	17.7	16.1	15.7	19.3	17.1	15.4	16.2	16.4	17.5	17.1	18.2	17.9	19.4	14.5
10	17.7	18.2	19.7	18.0	17.7	19.4	16.7	15.1	17.1	14.8	14.4	16.5	16.6	17.4	17.4	19.3	17.5	19.8	15.5
11	17.4	18.2	19.8	18.4	16.3	18.3	16.8	17.3	17.4	15.5	16.3	16.9	17.2	17.2	17.2	17.3	17.0	18.1	15.0
12	17.5	17.9	19.4	18.2	16.5	14.9	13.9	16.7	15.8	16.2	16.3	16.2	17.4	17.2	17.5	18.0	16.5	18.7	15.5
13	17.1	21.1	18.0	18.2	16.5	15.2	15.0	16.9	13.4	16.1	16.5	15.6	17.0	16.9	17.1	17.5	17.7	17.4	14.0
14	16.9	18.6	17.5	17.3	17.0	16.2	19.8	17.9	9.6	18.0	16.6	18.0	17.3	17.7	18.7	18.7	17.9	18.2	16.6
15	17.4	19.1	16.2	17.5	17.1	15.6	18.3	15.8	13.5	13.4	16.5	17.2	17.1	17.6	17.1	17.8	18.4	14.8	16.3
16	17.9	18.6	18.0	16.5	16.8	16.6	16.4	10.0	16.2	12.9	19.3	17.1	16.4	17.8	17.2	17.9	19.2	16.0	16.2
17	18.1	18.1	17.3	17.5	16.9	16.8	17.5	14.9	13.1	16.2	17.3	17.2	18.6	16.9	17.5	18.2	19.0	17.4	15.4
18	17.4	17.9	17.4	16.2	18.2	20.2	17.0	16.1	15.1	18.2	17.6	16.8	16.6	17.3	17.3	16.9	18.0	17.3	14.7
19	17.3	18.2	17.5	17.5	16.7	12.0	13.9	16.5	14.1	16.7	17.1	17.1	16.9	17.0	17.9	17.2	16.3	16.6	16.8
20	18.6	18.6	17.2	17.5	16.0	16.2	15.8	14.1	13.6	16.9	17.2	17.1	17.4	17.4	17.5	17.3	18.6	15.9	14.3
21	18.6	18.0	17.4	17.7	16.7	17.0	15.4	15.2	15.6	17.5	17.4	17.7	17.2	16.7	17.4	16.8	17.4	16.3	14.5
22	17.4	17.8	18.5	17.9	17.1	17.9	14.6	16.8	17.0	17.4	17.3	17.9	17.1	17.1	17.5	17.3	17.4	16.4	15.9
23	17.8	17.6	18.0	16.3	16.3	15.3	13.7	15.1	18.5	17.5	17.1	16.3	17.6	17.0	17.1	16.2	16.4	17.2	13.5
24	16.7	17.9	18.2	16.6	16.7	15.2	13.1	17.0	18.0	18.0	17.8	16.5	17.1	16.7	16.5	16.6	16.7	17.1	14.6
25	17.1	17.6	17.7	16.2	16.4	15.1	15.3	15.9	16.2	17.9	16.6	17.8	17.4	16.3	17.1	16.8	17.1	16.8	17.1
26	17.2	17.9	17.7	17.0	15.2	15.2	15.1	17.3	19.6	17.8	15.8	17.2	19.1	17.2	16.8	16.7	17.3	16.3	19.4
27	17.6	18.0	17.3	17.2	15.5	16.8	17.1	17.8	17.2	16.8	16.6	17.0	16.9	16.8	17.2	16.7	15.6	18.6	19.2
28	17.3	18.4	18.8	17.0	16.2	15.4	17.6	18.3	14.2	17.3	16.4	15.9	16.7	17.3	17.3	16.4	17.5	17.6	17.8
29	17.2	18.0	17.6	16.2	17.5	16.2	14.7	18.0	14.6	13.8	16.0	16.7	16.4	17.3	17.4	—	16.2	20.2	16.6
30	17.7	17.5	18.1	—	16.7	18.9	16.0	18.0	14.1	15.1	16.7	17.0	17.2	16.9	16.9	—	15.7	18.5	17.2
31	—	18.3	17.6	—	16.9	—	18.4	—	15.1	13.7	—	15.5	—	16.7	17.4	—	18.1	—	17.5
Mean	17.7	18.4	18.1	17.4	16.9	16.9	16.5	16.0	15.6	16.3	16.6	16.6	17.0	17.0	17.4	17.7	17.3	17.6	16.6

Table CXV. — **Summary of Daily Means. H.**

Date	1903		1904												1905				
	XI	XII	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	I	II	III	IV	V
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	707	723	707	759	756	725	713	747	831	756	787	786	778	767	760	739	787	776	724
2	712	728	722	755	754	720	724	766	798	832	792	769	751	757	755	733	767	779	759
3	717	716	736	753	752	729	715	769	787	786	798	774	755	753	759	714	677	730	736
4	718	712	737	745	749	746	707	766	774	782	751	776	758	756	733	740	753	711	738
5	746	726	730	734	756	745	752	817	803	787	770	774	749	751	725	730	779	729	728
6	741	745	728	724	732	736	744	837	764	727	775	777	767	765	745	731	762	715	735
7	751	728	742	730	752	730	732	821	724	743	744	789	772	760	751	718	772	740	722
8	759	735	746	744	753	756	828	756	754	747	761	770	764	768	751	738	740	739	740
9	761	737	732	736	738	744	771	778	716	755	783	771	766	747	753	735	740	714	799
10	744	736	709	738	745	714	761	790	754	795	801	765	764	749	748	715	747	707	782
11	750	736	708	732	769	733	760	751	750	782	768	759	753	752	752	752	756	737	791
12	748	741	715	735	766	794	810	762	777	770	768	771	750	752	747	739	765	726	782
13	755	685	738	754	765	788	792	757	820	772	765	781	755	757	753	746	743	749	808
14	758	728	747	751	756	770	708	739	886	738	764	739	751	744	725	726	739	735	762
15	750	719	770	747	755	781	733	778	818	819	765	753	754	746	753	742	731	794	768
16	741	728	740	765	760	764	767	879	770	828	715	754	766	743	752	738	718	773	764
17	737	737	751	747	758	760	746	792	825	771	751	752	729	758	747	734	721	749	784
18	750	740	750	771	736	701	756	772	789	735	745	760	764	750	750	758	739	751	795
19	751	735	747	748	761	844	811	765	807	761	755	754	758	756	740	752	768	762	758
20	728	728	752	748	774	770	778	807	814	757	750	755	750	749	746	750	727	775	802
21	745	739	749	743	762	756	784	788	780	746	748	744	752	761	748	759	748	768	800
22	750	742	730	741	754	741	799	760	756	749	751	740	754	754	748	750	748	766	775
23	743	746	739	768	769	787	814	789	730	746	754	769	745	755	754	769	766	753	816
24	763	740	736	764	761	788	824	757	738	737	741	765	754	761	764	764	761	754	798
25	756	745	744	770	767	790	786	775	770	741	769	743	749	767	754	759	754	759	752
26	753	740	745	757	788	788	790	751	710	743	777	752	720	752	759	761	752	768	714
27	746	739	752	752	783	760	755	742	753	759	763	756	757	760	752	761	780	727	717
28	750	731	725	757	770	784	746	733	805	751	767	775	761	750	750	766	746	745	741
29	753	738	747	771	747	770	796	739	798	812	774	762	766	758	749	—	769	699	762
30	744	747	738	—	762	723	774	745	808	790	761	756	753	756	758	—	778	729	752
31	—	734	747	—	758	—	732	—	790	814	—	782	—	761	749	—	736	—	746
Mean	744	732	737	750	758	758	765	774	781	769	764	764	755	755	749	743	751	745	763

Z = 0.60000 C. G. S.

Table CXVI. — **Summary of Daily Means. Z.**[1]

	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	505	454	538	521	469	510	503	429	440	474	—	461	448	446	430	421	386	401	440
2	481	490	515	534	485	529	457	450	462	500	—	460	465	442	431	424	488	459	437
3	508	489	487	494	487	488	469	465	448	508	—	448	451	455	437	464	446	457	435
4	519	468	497	492	494	483	448	460	456	519	—	455	496	430	437	445	476	487	420
5	483	488	505	497	509	457	420	465	461	493	—	460	478	424	453	477	449	476	428
6	512	487	498	482	485	453	442	451	439	500	—	459	484	427	445	461	428	457	415
7	491	497	475	489	485	457	436	477	460	491	—	473	487	446	436	495	358	438	420
8	493	500	464	510	493	459	456	454	464	477	—	501	473	440	431	442	474	467	426
9	430	506	453	494	484	465	453	458	461	460	—	482	462	442	424	446	443	458	409
10	508	473	463	471	480	464	422	458	460	441	—	482	458	442	429	443	429	447	425
11	514	475	502	466	468	463	453	460	467	453	—	466	442	433	450	420	423	452	438
12	537	476	484	463	489	504	438	450	467	456	—	481	443	435	418	431	440	450	425
13	518	497	471	454	468	489	526	430	464	419	—	473	446	432	417	425	437	435	417
14	510	497	467	460	468	486	493	420	425	392	—	455	444	433	429	452	427	449	418
15	512	485	462	449	467	489	459	483	456	411	—	450	436	447	416	439	439	434	423
16	488	464	521	462	471	473	487	455	451	515	—	459	465	465	405	437	452	434	428
17	522	469	472	452	472	464	425	453	456	494	—	457	520	434	435	452	433	430	439
18	508	461	467	452	466	520	470	439	467	439	—	465	521	435	423	431	428	433	399
19	509	446	457	453	469	478	476	450	478	441	—	471	470	429	411	440	438	434	412
20	482	458	455	458	472	488	476	463	478	435	335	460	458	427	414	425	427	434	430
21	491	472	487	442	468	470	424	484	478	433	441	473	446	458	414	441	434	430	421
22	537	468	504	439	443	475	457	467	481	436	450	477	456	426	394	422	422	423	412
23	535	471	482	462	441	461	488	468	475	412	451	481	449	422	414	432	432	429	402
24	532	456	491	460	435	485	482	461	477	397	431	458	446	424	411	460	445	425	400
25	509	464	483	455	434	427	473	476	483	—	462	460	477	427	423	435	468	424	412
26	503	453	476	468	439	504	474	433	475	—	479	435	466	436	425	422	437	413	436
27	490	458	481	470	447	471	445	480	517	—	460	457	451	424	413	452	387	434	445
28	485	453	467	481	440	468	494	474	496	—	452	467	445	424	425	421	428	405	433
29	487	447	521	481	437	446	439	466	499	—	448	443	439	426	429	—	433	432	440
30	485	474	494	—	432	453	480	458	499	—	430	457	438	434	435	—	427	427	431
31	—	513	524	—	439	—	442	—	483	—	—	474	—	419	450	—	419	—	421
Mean	503	474	486	473	466	476	461	458	468	*458*	*450*	464	462	435	426	441	437	439	424

[1] Minus 200 γ according to page 158.

Extracts from the Tables of Hourly Means of D, H, Z at Gjøahavn.

The four tables CXIII, CXIV, CXV, CXVI contain daily means of the magnetic elements D_W, I, H, Z for the interval during which registration was made at Gjøahavn, November 1903—May 1905.

Table CXVII.

Element	D	I	H	Z
	° ′	° ′	C. G. S.	C. G. S.
Mean value for 1904	7 21	80 16.7	0.00761	0.60463 [1]
Annual mean of daily range	17 8	0 11.7	0.00208	0.00200
Mean annual change	− 2.1	− 0.3	+ 3 γ	− 37 γ

The mean figures given in Table CXVII refer to the year 1904, while in Table CXVIII we have tabulated monthly means for all 19 months, November 1903—May 1905, for the elements D, I, H, X, Y, Z, where $X = H \cos D$ and $Y = H \sin D$. In Table CXIX we have given the monthly means of the daily range of these elements under the headings A_D, A_H, A_Z.

Table CXVIII. — **Summary of Montly Means.**

Month	1903						1904						1905					
	D	I	H	X	Y	Z [1]	D	I	H	X	Y	Z [1]	D	I	H	X	Y	Z [1]
	°	° ′	C.G.S.	C.G.S.	C.G.S.	C.G.S.	°	° ′	C.G.S.	C.G.S.	C.G.S.	C.G.S.	°	° ′	C.G.S.	C.G.S.	C.G.S.	C.G.S.
Jan.	—	—	—	—	—	—	8.7 W	89 18.1	0.00737	0.00729	0.00111	0.60486	6.9 W	89 17.4	0.00749	0.00744	0.00090	0.60429
Feb.	—	—	—	—	—	—	8.9 »	17.4	750	741	116	473	7.3 »	17.7	743	737	094	441
March	—	—	—	—	—	—	8.2 »	16.9	758	750	108	466	5.3 »	17.3	751	748	069	437
April	—	—	—	—	—	—	7.9 »	16.9	758	751	104	476	5.8 »	17.6	745	741	075	439
May	—	—	—	—	—	—	7.7 »	16.5	765	758	102	461	5.1 »	16.6	763	760	068	424
June	—	—	—	—	—	—	7.0 »	16.0	774	768	094	458	—	—	—	—	—	—
July	—	—	—	—	—	—	6.6 »	15.6	781	778	090	468	—	—	—	—	—	—
Aug.	—	—	—	—	—	—	6.2 »	16.3	769	765	083	*458*	—	—	—	—	—	—
Sep.	—	—	—	—	—	—	6.5 »	16.6	764	759	086	*450*	—	—	—	—	—	—
Oct.	—	—	—	—	—	—	6.7 »	16.6	764	759	089	464	—	—	—	—	—	—
Nov.	9.7 W	89 17.7	0.00744	0.00733	0.00125	0.60503	6.9 »	17.0	755	750	091	462	—	—	—	—	—	—
Dec.	8.1 »	18.4	732	725	103	474	6.9 »	17.0	755	750	091	435	—	—	—	—	—	—
Mean	—	—	—	—	—	—	7.4 W	89 16.7	0.00761	0.00755	0.00097	0.60463	—	—	—	—	—	—

Table CXIX.

Month	1903			1904			1905		
	A_D	A_H	A_Z	A_D	A_H	A_Z	A_D	A_H	A_Z
	°	γ	γ	°	γ	γ	°	γ	γ
January	—	—	—	28.0	206	211	15.0	137	157
February	—	—	—	22.0	202	212	20.4	235	270
March	—	—	—	11.2	156	101	20.0	248	270
April	—	—	—	18.9	260	240	22.2	267	284
May	—	—	—	21.7	293	319	19.0	273	292
June	—	—	—	19.8	248	299	—	—	—
July	—	—	—	19.9	290	206	—	—	—
August	—	—	—	18.5	225	175	—	—	—
September	—	—	—	13.8	192	169	—	—	—
October	—	—	—	16.3	158	198	—	—	—
November	27.0	218	237	14.7	146	170	—	—	—
December	12.7	225	140	9.0	116	118	—	—	—
Mean	—	—	—	17.8	208	201	—	—	—

[1] Minus 200 γ according to 158.

Gr. M. T. Table CXX. — **Diurnal Variation of D.** Gjøahavn 1903—05.

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1903	Nov.	+ 3.3	+ 5.6	+ 3.3	+ 2.3	+ 2.4	+ 1.6	+ 0.4	+ 1.5	− 1.1	− 1.7	− 2.2	− 2.4	− 2.8	− 3.0	− 3.3	− 3.6	− 3.3	− 2.8	− 2.1	− 0.8	+ 1.1	+ 2.4	+ 2.6	+ 2.9
»	Dec.	+ 1.3	+ 1.4	+ 1.6	+ 2.3	+ 2.2	+ 1.9	+ 1.2	+ 0.6	− 0.3	− 0.9	− 1.5	− 1.7	− 1.7	− 2.1	− 2.3	− 2.2	− 1.9	− 1.5	− 1.0	+ 0.3	+ 1.2	+ 1.3	+ 0.9	+ 1.2
1904	Jan.	+ 1.3	+ 1.5	+ 1.4	+ 1.7	+ 2.9	+ 3.6	+ 1.7	+ 1.5	− 0.3	− 1.1	− 1.9	− 1.9	− 2.0	− 2.1	− 2.3	− 2.7	− 2.7	− 2.2	− 1.3	+ 0.2	+ 0.7	+ 1.0	+ 1.1	+ 1.6
»	Feb.	+ 1.7	+ 1.9	+ 1.7	+ 1.8	+ 3.0	+ 1.9	+ 1.3	+ 1.4	+ 0.6	− 0.4	− 1.0	− 1.2	− 1.7	− 2.0	− 2.2	− 3.0	− 3.5	− 3.2	− 2.3	− 0.8	+ 0.6	+ 1.6	+ 1.9	+ 1.7
»	March	+ 1.8	+ 1.7	+ 1.6	+ 1.6	+ 1.6	+ 1.5	+ 1.1	+ 0.3	− 0.1	− 0.5	− 0.8	− 0.8	− 1.2	− 1.8	− 2.4	− 2.9	− 2.4	− 1.9	− 1.1	− 0.6	+ 0.6	+ 1.1	+ 1.3	+ 1.6
»	April	+ 4.0	+ 4.2	+ 4.2	+ 2.9	+ 2.3	+ 1.9	+ 1.0	+ 0.3	− 0.3	− 0.8	− 1.2	− 1.6	− 2.4	− 3.0	− 3.5	− 3.7	− 3.8	− 3.9	− 2.8	− 0.7	0.0	+ 1.3	+ 2.5	+ 3.0
»	May	+ 3.3	+ 3.1	+ 3.7	+ 3.7	+ 3.0	+ 2.5	+ 2.1	+ 1.4	+ 0.7	− 0.1	− 0.9	− 1.3	− 2.7	− 3.9	− 4.4	− 4.8	− 3.9	− 3.5	− 3.2	− 1.4	− 1.1	+ 1.2	+ 2.4	+ 3.5
»	June	+ 2.8	+ 4.0	+ 3.8	+ 3.6	+ 3.4	+ 2.7	+ 2.0	+ 1.2	+ 0.5	− 0.1	− 1.0	− 1.9	− 2.8	− 3.3	− 4.0	− 4.3	− 3.7	− 2.6	− 2.3	− 2.2	− 1.0	+ 0.9	+ 1.2	+ 1.9
»	July	+ 2.7	+ 3.4	+ 3.6	+ 3.4	+ 3.2	+ 2.9	+ 2.4	+ 1.8	+ 1.1	+ 0.4	− 0.3	− 1.3	− 2.3	− 3.0	− 3.6	− 3.7	− 3.5	− 2.4	− 2.5	− 2.8	− 2.0	+ 0.1	+ 1.2	+ 2.3
»	Aug.	+ 2.6	+ 2.8	+ 2.9	+ 3.1	+ 2.4	+ 1.7	+ 1.3	+ 0.8	+ 0.3	− 0.2	− 0.6	− 1.4	− 2.3	− 2.9	− 3.5	− 4.0	− 3.7	− 2.3	− 1.1	− 0.4	+ 0.1	+ 0.3	+ 0.6	+ 2.7
»	Sep.	+ 2.4	+ 2.7	+ 2.9	+ 3.0	+ 3.0	+ 2.5	+ 1.5	+ 1.1	− 0.1	− 0.5	− 1.0	− 1.3	− 1.9	− 2.2	− 2.6	− 3.1	− 2.6	− 2.3	− 1.9	− 1.5	− 0.7	+ 0.2	+ 1.3	+ 2.2
»	Oct.	+ 3.2	+ 3.0	+ 2.6	+ 2.9	+ 2.7	+ 2.0	+ 1.2	+ 0.5	− 0.6	− 1.0	− 1.3	− 1.6	− 2.1	− 2.9	− 3.3	− 3.4	− 3.2	− 2.8	− 1.6	− 1.1	+ 0.6	+ 1.7	+ 2.0	+ 2.7
»	Nov.	+ 1.0	+ 1.0	+ 1.5	+ 2.3	+ 2.3	+ 1.9	+ 1.4	+ 0.7	+ 0.2	− 0.6	− 1.1	− 1.6	− 2.3	− 2.6	− 2.7	− 2.8	− 2.6	− 1.1	− 0.5	+ 0.4	+ 1.0	+ 1.2	+ 1.4	+ 1.6
»	Dec.	+ 1.1	+ 1.1	+ 1.0	+ 0.9	+ 1.0	+ 1.3	+ 1.3	+ 0.5	+ 0.1	− 0.4	− 0.8	− 1.1	− 1.6	− 1.6	− 1.8	− 1.6	− 1.6	− 1.1	− 0.5	0.0	+ 0.7	+ 1.0	+ 0.9	+ 0.8
1905	Jan.	+ 1.7	+ 1.4	+ 1.6	+ 1.9	+ 1.7	+ 1.6	+ 1.2	+ 0.8	+ 0.3	− 0.2	− 1.1	− 1.5	− 1.7	− 2.0	− 2.0	− 2.4	− 2.6	− 2.3	− 1.5	− 0.1	+ 0.8	+ 1.4	+ 1.4	+ 1.7
»	Feb.	+ 2.1	+ 1.8	+ 2.9	+ 2.8	+ 2.8	+ 3.2	+ 3.3	+ 3.1	+ 0.9	− 1.0	− 0.9	− 1.9	− 2.9	− 3.0	− 2.8	− 3.8	− 3.8	− 3.6	− 2.5	− 1.3	+ 0.1	+ 1.2	+ 2.2	+ 2.0
»	March	+ 3.7	+ 3.3	+ 2.8	+ 2.9	+ 3.3	+ 2.9	+ 2.5	+ 1.6	+ 0.5	0.0	− 1.0	− 0.5	− 1.9	− 3.0	− 4.1	− 3.7	− 4.4	− 3.6	− 3.1	− 2.2	− 0.4	+ 0.7	+ 1.7	+ 2.9
»	April	+ 3.7	+ 4.6	+ 3.6	+ 3.9	+ 3.5	+ 3.0	+ 1.7	+ 1.0	− 0.1	− 0.6	− 1.0	− 1.2	− 2.1	− 3.0	− 4.0	− 4.9	− 3.7	− 4.1	− 3.5	− 1.9	− 0.6	+ 0.1	+ 2.1	+ 3.3
»	May	+ 4.3	+ 4.3	+ 4.3	+ 4.0	+ 3.6	+ 3.2	+ 2.4	+ 1.5	+ 0.9	+ 0.2	− 0.2	− 0.9	− 1.9	− 2.9	− 3.4	− 3.7	− 4.0	− 4.3	− 4.2	− 2.8	− 2.6	− 0.9	+ 1.4	+ 2.5

Table CXXI. — **Diurnal Variation of H.**

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1903	Nov.	− 22	− 21	− 10	+ 7	+ 7	+ 15	+ 22	+ 11	+ 25	+ 21	+ 20	+ 20	+ 10	+ 9	+ 8	+ 5	+ 8	− 1	− 3	− 9	− 24	− 36	− 29	− 24
»	Dec.	− 5	− 1	+ 2	+ 1	+ 7	+ 12	+ 23	+ 25	+ 25	+ 18	+ 15	+ 13	+ 9	+ 1	− 6	− 9	− 15	− 16	− 18	− 24	− 24	− 15	− 5	− 7
1904	Jan.	− 7	− 4	+ 1	+ 3	− 5	− 5	+ 17	+ 17	+ 27	+ 24	+ 16	+ 17	+ 12	+ 10	+ 5	− 5	− 22	− 22	− 17	− 14	− 10	− 11	− 8	− 11
»	Feb.	− 13	− 13	− 7	− 5	− 10	+ 5	+ 15	+ 13	+ 17	+ 16	+ 16	+ 11	+ 7	+ 6	+ 8	+ 13	+ 13	+ 5	− 1	− 8	− 22	− 32	− 27	− 15
»	March	− 10	− 7	− 4	− 4	0	+ 3	+ 8	+ 14	+ 14	+ 9	+ 7	+ 5	+ 13	+ 16	+ 12	+ 12	+ 3	+ 6	− 7	− 10	− 20	− 21	− 16	− 14
»	April	− 13	− 7	+ 1	+ 8	+ 13	+ 20	+ 24	+ 29	+ 27	+ 27	+ 29	+ 32	+ 31	+ 29	+ 19	+ 3	− 7	− 23	− 29	− 55	− 53	− 48	− 38	− 22
»	May	− 26	− 14	− 7	− 3	+ 3	+ 14	+ 20	+ 30	+ 35	+ 36	+ 40	+ 45	+ 42	+ 23	+ 13	− 5	− 11	− 8	− 22	− 33	− 37	− 55	− 49	− 36
»	June	− 25	− 16	− 14	− 9	− 3	+ 5	+ 12	+ 16	+ 24	+ 27	+ 38	+ 47	+ 33	+ 25	+ 17	− 9	− 26	− 32	+ 1	− 3	− 16	− 36	− 30	− 22
»	July	− 19	− 23	− 18	− 10	− 6	0	+ 9	+ 13	+ 14	+ 21	+ 29	+ 41	+ 31	+ 34	+ 17	− 3	− 10	− 17	− 10	− 5	− 18	− 39	− 27	− 21
»	Aug.	− 16	− 9	− 3	− 2	+ 3	+ 10	+ 15	+ 16	+ 16	+ 20	+ 22	+ 27	+ 28	+ 22	+ 2	− 8	− 20	− 22	− 17	− 15	− 20	− 18	− 15	− 24
»	Sept.	− 13	− 13	− 11	− 6	+ 1	+ 8	+ 15	+ 18	+ 17	+ 13	+ 11	+ 5	+ 13	+ 6	− 2	+ 1	− 6	+ 3	− 1	− 3	− 12	− 15	− 17	− 16
»	Oct.	− 20	− 14	− 7	− 3	+ 2	+ 11	+ 21	+ 25	+ 23	+ 19	+ 13	+ 13	+ 11	+ 10	+ 6	− 8	− 6	− 8	− 12	− 5	− 20	− 22	− 18	− 18
»	Nov.	− 2	+ 2	+ 2	− 2	+ 1	+ 9	+ 17	+ 21	+ 20	+ 19	+ 22	+ 12	+ 9	+ 1	− 4	− 16	− 20	− 11	+ 4	− 14	− 17	− 14	− 15	− 13
»	Dec.	− 5	− 1	+ 1	+ 5	+ 6	+ 10	+ 12	+ 19	+ 19	+ 17	+ 14	+ 11	+ 6	+ 8	− 2	− 10	− 9	− 10	− 14	− 18	− 19	− 16	− 9	− 6
1905	Jan.	− 8	+ 2	+ 4	+ 5	+ 11	+ 14	+ 17	+ 20	+ 20	+ 20	+ 20	+ 16	+ 14	+ 6	+ 2	0	− 5	− 13	− 24	− 29	− 29	− 24	− 17	− 14
»	Feb.	− 15	− 7	− 6	− 2	+ 2	+ 16	+ 20	+ 17	+ 33	+ 37	+ 28	+ 27	+ 22	+ 13	+ 14	+ 18	+ 2	− 9	− 21	− 37	− 45	− 43	− 36	− 21
»	March	− 34	− 20	− 11	− 6	− 3	+ 12	+ 19	+ 22	+ 22	+ 21	+ 18	+ 21	+ 22	+ 32	+ 19	+ 2	+ 21	− 1	− 10	− 14	− 32	− 37	− 36	− 37
»	April	− 26	− 21	− 9	+ 1	+ 12	+ 26	+ 31	+ 29	+ 30	+ 29	+ 29	+ 35	+ 32	+ 22	+ 7	− 6	− 18	− 16	− 4	− 31	− 37	− 32	− 43	− 40
»	May	− 26	− 14	− 10	− 2	+ 5	+ 12	+ 17	+ 24	+ 26	+ 30	+ 38	+ 37	+ 37	+ 24	+ 1	− 19	− 28	− 22	− 6	− 31	− 18	− 28	− 32	− 20

Table CXXII. — △ X

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1903	Nov.	− 27	− 30	− 16	+ 3	+ 3	+ 12	+ 21	+ 8	+ 27	+ 24	+ 24	+ 24	+ 15	+ 14	+ 14	+ 11	+ 14	+ 4	+ 1	− 8	− 26	− 40	− 33	− 29
»	Dec.	− 7	− 3	− 1	− 3	+ 3	+ 9	+ 21	+ 24	+ 25	+ 19	+ 17	+ 16	+ 12	+ 5	− 2	− 5	− 12	− 13	− 16	− 24	− 26	− 17	− 6	− 9
1904	Jan.	− 9	− 6	− 1	0	− 10	− 11	+ 14	+ 14	+ 27	+ 26	+ 19	+ 20	+ 15	+ 14	+ 9	0	− 17	− 18	− 15	− 14	− 11	− 13	− 10	− 14
»	Feb.	− 16	− 16	− 10	− 8	− 15	+ 2	+ 13	+ 10	+ 16	+ 17	+ 18	+ 13	+ 10	+ 9	+ 12	+ 18	+ 19	+ 10	+ 3	− 6	− 23	− 34	− 30	− 18
»	March	− 13	− 10	− 7	− 7	− 3	0	+ 6	+ 13	+ 14	+ 10	+ 8	+ 6	+ 15	+ 19	+ 16	+ 17	+ 7	+ 9	− 5	− 9	− 21	− 23	− 18	− 17
»	April	− 20	− 14	− 6	+ 3	+ 9	+ 17	+ 22	+ 28	+ 27	+ 28	+ 31	+ 34	+ 35	+ 34	+ 25	+ 9	0	− 16	− 24	− 53	− 53	− 50	− 42	− 27
»	May	− 31	− 19	− 13	− 9	− 2	+ 10	+ 16	+ 27	+ 34	+ 36	+ 41	+ 47	+ 46	+ 29	+ 20	+ 3	− 4	− 2	− 16	− 30	− 35	− 57	− 53	− 42
»	June	− 30	− 23	− 20	− 15	− 9	0	+ 8	+ 14	+ 23	+ 27	+ 39	+ 50	+ 37	+ 30	+ 24	− 2	− 20	− 27	+ 5	+ 1	− 14	− 37	− 32	− 25
»	July	− 23	− 29	− 24	− 16	− 11	− 5	+ 5	+ 10	+ 12	+ 20	+ 29	+ 43	+ 35	+ 39	+ 23	+ 3	− 4	− 13	− 6	0	− 14	− 39	− 29	− 25
»	Aug.	− 20	− 14	− 8	− 7	− 1	+ 7	+ 13	+ 14	+ 15	+ 20	+ 23	+ 29	+ 32	+ 27	+ 8	− 1	− 14	− 18	− 15	− 14	− 20	− 18	− 16	− 28
»	Sep.	− 17	− 18	− 16	− 11	− 4	+ 4	+ 12	+ 16	+ 17	+ 14	+ 13	+ 7	+ 16	+ 10	+ 2	+ 6	− 2	+ 7	+ 2	0	− 11	− 15	− 19	− 20
»	Oct.	− 24	− 18	− 10	− 7	− 2	+ 8	+ 19	+ 24	+ 24	+ 20	+ 15	+ 15	+ 14	+ 14	+ 10	− 4	− 2	− 4	− 10	− 4	− 21	− 24	− 20	− 21
»	Nov.	− 4	0	0	− 6	− 3	+ 6	+ 14	+ 20	+ 20	+ 20	+ 24	+ 15	+ 13	+ 5	+ 1	− 11	− 15	− 9	+ 5	− 15	− 19	− 16	− 17	− 16
»	Dec.	− 7	− 3	− 1	+ 4	+ 4	+ 8	+ 10	+ 18	+ 19	+ 18	+ 15	+ 13	+ 9	+ 11	+ 1	− 7	− 6	− 8	− 13	− 18	− 20	− 18	− 10	− 7
1905	Jan.	− 11	0	+ 1	+ 2	+ 8	+ 11	+ 15	+ 18	+ 19	+ 20	+ 22	+ 18	+ 17	+ 9	+ 5	+ 4	− 1	− 9	− 21	− 29	− 30	− 26	− 19	− 17
»	Feb.	− 18	− 10	− 11	− 7	− 3	+ 10	+ 14	+ 12	+ 31	+ 38	+ 29	+ 30	+ 27	+ 18	+ 19	+ 24	+ 8	− 3	− 17	− 34	− 45	− 45	− 39	− 24
»	March	− 40	− 25	− 16	− 11	− 9	+ 7	+ 15	+ 19	+ 21	+ 21	+ 20	+ 22	+ 25	+ 37	+ 26	+ 8	+ 28	+ 5	− 5	− 10	− 31	− 38	− 39	− 42
»	April	− 32	− 29	− 15	− 6	+ 6	+ 21	+ 28	+ 27	+ 30	+ 30	+ 30	+ 37	+ 35	+ 27	+ 14	+ 2	− 12	− 9	+ 2	− 28	− 36	− 32	− 46	− 45
»	May	− 33	− 21	− 17	− 8	− 1	+ 6	+ 13	+ 21	+ 24	+ 30	+ 38	+ 38	+ 40	+ 29	+ 7	− 12	− 21	− 14	+ 1	− 26	− 14	− 26	− 34	− 24
	Mean	− 20	− 15	− 10	− 6	− 2	+ 6	+ 15	+ 18	+ 22	+ 23	+ 24	+ 25	+ 24	+ 20	+ 12	+ 3	− 3	− 7	− 8	− 17	− 25	− 30	− 27	− 24

Table CXXIII. — △ Y

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1903	Nov.	− 41	− 71	− 42	− 31	− 32	− 23	− 8	− 21	+ 11	+ 20	+ 26	+ 29	+ 36	+ 38	+ 42	+ 47	+ 42	+ 37	+ 28	+ 12	− 11	− 27	− 30	− 35
»	Dec.	− 16	− 18	− 21	− 30	− 30	− 26	− 19	− 11	+ 1	+ 10	+ 18	+ 21	+ 21	+ 28	+ 31	+ 30	+ 27	+ 22	+ 16	− 1	− 13	− 15	− 11	− 15
1904	Jan.	− 16	− 19	− 20	− 23	− 38	− 47	− 25	− 22	0	+ 11	+ 23	+ 23	+ 25	+ 26	+ 30	+ 36	+ 38	+ 32	+ 19	− 1	− 8	− 12	− 14	− 20
»	Feb.	− 21	− 23	− 22	− 23	− 38	− 26	− 19	− 20	− 10	+ 3	+ 11	+ 14	+ 22	+ 26	+ 28	+ 38	+ 44	+ 42	+ 30	+ 12	− 5	− 17	− 22	− 20
»	March	− 22	− 22	− 20	− 20	− 21	− 20	− 16	− 6	0	+ 5	+ 10	+ 10	+ 14	+ 22	+ 30	+ 37	+ 31	+ 24	+ 15	+ 9	− 5	− 12	− 15	− 19
»	April	− 51	− 54	− 55	− 39	− 32	− 28	− 16	− 8	0	+ 7	+ 11	+ 17	+ 28	+ 36	+ 44	+ 48	+ 51	+ 54	+ 40	+ 16	+ 7	− 11	− 28	− 37
»	May	− 40	− 39	− 48	− 48	− 40	− 35	− 30	− 22	− 14	− 3	+ 7	+ 11	+ 30	+ 48	+ 56	+ 64	+ 53	+ 47	+ 45	+ 23	+ 19	− 9	− 25	− 41
»	June	− 34	− 51	− 48	− 46	− 44	− 36	− 28	− 18	− 10	− 2	+ 8	+ 19	+ 23	+ 40	+ 50	+ 58	+ 52	+ 38	+ 30	+ 29	+ 15	− 7	− 12	− 22
»	July	− 33	− 42	− 45	− 43	− 41	− 38	− 33	− 25	− 16	− 8	0	+ 12	+ 26	+ 35	+ 45	+ 49	+ 47	+ 34	+ 34	+ 37	+ 29	+ 4	− 12	− 28
»	Aug.	− 32	− 36	− 38	− 40	− 32	− 24	− 19	− 12	− 6	0	+ 5	+ 15	+ 27	+ 35	+ 46	+ 54	+ 51	+ 33	+ 17	+ 7	+ 1	− 2	− 6	− 32
»	Sep.	− 30	− 34	− 37	− 39	− 40	− 34	− 22	− 17	− 1	+ 5	+ 12	+ 16	+ 23	+ 28	+ 34	+ 41	+ 35	+ 30	+ 25	+ 20	+ 11	− 1	− 15	− 27
»	Oct.	− 40	− 38	− 33	− 38	− 36	− 28	− 18	− 10	+ 5	+ 11	+ 15	+ 19	+ 26	+ 37	+ 43	+ 46	+ 43	+ 38	+ 22	+ 15	− 5	− 20	− 24	− 33
»	Nov.	− 13	− 14	− 20	− 30	− 30	− 26	− 21	− 12	− 5	+ 6	+ 12	+ 20	+ 29	+ 34	+ 36	+ 39	+ 37	+ 16	+ 6	− 4	− 11	− 14	− 16	− 19
»	Dec.	− 14	− 14	− 13	− 12	− 14	− 18	− 19	− 9	− 4	+ 3	+ 9	+ 13	+ 20	+ 20	+ 24	+ 22	+ 22	+ 16	+ 8	+ 2	− 7	− 11	− 11	− 10
1905	Jan.	− 21	− 19	− 22	− 26	− 24	− 23	− 18	− 13	− 6	0	+ 12	+ 18	+ 21	+ 26	+ 26	+ 32	+ 35	+ 32	+ 23	+ 5	− 7	− 15	− 16	− 21
»	Feb.	− 26	− 23	− 37	− 36	− 36	− 44	− 46	− 43	− 16	+ 8	+ 8	+ 22	+ 35	+ 38	+ 35	+ 48	+ 50	+ 49	+ 36	+ 22	+ 4	− 10	− 24	− 24
»	March	− 44	− 41	− 35	− 37	− 43	− 40	− 35	− 24	− 9	− 3	+ 11	+ 4	+ 22	+ 35	+ 52	+ 48	+ 55	+ 48	+ 42	+ 31	+ 9	− 4	− 18	− 33
»	April	− 45	− 58	− 46	− 51	− 48	− 43	− 26	− 17	− 2	+ 4	+ 10	+ 11	+ 24	+ 37	+ 52	+ 65	+ 51	+ 56	+ 46	+ 29	+ 13	+ 3	− 22	− 38
»	May	− 53	− 55	− 55	− 52	− 48	− 44	− 34	− 23	− 15	− 6	− 2	+ 7	+ 20	+ 35	+ 45	+ 51	+ 56	+ 59	+ 56	+ 41	+ 36	+ 15	− 14	− 30
	Mean	− 31	− 35	− 35	− 35	− 35	− 32	− 24	− 18	− 5	+ 4	+ 11	+ 16	+ 25	+ 33	+ 39	+ 45	+ 43	+ 39	+ 28	+ 16	+ 4	− 9	− 18	− 27

Gr. M. T. Table CXXIV. — **Diurnal Variation of I.** **Gjøahavn 1903—05.**

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1903	Nov.	+ 1.2	+ 1.2	+ 0.6	− 0.4	− 0.4	− 0.8	− 1.2	− 0.6	− 1.4	− 1.2	− 1.1	− 1.1	− 0.5	− 0.5	− 0.4	− 0.2	− 0.4	+ 0.1	+ 0.2	+ 0.5	+ 1.4	+ 2.0	+ 1.6	+ 1.3
»	Dec.	+ 0.2	0.0	− 0.2	− 0.1	− 0.4	− 0.7	− 1.3	− 1.4	− 1.4	− 1.0	− 0.9	− 0.7	− 0.5	− 0.1	+ 0.3	+ 0.5	+ 0.8	+ 0.9	+ 1.0	+ 1.4	+ 1.4	+ 0.8	+ 0.2	+ 0.4
1904	Jan.	+ 0.4	+ 0.2	− 0.1	− 0.2	+ 0.3	+ 0.3	− 0.9	− 0.9	− 1.5	− 1.3	− 0.9	− 0.9	− 0.7	− 0.5	− 0.2	+ 0.3	+ 1.3	+ 1.3	+ 1.0	+ 0.8	+ 0.5	+ 0.7	+ 0.4	+ 0.6
»	Feb.	+ 0.7	+ 0.7	+ 0.3	+ 0.2	+ 0.5	− 0.3	− 0.9	− 0.8	− 1.0	− 0.9	− 0.9	− 0.6	− 0.4	− 0.4	− 0.5	− 0.8	− 0.8	− 0.3	0.0	+ 0.4	+ 1.2	+ 1.8	+ 1.5	+ 0.8
»	March	+ 0.6	+ 0.4	+ 0.2	+ 0.2	0.0	− 0.2	− 0.5	− 0.8	− 0.8	− 0.5	− 0.4	− 0.3	− 0.7	− 0.9	− 0.7	− 0.7	− 0.2	− 0.3	+ 0.4	+ 0.6	+ 1.1	+ 1.2	+ 0.9	+ 0.8
»	April	+ 0.7	+ 0.4	− 0.1	− 0.5	− 0.8	− 1.1	− 1.4	− 1.6	− 1.5	− 1.5	− 1.6	− 1.8	− 1.7	− 1.6	− 1.0	− 0.1	+ 0.4	+ 1.3	+ 1.6	+ 3.1	+ 3.0	+ 2.7	+ 2.1	+ 1.2
»	May	+ 1.4	+ 0.8	+ 0.3	+ 0.1	− 0.2	− 0.8	− 1.1	− 1.7	− 2.0	− 2.0	− 2.3	− 2.5	− 2.4	− 1.3	− 0.7	+ 0.3	+ 0.7	+ 0.5	+ 1.3	+ 1.9	+ 2.1	+ 3.1	+ 2.7	+ 2.0
»	June	+ 1.4	+ 0.8	+ 0.7	+ 0.5	+ 0.1	− 0.3	− 0.7	− 0.9	− 1.4	− 1.5	− 2.2	− 2.7	− 1.9	− 1.4	− 1.0	+ 0.5	+ 1.5	+ 1.8	− 0.1	+ 0.2	+ 0.9	+ 2.0	+ 1.6	+ 1.2
»	July	+ 1.0	+ 1.3	+ 1.0	+ 0.5	+ 0.3	0.0	− 0.5	− 0.7	− 0.8	− 1.2	− 1.7	− 2.3	− 1.8	− 1.9	− 1.0	+ 0.2	+ 0.6	+ 1.0	+ 0.6	+ 0.3	+ 1.0	+ 2.2	+ 1.5	+ 1.1
»	Aug.	+ 0.8	+ 0.4	+ 0.1	+ 0.1	− 0.2	− 0.6	− 0.9	− 1.0	− 1.0	− 1.2	− 1.3	− 1.6	− 1.6	− 1.3	− 0.1	+ 0.4	+ 1.1	+ 1.2	+ 0.9	+ 0.9	+ 1.1	+ 1.0	+ 0.8	+ 1.3
»	Sep.	+ 0.8	+ 0.8	+ 0.7	+ 0.4	0.0	− 0.4	− 0.8	− 1.0	− 0.9	− 0.7	− 0.6	− 0.2	− 0.7	− 0.3	+ 0.2	0.0	+ 0.4	− 0.1	+ 0.1	+ 0.2	+ 0.7	+ 0.9	+ 1.0	+ 0.9
»	Oct.	+ 1.1	+ 0.7	+ 0.3	+ 0.1	− 0.2	− 0.7	− 1.2	− 1.4	− 1.4	− 1.1	− 0.8	− 0.8	− 0.7	− 0.6	− 0.3	+ 0.4	+ 0.3	+ 0.4	+ 0.6	+ 0.2	+ 1.1	+ 1.2	+ 0.9	+ 0.9
»	Nov.	+ 0.1	− 0.2	− 0.2	+ 0.1	− 0.1	− 0.5	− 1.0	− 1.2	− 1.1	− 1.1	− 1.3	− 0.7	− 0.5	− 0.1	+ 0.2	+ 0.9	+ 1.1	+ 0.6	− 0.3	+ 0.7	+ 0.9	+ 0.7	+ 0.8	+ 0.7
»	Dec.	+ 0.3	+ 0.1	0.0	− 0.2	− 0.3	− 0.5	− 0.6	− 1.0	− 1.0	− 0.9	− 0.7	− 0.6	− 0.3	− 0.4	+ 0.2	+ 0.6	+ 0.6	+ 0.6	+ 0.8	+ 1.1	+ 1.1	+ 0.9	+ 0.5	+ 0.4
1905	Jan.	+ 0.4	− 0.2	− 0.3	− 0.3	− 0.7	− 0.8	− 1.0	− 1.2	− 1.2	− 1.2	− 1.1	− 0.9	− 0.8	− 0.3	− 0.1	0.0	+ 0.3	+ 0.7	+ 1.3	+ 1.6	+ 1.6	+ 1.3	+ 0.9	+ 0.8
»	Feb.	+ 0.9	+ 0.4	+ 0.4	+ 0.1	− 0.1	− 0.9	− 1.1	− 0.9	− 1.8	− 2.1	− 1.5	− 1.5	− 1.2	− 0.7	− 0.7	− 1.0	− 0.1	+ 0.5	+ 1.2	+ 2.1	+ 2.6	+ 2.5	+ 2.1	+ 1.2
»	March	+ 1.9	+ 1.1	+ 0.6	+ 0.3	+ 0.1	− 0.7	− 1.1	− 1.3	− 1.3	− 1.2	− 1.1	− 1.2	− 1.3	− 1.8	− 1.1	0.0	− 1.2	0.0	+ 0.6	+ 0.7	+ 1.8	+ 2.1	+ 2.0	+ 2.1
»	April	+ 1.4	+ 1.2	+ 0.6	0.0	− 0.7	− 1.5	− 1.7	− 1.6	− 1.7	− 1.6	− 1.6	− 2.0	− 1.8	− 1.2	− 0.3	+ 0.4	+ 1.1	+ 0.9	+ 0.2	+ 1.7	+ 2.1	+ 1.8	+ 2.4	+ 1.8
»	May	+ 1.4	+ 0.7	+ 0.5	+ 0.1	− 0.3	− 0.7	− 1.0	− 1.4	− 1.5	− 1.7	− 2.2	− 2.1	− 2.1	− 1.3	0.0	+ 1.1	+ 1.6	+ 1.3	+ 0.3	+ 1.7	+ 1.0	+ 1.5	+ 1.7	+ 1.1

Table CXXV. — **Diurnal Variation of Z.**

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1903	Nov.	− 34	− 26	− 20	− 15	− 2	+ 6	+ 27	+ 31	+ 27	+ 29	+ 30	+ 30	+ 31	+ 33	+ 32	+ 29	+ 14	− 2	− 22	− 46	− 45	− 41	− 41	− 35
»	Dec.	− 27	− 22	− 19	− 11	− 6	+ 3	+ 14	+ 22	+ 21	+ 21	+ 21	+ 25	+ 23	+ 19	+ 20	+ 17	+ 14	+ 3	− 13	− 19	− 22	− 23	− 23	− 26
1904	Jan.	− 32	− 31	− 26	− 20	− 7	+ 2	+ 18	+ 29	+ 24	+ 23	+ 27	+ 30	+ 29	+ 26	+ 27	+ 23	+ 14	+ 5	− 13	− 20	− 32	− 33	− 33	− 35
»	Feb.	− 32	− 29	− 27	− 18	− 7	− 6	+ 2	+ 16	+ 28	+ 20	+ 19	+ 25	+ 26	+ 31	+ 35	+ 42	+ 24	+ 12	− 15	− 23	− 26	− 28	− 39	− 35
»	March	− 16	− 13	− 11	− 7	− 4	0	0	+ 5	+ 9	+ 9	+ 7	+ 6	+ 8	+ 12	+ 19	+ 17	+ 14	+ 15	+ 8	− 5	− 15	− 21	− 20	− 23
»	April	− 59	− 43	− 25	− 14	− 7	+ 3	+ 12	+ 18	+ 16	+ 21	+ 22	+ 30	+ 34	+ 47	+ 56	+ 52	+ 39	+ 31	+ 3	− 20	− 36	− 55	− 64	− 62
»	May	− 87	− 68	− 46	− 21	− 11	0	+ 8	+ 19	+ 24	+ 24	+ 33	+ 46	+ 60	+ 68	+ 75	+ 70	+ 49	+ 48	+ 30	− 8	− 48	− 73	− 92	− 90
»	June	− 61	− 50	− 39	− 23	− 8	+ 3	+ 7	+ 14	+ 19	+ 25	+ 32	+ 45	+ 58	+ 64	+ 61	+ 49	+ 42	+ 8	− 3	− 11	− 38	− 66	− 61	− 71
»	July	− 40	− 31	− 24	− 15	− 7	0	+ 7	+ 12	+ 12	+ 12	+ 14	+ 17	+ 22	+ 27	+ 30	+ 40	+ 40	+ 23	+ 12	+ 8	− 15	− 39	− 47	− 48
»	Aug.	− 31	− 24	− 17	− 7	− 2	0	+ 4	+ 6	+ 7	+ 10	+ 12	+ 17	+ 23	+ 29	+ 34	+ 35	+ 38	+ 24	+ 6	− 16	− 28	− 38	− 42	− 40
»	Sep.	− 28	− 19	− 14	− 6	+ 3	+ 6	+ 14	+ 13	+ 15	+ 15	+ 16	+ 19	+ 20	+ 27	+ 33	+ 23	+ 21	+ 20	− 3	− 11	− 30	− 45	− 46	− 42
»	Oct.	− 26	− 24	− 18	− 9	− 1	+ 7	+ 12	+ 26	+ 22	+ 24	+ 20	+ 21	+ 22	+ 34	+ 36	+ 38	+ 21	+ 8	− 11	− 29	− 39	− 47	− 45	− 35
»	Nov.	− 30	− 27	− 23	− 12	− 2	0	+ 7	+ 16	+ 25	+ 22	+ 21	+ 21	+ 23	+ 30	+ 31	+ 27	+ 23	+ 2	− 18	− 20	− 29	− 31	− 30	− 31
»	Dec.	− 20	− 17	− 15	− 13	− 9	− 4	+ 5	+ 7	+ 11	+ 13	+ 16	+ 17	+ 19	+ 24	+ 21	+ 17	+ 14	+ 6	− 2	− 12	− 16	− 18	− 22	− 23
1905	Jan.	− 24	− 22	− 17	− 13	− 8	− 3	+ 3	+ 5	+ 13	+ 17	+ 21	+ 29	+ 27	+ 23	+ 26	+ 26	+ 14	+ 3	− 4	− 12	− 20	− 30	− 27	− 26
»	Feb.	− 30	− 28	− 19	− 14	− 9	0	+ 9	+ 13	+ 21	+ 38	+ 43	+ 26	+ 25	+ 25	+ 32	+ 29	+ 19	− 4	− 10	− 18	− 31	− 43	− 37	− 32
»	March	− 35	− 28	− 23	− 16	− 9	0	+ 8	+ 19	+ 13	+ 15	+ 17	+ 22	+ 25	+ 39	+ 40	+ 22	+ 21	+ 15	+ 2	− 7	− 13	− 31	− 44	− 48
»	April	− 53	− 39	− 27	− 14	− 4	+ 8	+ 13	+ 23	+ 16	+ 17	+ 20	+ 28	+ 28	+ 47	+ 53	+ 60	+ 38	+ 27	− 1	− 18	− 48	− 58	− 52	− 55
»	May	− 59	− 50	− 31	− 20	− 9	+ 4	+ 6	+ 12	+ 14	+ 17	+ 22	+ 26	+ 39	+ 47	+ 61	+ 65	+ 66	+ 43	+ 17	− 19	− 47	− 71	− 72	− 66

The Diurnal Variation. — To get an idea of the diurnal variation of the magnetic elements at Gjøahavn the tables CXX, CXXI, CXXII, CXXIII, CXXIV, CXXV, have been prepared. These tables contain, respectively for D, H, X, Y, I and Z, residuals between monthly means of hourly values and their total mean, referred to the figures designated *Mean* (1). Regarding the residuals $\triangle X$ and $\triangle Y$, we may remark that they respectively emerge from calculations by aid of the formulae:

$$\triangle X = \cos D_m \triangle H - H_m \sin D_m \sin 1' \triangle D$$
$$\triangle Y = \sin D_m \triangle H + H_m \cos D_m \sin 1' \triangle D$$

The Character of the Magnetic Elements at Gjøahavn. — Owing to the simple method used in the character designation (cf. page 110) the character for the three elements came out somewhat differently for each element and we have therefore in Table CXXVI.

Table CXXVI.

Date	1904		1904												1905				
	XI	XII	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	I	II	III	IV	V
1	1	0	2	1	0	1	0	0	1	0	0	0	0	1	1	1	0	2	0
2	2	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	2	2	0
3	2	0	0	1	0	0	0	0	0	2	0	0	1	2	1	2	0	1	0
4	2	1	0	0	1	0	0	0	0	2	0	0	1	0	1	1	0	1	0
5	0	1	2	0	1	0	1	0	0	0	0	0	1	0	1	2	0	0	0
6	0	1	1	0	0	0	0	2	2	0	2	0	0	0	1	1	0	0	0
7	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0
8	0	2	1	0	0	0	0	1	0	0	2	2	0	1	1	0	0	0	0
9	0	1	0	2	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
10	1	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
11	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0
12	1	1	1	0	2	0	1	0	0	1	0	1	1	0	0	1	0	0	0
13	0	1	0	2	0	0	2	0	1	0	0	2	2	2	0	0	0	0	0
14	1	0	1	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0
15	2	0	1	0	1	0	0	2	0	0	0	0	0	2	0	0	0	0	1
16	1	0	0	2	1	0	0	2	0	0	2	0	2	2	1	0	1	0	1
17	1	1	0	0	1	0	0	0	0	1	0	1	2	0	1	1	0	2	0
18	0	2	2	0	0	2	0	0	0	0	0	1	1	0	0	0	1	2	1
19	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0
20	1	0	1	1	0	0	0	0	0	0	1	1	2	0	0	1	0	0	0
21	0	0	1	1	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0
22	1	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	1	1	0
23	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0
24	1	2	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	2	0
25	1	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0
26	1	2	2	1	2	0	0	1	0	2	0	0	0	0	0	0	0	0	0
27	1	0	1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	2
28	2	0	0	2	0	0	2	0	0	1	0	0	0	0	0	1	1	0	2
29	1	0	2	1	1	0	1	0	1	1	0	0	0	0	1		0	0	1
30	1	2	2		1	1	0	0	0	0	1	0	0	0	0		0	0	0
31		2	0		0		0		0	0		0		1	1		0		0

taken the mean of the three figures of character for D, H, Z for each day. These mean figures ought to give a fairly good expression for the magnetic conditions at Gjøahavn. From Table CXXVI we have for each month counted up the number of cases in which the character 0, 1, 2, has been put with the result seen in Table CXXVII. The mean figures for each of the three cases show a definite annual progress, more calm days during the summer than during the winter. Remarkable is the large number of days with the character 2, three days per month.

The highest and lowest mean hour values registered during the year 1904 and during the stay and their difference have for the three elements D, H, Z, been given in Table CXXVIII.

Table CXXVII.

Character	Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
0	1903	—	—	—	—	—	—	—	—	—	—	10	15
	1904	12	17	19	23	23	23	24	22	23	19	13	21
	1905	18	16	25	19	25	—	—	—	—	—	—	—
	Mean	15	16	22	21	24	23	24	22	23	19	12	18
1	1903	—	—	—	—	—	—	—	—	—	—	15	10
	1904	12	7	10	6	6	4	6	6	4	10	12	6
	1905	12	9	4	6	4	—	—	—	—	—	—	—
	Mean	12	8	7	6	5	4	6	6	4	10	14	8
2	1903	—	—	—	—	—	—	—	—	—	—	5	6
	1904	7	5	2	1	2	3	1	3	3	2	5	4
	1905	1	3	2	5	2	—	—	—	—	—	—	—
	Mean	4	4	2	3	2	3	1	3	3	2	5	5

Table CXXVIII.

Interval	*D*			*H*			*Z*[1]		
	Max.	Min.	Ampl.	Max.	Min.	Ampl.	Max.	Min.	Ampl.
	°	°	°	C. G. S.	C. G. S.	γ	C. G. S.	C. G. S.	γ
1904	117.7 W	23.0 E	140.7	0.01155	0.00136	1019	0.60905	0.60032	873
Stay	125.9 W	57.1 E	183.0	0.01302	0.00000	1302	0.61284	0.59367	1917

As the scope of this paper only embraces reduction of the register curves and details regarding the constants necessary for this reduction, no further discussion of the results will be given.

THE MAGNETIC STATION AT KING POINT.

Introduction.

In the main introduction, Part I, page 11, a short account of the voyage *Gjøahavn — King Point* has been given. According to this account the Expedition left Gjøahavn on the 13th of August 1905 and arrived at King Point the 3rd of September. The interval September the 11th—October the 2nd was used for the building of the necessary houses on shore, living house and variation house.

The geographical co-ordinates of the station at King Point were calculated to be:

$$\varphi = 69°6'40'' \text{ N}$$
$$\lambda = 138°8'13'' \text{ W}$$

and these co-ordinates refer, as far as we can understand, to the Gjøa lying in her winter quarters. The base-line direction of the station was founded on a rather long series of absolute observations of declination, taken by Wiik with the Seemann, on the 22nd of September 1905. Here, as at Gjøahavn, the foundations for the variation instruments were dug into the ground exactly at the place where the observation mentioned had been taken. When the variation instruments were unpacked, they proved to be in full order and even the suspension threads of the d- and h-variometer were still intact. The variation instruments were mounted during the two days, the 13th and the 14th of October, and the arrangement was exactly the same as at Gjøahavn, (cf. Fig. 12, p. 102).

[1] Minus 200 γ according to page 158.

After the instruments had been mounted the necessary measurements were controlled and for further information we refer to page 40. The first photogram was taken on the 17th of October 1905, and already the next day, the 18th, an experiment for determination of the scale values of the variometers was made.

Absolute Observations.

The base-line direction to which all the absolute observations were to be referred was, as mentioned, based on the observation taken on the 22nd of September and the result was:

$$D = 42° \, 3.4' \text{ E}$$

the azimuth of the Mark used on this occasion being:

$$a = 3° \, 51.1'.$$ [1]

Absolute Observations of Declination. — Excluding the observation for determination of the base-line direction, there were at King Point taken in all 196 absolute observations of declination, 161 measurements being made by Wiik and the rest, 35 observations, taken by Amundsen. Wiik employed the Seemann the whole time, while Amundsen used both the Seemann and the Zschau. Wiik's series covered the interval from October the 20th 1905 to March the 23rd 1906, during which period we have variation records. Amundsen's series was taken during May and June 1906, but during this period there were no variation records.

Referring to page 36, we see that nothing has been stated as to where the absolute house was put up, but we have taken for granted that this house, probably a snow hut, was placed at the south western side of the variation house, about 75 metres away in the base-line direction. As *Mark* for the observations both observers used two flagpoles, placed on the roof of the variation house, and the azimuth of the Mark has been determined to be:

$$a = 222° \, 33.4'$$ [1]

Under the supposition that torsionless suspension was employed, we have for the reduction of the observations:

(I) $$D = M - (\delta + a),$$

where M means the mean reading of the Mark, and δ the mean setting in the meridian. Here, however, as at Gjøahavn, correction for torsion will have to be applied, even if every care is taken to remove all observable twists of the thread. As the directive force is considerably larger at King Point than at Gjøahavn, it is clear that the torsional effect is less at the first station, but as at King Point minutes is used as unit for the data for declination, while at Gjøahavn we used degrees, we see that correction for torsional effect will have to be made with all possible care. As already known, the torsional effect of the thread was not observed directly, but material for determination of the angular effect of torsion ϱ has here, as at Gjøahavn, to be derived from the observations of deflection (cf. pp. 57—59). We see that:

(II) $$\theta' = H \, tg \, \varrho,$$

where the angular effect is got by aid of the formula:

(III) $$\varrho = [v - v' + x] \, B \text{ (cp. p. 57)}$$

The result of the calculations for torsional effect of the thread of the Seemann will be found in Table CXXIX where data for ϱ have been determined by aid of formula (III), H is derived from the h-curves and finally θ' is found by formula (II).

[1] Cp. foot note pag. 54.

Table CXXIX.

Year	Date	ϱ	H	θ'	Year	Date	ϱ	H	θ'
		° ′	C. G. S.	γ			° ′	C. G. S.	γ
1905	Oct. 24	0 18.5	0.08472	46 E	1906	Jan. 25	0 32.4	0.08451	80 E
»	» 24	23.8	469	59 »	»	» 27	34.9	490	86 »
»	» 30	31.6	451	78 »	»	» 27	31.3	489	77 »
»	» 30	15.6	457	38 »	»	» 29	31.2	454	77 »
»	» 31	27.7	457	68 »	»	» 29	32.4	453	80 »
»	» 31	19.1	457	47 »	»	Feb. 1	36.1	355	88 »
»	Nov. 1	19.0	447	47 »	»	» 1	38.0	305	92 »
»	» 1	33.1	453	—					
»	» 2	22.3	464	55 »	1906	Feb. 7	0 31.7	0.08490	78 E
»	» 2	13.7	460	34 »	»	» 7	60.1	508	—
»	» 7	29.7	415	73 »	»	» 8	39.7	423	97 »
»	» 7	56.6	436	—	»	» 8	74.3	466	—
»	» 8	15.5	437	38 »	»	» 14	38.5	480	95 »
»	» 8	35.7	439	—	»	» 14	37.8	483	93 »
					»	» 15	60.5	370	—
1905	Nov. 14	0 33.8	0.08430	83 E	»	» 15	26.6	509	—
»	» 14	14.4	435	—	»	» 17	40.3	459	99 »
»	» 20	39.6	398	97 »	»	» 17	40.3	465	99 »
»	» 20	30.8	443	76 »	»	» 20	33.5	474	83 »
»	» 22	27.0	429	66 »	»	» 20	39.2	476	97 »
»	» 22	32.0	459	79 »	»	» 21	36.7	439	90 »
»	» 29	19.0	480	48 »	»	» 21	37.8	456	93 »
»	» 29	32.0	443	78 »	»	» 27	8.5	495	—
					»	» 27	23.0	435	—
1905	Dec. 5	0 32.4	0.08460	80 E	»	March 2	35.6	454	88 »
»	» 5	28.4	456	70 »	»	» 2	36.4	451	89 »
»	» 6	6.0	444	—	»	» 3	48.8	456	120 »
»	» 6	44.4	434	—	»	» 3	37.7	457	93 »
»	» 9	33.6	449	80 »	»	» 5	46.8	452	115 »
»	» 9	27.6	447	69 »	»	» 5	48.2	458	119 »
					»	» 8	58.0	394	—
1905	Dec. 11	0 29.8	0.08468	73 E	»	» 8	49.1	453	121 »
»	» 11	29.8	484	74 »	»	» 10	54.2	487	133 »
»	» 13	51.3	328	124 »	»	» 10	36.3	471	89 »
»	» 13	51.4	332	—	»	» 12	38.9	461	96 »
»	» 18	40.8	444	98 »	»	» 12	48.2	465	119 »
»	» 18	45.6	484	112 »	»	» 15	37.2	451	92 »
»	» 19	26.9	387	66 »	»	» 15	18.6	462	—
»	» 19	13.6	379	—	»	» 19	25.2	459	—
»	» 20	40.5	384	99 »	»	» 19	25.6	455	—
»	» 20	12.1	544	—	»	» 21	17.2	464	—
»	» 21	38.5	464	95 »	»	» 21	44.3	463	109 »
»	» 21	37.1	467	91 »	»	» 22	41.4	420	101 »
					»	» 22	38.5	445	95 »
1906	Jan. 9	0 4.9	0.08464	—					
»	» 9	15.9	464	—	1906	June 11	0 27.3	0.08450	—
»	» 10	37.4	472	92 E	»	» 11	50.6	450	125 E
»	» 10	26.3	474	66 »	»	» 13	72.4	450	—
»	» 11	30.2	454	74 »	»	» 13	51.7	450	127 »
»	» 11	33.9	450	83 »	»	» 15	46.8	450	115 »
»	» 19	33.6	437	83 »	»	» 15	49.1	450	121 »
»	» 19	0 35.0	0.08429	86 »	»	» 16	6.7	450	—
»	» 20	45.6	444	112 »	»	» 16	10.0	450	—
»	» 20	27.6	445	68 »	»	» 29	46.9	450	115 »
»	» 25	33.6	452	82 »	»	» 29	48.0	450	117 »

Table CXXIX will be seen to be divided into 7 series, each of which is supposed to give the average value for θ' for the time interval in question. From the table alone we shall not be able to decide the date when θ' changes from one value to another, but this may with comparatively great accuracy be done by aid of the register. A change in the base-line value for the d-curve may of course be due to change in the relation between curve and the line of reference, but where no change can be seen to have taken place, we may suspect the change in the base-line value B_d to be due to error in the absolute data for D, arising from an alteration in the value of the torsional effect. Our final result for the value of θ' will be seen from the graph given in Fig. 32.

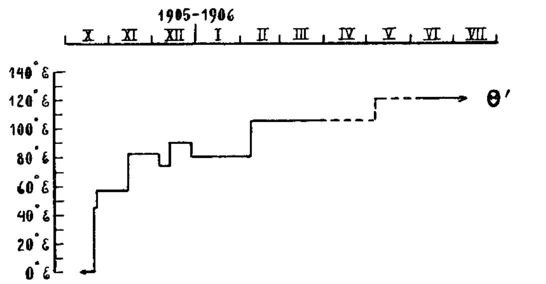


Fig. 32. Graph giving the torsional effect of the thread of the Seemann No. 219.

As mentioned, Amundsen, during May and June 1906 also made observations with the Zschau. During this interval we have no curves and have therefore for H in formula (II) made use of an average value, this being also done in the calculation of θ' for the thread of the Seemann in June 1906, as will be seen from Table CXXIX. Data for calculation of θ for the thread of the Zschau will be found in Table CXXX.

Table CXXX.

Year	Date	ϱ	H	θ'
		° ′	C. G. S.	γ
1906	May 5	0 11.8 W	0.08450	—
»	» 5	5.1 E	»	15 E
»	» 11	10.3 E	»	25 E
»	» 11	13.7 W	»	—
»	» 12	7.1 E	»	18 E
»	» 12	1.8 E	»	4 E
»	» 16	12.9 W	»	—
»	» 16	22.4 E	»	—
»	» 16	3.1 E	»	8 E
»	» 16	13.3 E	»	33 E
»	» 17	2.3 E	»	6 E
»	» 17	3.9 E	»	10 E
»	» 19	6.1 W	»	—
»	» 19	6.0 W	»	—
»	» 19	1.5 E	»	4 E
»	» 19	11.5 E	»	28 E
1906	June 27	0 7.3 W	0.08450	18 W
»	» 27	1.4 W	»	3 W
»	» 28	17.0 W	»	—
»	» 28	6.1 E	»	—
»	» 28	3.8 W	»	9 W
»	» 28	14.0 E	»	—

According to Table CXXX we may for May 1906 put $\theta' = 15\,E$ and for June $\theta' = 10$ W, and with these values for θ' Amundsen's series with the Zschau have been corrected.

The absolute observations for declination taken at King Point are to be found in the journals, which in the Main List, Part I, page 15, have the numbers: 47, 48, 49. In Table CXXXI, pages 278 and 279 we give in chronological order data for D'_E, ϱ and D_E, where D'_E stands for the value obtained directly from the observation, reduced according to formula (I), which means that no correction for torsion has been applied. Under ϱ the correction for torsion is entered and under the last heading D_E we have the final value for declination.

In Table CXXXII we have tabulated monthly means for D, extracted from Table CXXXI, and added the number of observations taken for each month. The data for D obtained from the absolute observations are entered under the heading D_a, and for comparison we have also added monthly means for D obtained from reduction of the d-curve, these values being found under the heading D_r.

Table CXXXII.

Year	Month	D_r	D_a	Number of Observ.
		° ′	° ′	
1905	Oct.	42 26 E	42 34 E	11
»	Nov.	28 »	33 »	38
»	Dec.	25 »	30 »	27
1906	Jan.	23 »	26 »	26
»	Feb.	25 »	24 »	32
»	March	24 »	32 »	27
»	April	—	—	0
»	May	—	28 »	16
»	June	—	26 »	19
Sum	......	....	....	196
Mean	......	42°25′ E	42°29′ E	

The highest observed value for declination was 43° 22.1′ E, which occurred at $7^h\ 9^m$ p. m. Gr. M. T. on the 4th of December 1905. The lowest observed value for declination was 41° 59.6′ E, which occurred at $3^h\ 5^m$ p. m. Gr. M. T. on the 16th of June 1906. The difference between the extremes is thus 1° 22.5′.

Absolute Observations of Horizontal Intensity. — The absolute observations of horizontal intensity at King Point fall, as in case of declination, in two series. The first series covers the interval October the 20th 1905—March the 23rd 1906, and during the whole of this period we have register records, which terminated on the 30th of March 1906. All the observations in *Series I* were made by Wiik with use of the Seemann No. 219, Defl. I and Defl. II. There were taken both deflections and oscillations. The *Second Series* of absolute observations of horizontal intensity covers the interval May the 5th — Juni the 30th 1906, and during this period we have, as mentioned, no register records. Amundsen's series had been taken for the purpose of collecting material for control of the constants of the magnets, and deflections were made with the following magnets:

Seemann . . . . . I and II
Zschau . . . . . . 2, 3, 4, 5, 6, 7, 8 and 9

and oscillations with the same magnets, except 8 and 9. As no oscillations could be made at Gjøahavn, these observations have special interest. The observations of oscillation were made with the Seemann oscillation box in all cases, also when the Zschau magnets were employed, and as thus all magnets were suspended by one and the same thread, this may have a certain significance.

Before dealing with the result of the observations we shall have to discuss some details regarding the way in which the oscillations were made, as in these observations Amundsen seems to have had some trouble. In the oscillation box of the Seemann there was placed a scale, the division of which made an accuracy of 1° possible. Before the observation began, the suspension was made as torsionless as possible and when this was attained the magnet was put in oscillation with a range corresponding to between 20 and 30 degrees on each side of the zero point. After the exact range had been noted, the observation was begun by noting every third passage from the 0th to the 60th. When the 60th passage had been noted, the amplitude of the oscillation was recorded, now about 16°, and in the usual way the time interval the needle needed for 60 passages was used for calculation of the point of time when the 100th passage ought to occur. The exact time of the 100th passage was now noted and again every third passage observed until the 160th, whereupon the amplitude of the oscillation was finally noted, being now about 9°. Now it is clear that, if the 0th passage has been taken when the needle passed from left to right, this is also the case with the 6th, the 12th, the 60th, the 100th and 160th passage, or, in other words, all passages correspond to equal numbers left-to-right, if the zero passage is left-to-right. This rule seems to have been quite clear to Wiik and he has always been able to follow it without difficulty. However, when Amundsen began his series, he seems to have had much trouble, which will appear from the following account (cf. page 37). Amundsen writes: "Curiously enough Wiik seems to have obtained agreement between the calculated point of time for the 100th passage and the actually observed time. It is not clear to me how this was done, as I in no case obtained agreement. A possible reason may be that Wiik, on account of the extreme cold, used a watch instead of a chronometer (Wiik used watch No. 8.). Not obtaining agreement, I elected to note down the passage nearest the point of time calculated, and this passage corresponds to the 101st passage. This passage has been noted by all the observations except in two cases, when the 102nd passage was taken, and in these two cases notes to that effect have been added."

On studying Amundsens observations we have come to the result that he has not made the observations in accordance with what he has written above. He evidently got the system mixed up, which will plainly appear from reductions made according to what he has stated. To show this we may give the following example: We have that $\log H = C_s - 2 \log T$, where C_s is known, T observed, and H is obtained by calculation. Now it appears that we get $H = 0.08620$ as average value for most of Amundsen's observations, if in calculation of the time for one oscillation we accept Amundsen's statement, according to which the second series starts with the 101st passage. However, the deflections taken by Amundsen and both deflections and oscillations taken by Wiik give an average value for H at King Point equal to 0.08450, from which we see that the first value is 170 γ too high.

From what has been said above we may conclude that the beginning of the second series of oscillations in the observations taken by Amundsen did not start with the 101st passage, as Amundsen states, but with the 99th passage. As 99 and 101 are odd numbers, the passage has the contrary direction to the passage of the 0th transit. In the two cases in which Amundsen states he noted the 102nd passage there is no doubt that he actually observed the 100th passage, and in some few cases the result of calculation shows that Amundsen noted the 98th passage instead of the one he claimed to have observed.

Regarding the reduction of the observations of horizontal intensity we refer to pp. 43—45 for deflection and to pp. 45—48 for oscillations. We may merely remark that the usual combination of deflections and oscillations for reduction of the value of H cannot be used, as there is usually too much time between the two kinds of observations. For the reduction we have therefore the two formulae:

$$\log H = C_a - \log \sin \varphi_0$$
$$\log H = C_s - 2 \log T_0$$

the values for C_a and C_s being taken from Tables XXVII—XXIX, pp. 73 and 74, while the index at φ and T means that the necessary corrections have been applied. During the stay at King Point H was observed 156 times, in 90 cases reduced from deflections and in 66 cases reduced from oscillations. In the same way as at Gjøahavn there were also at King Point made two full sets of observation, so that for each deflection we may derive two values for H. For the oscillations the series allow from one to four values for H to be extracted. The number of observations made by each of the two observers Amundsen and Wiik will appear from Table CXXXIII. As mentioned we only have register records for the time interval when Wiik made his observations, and his observations will therefore not be given in detail at this place, as such observations will be given in combination with the determinations of the base-line. The results of Amundsen's observations of deflection will be found in Table CXXXV, page 280 and 281. In Table CXXXVI, page 282 in Obs., the results of Amundsens observations of oscillations have been given and the meaning of the various columns will be clear from what has already been said above, (cf. pp. 45—48). Finally in Table CXXXVII below, all the observations for H, are derived both from deflections and from oscillations, tabulated in chronological order and divided over 15 columns, where the headings refer to the month in which the observations were taken. The mean value for H for each column has been added below. Monthly means for H at King Point will be found in Table CXXXIV according to what the reduced h-curves show under H_r, and according to what the absolute observations give under H_a. The number of absolute observations in each month has also been added.

Table CXXXIII.

Observer	Defl.	Oscill.	Sum
Wiik	112	73	185
Amundsen	80	98	178
Sum	192	171	363

Table CXXXVII.

$H = 0.08000 +$

No	1905					1906									
	X	XI	XI	XII	XII	I	II	III	V	V	V	V	VI	VI	VI
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	370	447	455	460	467	464	355	454	497	**613**	457	400	465	395	348
2	391	453	461	456	465	464	305	451	493	508	482	399	466	510	371
3	472	468	430	463	328	472	271	456	474	449	467	454	509	453	348
4	469	466	435	454	332	474	489	457	488	478	450	457	529	431	479
5	**201**	466	367	462	421	391	432	452	489	408	536	443	518	445	450
6	269	464	398	444	402	388	480	458	462	452	545	418	466	457	406
7	528	466	443	434	489	454	490	442	468	456	547	457	448	400	429
8	507	462	381	473	522	450	508	465	493	454	481	505	452	383	434
9	451	459	400	476	444	387	423	394	515	424	377	495	457	442	374
10	457	448	537	488	484	400	466	453	446	474	385	475	446	431	365
11	457	415	429	465	474	437	480	487	454	466	402	397	478	509	475
12	457	436	459	465	474	429	483	471	452	475	400	421	459	405	469
13	465	491	490	449	387	444	459	461	436	372	432	414	440	400	474
14	458	499	472	449	379	445	461	465	377	424	484	427	455	426	407
15	459	502	487	468	384	391	370	451	402	400	437	431	453	440	440
16	—	437	292	484	544	393	509	462	432	407	405	432	457	474	499
17	—	439	348	462	504	452	459	459	457	477	444	416	484	476	478
18	—	426	479	462	510	451	465	455	392	508	431	473	455	473	499
19	—	473	455	572	464	390	474	464	396	497	423	492	486	502	425
20	—	480	466	521	467	389	476	463	419	313	438	484	458	496	407
21	—	478	486	474	460	490	439	498	426	301	395	472	471	449	426
22	—	435	543	—	455	489	456	464	363	282	388	465	472	445	436
23	—	457	480	—	—	454	495	502	357	286	370	421	457	439	457
24	—	461	443	—	—	453	435	420	498	322	512	453	454	381	—
25	—	471	471	—	—	—	—	445	477	274	501	464	499	379	—
26	—	—	512	—	—	—	—	513	551	306	397	—	—	—	—
27	—	—	489	—	—	—	—	532	563	—	416	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mean	427	460	448	471	448	435	450	463	455	416	445	447	469	442	430

Table CXXXIV.

Year	Month	H_r	H_a	Number of observ.
		C. G. S.	C. G. S.	
1905	Oct.	0.08451	0.08427	15
»	Nov.	435	457	52
»	Dec.	445	459	43
1906	Jan.	456	435	24
»	Feb.	444	450	24
»	March	460	463	27
»	April	—	—	0
»	May	—	441	105
»	June	—	447	73
Mean		0.08448	0.08447	—
Sum		—	—	363

The highest observed value for horizontal intensity was 0.08613, which occurred at 2^h2^m a. m. Gr. M. T. on the 15th of May 1906. The lowest observed value was 0.08201, which occurred at $7^h\,20^m$ p. m. Gr. M. T. on the 25th of October 1905. The difference fo the extremes thus being 412 γ.

Absolute Observations of Inclination. — During the interval October the 19th 1905 — March the 14th 1906 28 observations of inclination were made by Wiik with use of Dover No. 154, Needle I and Needle II. During the days from 13th to 16th of June 1906 Amundsen made one observation with both needles of the Dover and 10 observations with the Fox Circle No. 21, Needle A. Four observations were made with free needle and three with the needle deflected respectively with Defl. N and Defl. S. No observations were made with the Earth Inductor at King Point, this instrument remaining stored the whole time. As in the other observations also the observations with the inclinatorium was oriented in the base-line direction, but as at King Point the base-line direction agrees very well with the average magnetic meridian, no correction is needed.

In Table CXXXVIII, p. 283 in Obs., we give the result of the inclination observations with the Dover. Excluding the two observations for June the 16th, we get as total mean:

$$I_m = 81° \; 50' \; 30''$$

In Table CXXXIX, p. 283 in Obs., we give the results for Amundsen's observations with the Fox Circle. The data put in brackets are excluded in the determination of the means in the last horizontal line of the table. Combining the three means into a total, we get $I' = 81° 47.2'$, but this mean has to be corrected for index error of the needle, which for King Point may be put at — 5.2', and as final result we thus get $I_m = 81°42'0''$, which mean seems to be too low in comparison with the mean value obtained in the observations with the Dover. At Gjøahavn the observations with the Fox Circle gave too high a value in comparison with the result obtained with the Dover.

Table CXL.

No.	1905			1906			
	X	XI	XII	I	II	III	
	° ′	° ′	° ′	° ′	° ′	° ′	
1	81 51.0	81 51.4	81 52.0	81 50.5	81 50.8	81 49.7	
2	51.0	49.8	51.1	51.4	50.5	49.2	
3	—	49.4	51.4	—	49.0	51.6	
4	—	48.9	51.1	—	49.8	49.5	
5	—	51.7	48.8	—	50.2	—	
6	—	51.2	50.0	—	50.4	—	
7	—	54.5	—	—	—	—	
8	—	50.5	—	—	—	—	
Mean	81°51′.0	81°50′.9	81°50′.7	81°51′.0	81°50′.1	81°50′.0	(I_a)
	51.5	52.6	51.8	51.1	51.8	50.8	(I_r)

In Table CXL we have tabulated the results we got with the Dover in chronological order divided over six columns corresponding to the months in which the observations were made. Below have been entered the monhtly means (marked I_a), while below this again corresponding means resulting from reductions of the z-curves have been added under the mark I_r.

Absolute Observations for Total Intensity. — At King Point there were taken only three observations for total intensity. These observations were taken by Amundsen in June 1906 in combination with the inclination observations obtained with the Fox Circle. In these observations, as we know, both the two deflectors N and S were screwed on to the back of the vertical circle of the instrument. The formula used for calculation of the total force F was:

$$F = \frac{R\,(1 + \beta t),}{\sin \psi}$$

where the values for the two constants have been taken from Table LCIII, page 99 $R = 0.50700$ and $\beta = 0.00020$. Details of the observations will be found in Table CXLI, p. 283 in Obs. Taking the mean from the column headed F we get 0.59372 C. G. S. Accepting for King Point $H = 0.08450$ and $I_m = 81° \; 51' \; 30''$ we get from calculation by the formula:

$$F = \frac{H}{\cos I_m}$$

$F = 0.59666$, which seems to indicate that Amundsen's result lies about 300 γ too low, which again implies that we have not succeeded in getting a reliable value for the constants R and β, or that these constants have undergone a change, which cannot be found on account of insufficient control material. However, there is still another explanation, namely, that the inclination has a lower value in June than the one used above. Accepting H as before and putting for I the value 81°49′, we get a reasonable agreement. It may be remarked that Amundsen's results for I with deflected needle points in the direction of a lower value for I in June, but with free needle he gets on the other side a much too high value.

The Variometer Material at King Point.

Introduction. — Referring to pp. 40— 41 we see that the variometers were mounted at King Point during the days 14th and 15th of October 1905 and the recording was begun on the 18th. The last photogram was removed from the drum of the registrator on the 31st of March 1906. Excepting the last week of March 1906, the variometers were tended by Wiik. As everything of interest regarding the variometers has already been said in the chapter headed *Register Journal* (pp. 37—41) nothing need to be added at this place.

The Temperature in the Variation House. — The variation house at King Point is more or less to be considered a cellar and a rather bad one, The meteorological data show very infavourable conditions, which will be seen from the monthly mean of temperature given in Table CXLII. Taking the mean temperature for these six months we get $t_m =$ — 18.2°. In spite of this low mean temperature in the variation house we have also for King Point retained — 10.0° C as standard temperature, and the determinations of the base-line values of the h- and z-curves refer to this temperature. In the same way as at Gjøahavn the ordinates of the temperature curve are read in reference to the base-line of the z-curve, and the formula for reduction is:

$$T = B'_\tau + \varepsilon_\tau t, \quad \text{(I)}$$

where t means the ordinate, ε_τ the scale value and B'_τ the base-line value. The thermometer in the variation house was read every day with very few exceptions up to January the 31st, but after this date there are only two readings, on the 1st of February and the 2nd of March. The t-curve was at first so placed that — 10° corresponded to an ordinate equal to 37 mm. The temperature, however, rapidly went down, and the t-curve thus got into collision with the z-curve. On the 6th of November the t-curve was pushed up again so a temperature of — 11° corresponded to an ordinate equal to zero. When the temperature increased above — 10° the temperature curve began to get blurred and on a further rise the curve vanished.

We have made various graphical comparisons between data for the temperature read on the thermometer and ordinate readings. The result of these comparisons gave the scale values stated in Table CXLIII, where the mean value, $\varepsilon_\tau = 0.182$, has been

Table CXLII.

Year	Month	t
		°
1905	Oct.	— 10.5
»	Nov.	— 12.2
»	Dec.	— 21.2
1906	Jan.	— 26.5
»	Feb.	— 22.1
»	March	— 16.7

Table CXLIII.

Year	Epoch	ε_τ
1905	Oct. 18—Nov. 6	0.182
	Nov. 6—Dec. 2	.184
	Dec. 2—Dec. 31	.180
1906	Jan. 1—Jan. 31	.182
Mean..................		0.182

accepted for the reduction of the t-curve. For Gjøahavn we found $\varepsilon_T = 0.183$ mm. per 1° C and there, as at King Point, we have used only the two first decimal places, $\varepsilon_T = 0.18$. For the base-line value we have for the time after 6th of November 1905 $B'_T = B_T = -10.6°$ and for the time before this date we have, reduced to the same stand: $B'_T = B_T + \triangle = -(3.6 + 7.0) = -10.6°$. With use of above given data for B'_T and ε_T we have reduced the t-curve with the result given in Table CXLIV below, where daily mean values for the temperature in the Variation House have been tabulated from October the 18th 1905 to March the 31st 1906.

Table CXLIV.

Day	1905—1906					
	X	XI	XII	I	II	III
	°	°	°	°	°	°
1	—	— 9.6	— 12.3	— 25.2	— 25.5	— 27.0
2	—	— 10.4	— 12.7	— 24.6	— 23.5	— 25.8
3	—	— 14.9	— 19.0	— 24.3	— 23.7	— 24.1
4	—	— 16.1	— 19.0	— 27.9	— 23.3	— 23.9
5	—	— 17.1	— 19.7	— 25.8	— 19.5	— 23.7
6	—	— 17.4	— 19.5	— 25.2	— 17.8	— 23.8
7	—	— 16.4	— 20.8	— 26.1	— 17.8	— 23.0
8	—	— 16.6	— 21.2	— 27.8	— 16.1	— 22.1
9	—	— 15.0	— 21.3	— 27.0	— 17.8	— 22.1
10	—	— 14.2	— 19.8	— 28.2	— 17.2	— 21.8
11	—	— 12.8	— 18.9	— 27.0	— 17.1	— 17.6
12	—	— 11.5	— 19.9	— 28.6	— 16.8	— 15.3
13	—	— 11.0	— 19.6	— 27.8	— 19.2	— 15.0
14	—	— 10.4	— 19.3	— 26.9	— 24.5	— 14.0
15	—	— *10.2*	— 19.7	— 26.1	— 22.7	— 12.7
16	—	— *10.0*	— 21.8	— 22.5	— 21.9	— 12.9
17	—	— *10.0*	— 25.0	— 24.1	— 21.4	— 15.4
18	— 8.6	— 10.3	— 24.7	— 27.5	— 22.3	— 12.9
19	— 8.2	— 10.3	— 22.8	— 27.1	— 23.1	— 12.6
20	— 10.4	— *10.3*	— 21.7	— 25.7	— 25.1	— 13.4
21	— 12.3	— 10.5	— 21.9	— 25.0	— 23.6	— 13.5
22	— 12.6	— 10.6	— 24.8	— 26.6	— 23.8	— 12.6
23	— 11.9	— 10.8	— 21.7	— 25.6	— 24.8	— 12.3
24	— 11.1	— 10.8	— 22.4	— 24.0	— 23.1	— 12.8
25	— 12.2	— 11.6	— 23.3	— 26.3	— 26.0	— 11.5
26	— 12.1	— 13.1	— 22.9	— 28.5	— 25.0	— 11.5
27	— 10.6	— 11.2	— 23.5	— 30.7	— 25.9	— 10.6
28	— 8.1	— *10.2*	— 24.3	— 27.1	— 27.3	— 10.7
29	— 7.4	— 10.4	— 24.5	— 27.3		— 11.7
30	— 10.2	— 11.6	— 25.8	— 27.4		— 13.9
31	— 10.8		— 24.3	— 27.6		— 18.1
Mean	—	— 12.2	— 21.2	— 26.5	— 22.1	— 16.7

The Scale Value of the Variometers at King Point.

As material for determination of the scale value of the variometer curves at King Point we have three deflection experiments and in connection with the two first observations there were made torsion experiments. Regarding the arrangement, which at King Point was exactly the same as it had been at Gjøahavn, we refer to Fig. 12, p. 104, as well as to the Register Journal, pp. 37—41. On studying the material we found that neither at King Point could the data obtained by the torsion experiments be used directly, being too inexact. This being the case, the method for determination of the scale values at King Point will be the same as at Gjøahavn, where, as we remember, we began with the formula:

$$(1 + \theta) = \frac{M_o}{a_d} \cdot \frac{2\,R\,c\,(1 - \mu\,t)}{H\,r^3\,(1 + 3\,\beta t)},$$

where M_0 means the magnetic moment of the deflection magnet used in the experiment. According to page 132, $M_0 = 13.2$. The deflection distance used at King Point was $r = 15.87$ cm. and the constant c, corresponding to this distance, was 0.29930, while the values for the rest of the letters of the formula are given in Table CXLVII below. As a result of the calculations we get for the three experiments made at King Point the data given in Table CXLV. By aid of the formula $\theta = \frac{D}{MH}$ we can get a valuable control of these data in the following way: For Gjøahavn we found for the last period $\theta_0 =$ ca. 42, corresponding to $H_a = 750\,\gamma$. For King Point we have $H_0 = 8450$ (cp. Table CLVI). If we suppose that M has remained constant, we should have:

$$\text{for Gjøahavn: } 42 = \frac{D}{M:0.00750}$$

$$\text{for King Point: } \theta = \frac{D}{M:0.0850}$$

From this we find: $\theta = 3.7$, which value agress very well with those tabulated in Table CXLV. Now supposing that M has deminished slightly, the value of θ should increase a little, and an increasing tendency of this kind was actually found at Gjøahavn (cp. Table XCV). A tendency of the same kind seems also to be indicated here — θ calculated is 3.7, while the mean in the Table CXLV is 3.8. These values for θ introduced in formula:

$$\alpha = \frac{a_z(1+\theta)}{2\,R\,K\,\theta}$$

show that the following twists have actually been given to the torsion head of the d- and h-variometer:

1905, October 18. . . . $\alpha = 68.29'$
» , November 25 . . $\alpha = 67.11'$

According to the Register Journal at King Point the pointer of the tangent screw of the torsion head was put at 25 p on each side of the zero point, which, 1 p being equal to 3.0′, corresponds to 75′. Referring to Fig. 22, p. 136, we see that the mean value $\delta_p = -2.4$ accords fairly well with what was found in the last torsion experiment made at Gjøahavn.

Table CXLV.

Year	Date	$1+\theta$	θ
1905	Oct. 18	4.77	3.77
»	Nov. 25	4.83	3.83
1906	March 2	4.81	3.81

Table CXLVI.

p'	p	δ_p
25.0	22.8	− 2.2
25.0	22.4	− 2.6

The value for the constant q has been taken from Fig. 20, p. 128, where for the used distance $r = 15.87$ we get: $q = 0.72920$.

Having now obtained reliable data for θ and q we proceed to calculate the scale values of the variometers according to the data obtained in the deflection experiments and get the results given in Table CXLVII, where all the necessary data for determination have been added. For the d- and the h-variometer we may, as we see, use constant scale values for the whole stay at King Point and have accepted $\omega' = 8'$ per mm, $\varepsilon_h = 12.45\,\gamma$ per mm. We may remark that direct comparison between absolute data for declination and corresponding ordinates seems to prove the correctness of the above value for ω' and a corresponding test of the scale value of the h-curve also gave a satisfactory result.

Regarding the scale value of the z-curve, there has evidently occurred a change on the 25th of November during the experiment, and besides this we have accepted a gradually changing value for ε_z, which for the 18th of October 1905 has been put equal to:

$$\varepsilon_z = 21.98,$$

Table CXLVII.

No.	Date	t	H	r	q	a_d	a_h	a_z	ε_h	ω	θ	a_τ	α	p	ε_d	ε_z
		°	C. G. S.	cm.		mm.	mm.	mm.	γ	′		mm.	′		γ	γ
1	$1905^{18}/_{10}$	− 7.8	0.08452	15.87	0.72920	33.30	52.8	22.0	12.42	8.01	3.8	32.12	68.3	22.8	1.97	21.7
2	» $^{25}/_{11}$	− 12.4	.08459	»	»	33.00	52.8	21.6	12.48	8.12	»	31.67	67.1	22.4	2.00	22.2
3	$1906\ ^{2}/_{3}$	− 24.6	.08479	»	»	33.25	53.3	19.6	12.43	8.08	»	—	—	—	1.99	24.6

which value increases by 0.2 per month up to November the 25th, when an abrupt change makes it:

$$\varepsilon_z = 24.13$$

and from this date the value increases again steadily by 0.2 per month.

Determination of the Base-Line Value of the d-Curve at King Point.

Increasing ordinate corresponds to decreasing easterly declination, and for determination of the base-line value of the d-curve at King Point we have the formula:

$$B'_d = D_E + \omega' d \tag{I}$$

where D_E means the observed value for declination, of course corrected for torsional effect of the thread, d is the corresponding ordinate, read in millimetres, and ω' the scale value of the d-curve, expressed in minutes per millimetre. The result of the calculations for base-line values will be found in Table CXLVIII, where the headings of the various columns will be understood from what has already been said. We may remark that c is the value for the correction of B_d in the formula:

$$B'_d = B_d + c, \tag{II}$$

where B_d is the base-line value got directly by calculation with formula (I), and B'_d represents the base-line value the curve should have had if the instrument had the whole time kept the stand it had when it was mounted. In Fig. 33 we have given the graphic curves for the base-line value B'_d and for the correction c.

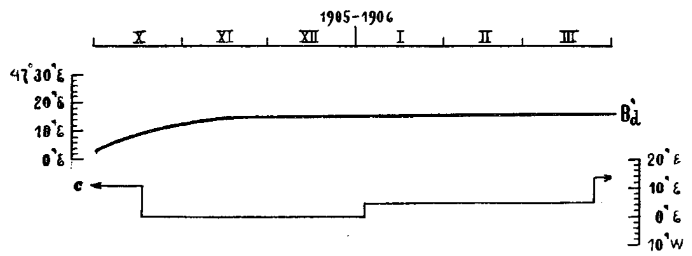


Fig. 33. The base-line value of the d-curve at King Point, B'_d, and the correction c.

Table CXLVIII

Year	Date	Gr. M. T.	$B'_{d_\circ}$	I	Obs.	Year	Date	Gr. M. T.	$B'_{d_\circ}$	I	Obs.
		h. m.	° ′					h. m.	° ′		
1905	Oct. 20	6 56 p	47 4.6	S	W	1905	Dec. 19	8 6 p	47 13.8	S	W
»	» 20	7 31 »	5.8	»	»	»	» 20	6 31 »	17.1	»	»
»	» 21	6 53 »	6.6	»	»	»	» 20	8 2 »	15.6	»	»
»	» 23	7 29 »	7.7	»	»	»	» 21	6 37 »	13.8	»	»
»	» 24	6 34 »	8.1	»	»	»	» 21	8 6 »	16.4	»	»
»	» 25	6 28 »	12.7	»	»	»	» 22	6 46 »	15.1	»	»
»	» 28	7 6 »	8.5	»	»	»	» 22	7 8 »	14.2	»	»
»	» 30	6 29 »	11.2	»	»	1906	Jan. 5	7 11 »	18.1	»	»
»	» 30	8 6 »	12.2	»	»	»	» 5	7 34 »	17.8	»	»
»	» 31	6 31 »	10.6	»	»	»	» 6	7 22 »	17.3	»	»
»	» 31	8 5 »	14.6	»	»	»	» 9	6 42 »	16.2	»	»
»	Nov. 1	6 26 »	11.4	»	»	»	» 10	6 47 »	16.7	»	»
»	» 1	8 2 »	12.0	»	»	»	» 11	6 40 »	19.3	»	»
»	» 2	6 31 »	10.5	»	»	»	» 11	9 33 »	17.0	»	»
»	» 2	8 1 »	10.7	»	»	»	» 17	11 54 »	21.1	»	»
»	» 4	7 6 »	19.9	»	»	»	» 18	0 16 a	12.6	»	»
»	» 6	6 49 »	12.6	»	»	»	» 19	6 38 p	14.0	»	»
»	» 6	7 36 »	14.3	»	»	»	» 19	8 15 »	13.5	»	»
»	» 7	6 41 »	9.2	»	»	»	» 20	6 46 »	15.0	»	»
»	» 7	8 16 »	7.7	»	»	»	» 20	11 48 »	12.9	»	»
»	» 8	6 42 »	10.3	»	»	»	» 21	0 7 a	14.3	»	»
»	» 8	8 14 »	11.1	»	»	»	» 24	7 17 p	14.5	»	»
»	» 9	6 33 »	10.6	»	»	»	» 24	7 43 »	12.9	»	»
»	» 9	8 9 »	11.3	»	»	»	» 25	6 38 »	20.6	»	»
»	» 10	8 13 »	10.3	»	»	»	» 25	9 34 »	14.0	»	»
»	» 11	6 34 »	13.1	»	»	»	» 26	6 57 »	16.1	»	»
»	» 11	8 7 »	13.7	»	»	»	» 26	7 22 »	15.1	»	»
»	» 13	6 45 »	17.7	»	»	»	» 27	6 35 »	15.0	»	»
»	» 13	7 37 »	29.1	»	»	»	» 28	8 18 »	11.9	»	»
»	» 13	8 2 »	14.1	»	»	»	» 29	6 38 »	12.0	»	»
»	» 14	6 36 »	11.6	»	»	»	» 30	6 40 »	12.8	»	»
»	» 14	8 10 »	16.9	»	»	»	» 31	6 39 »	18.7	»	»
»	» 17	6 46 »	2.5	»	»	»	» 31	7 30 »	15.7	»	»
»	» 18	8 26 »	19.4	»	»	»	Feb. 1	6 34 »	14.8	»	»
»	» 20	6 47 »	18.1	»	»	»	» 2	9 47 »	11.4	»	»
»	» 20	8 20 »	15.4	»	»	»	» 3	6 35 »	15.6	»	»
»	» 21	6 46 »	16.5	»	»	»	» 3	11 33 »	15.8	»	»
»	» 21	8 22 »	15.0	»	»	»	» 5	7 33 »	18.7	»	»
»	» 22	6 58 »	14.5	»	»	»	» 6	6 43 »	11.6	»	»
»	» 22	8 33 »	14.2	»	»	»	» 7	6 37 »	12.4	»	»
»	» 23	6 46 »	21.1	»	»	»	» 7	11 43 »	18.7	»	»
»	» 23	8 40 »	19.3	»	»	»	» 8	6 39 »	18.9	»	»
»	» 24	8 4 »	13.7	»	»	»	» 8	11 46 »	18.1	»	»
»	» 25	6 40 »	13.6	»	»	»	» 9	9 39 »	16.4	»	»
»	» 25	8 10 »	17.1	»	»	»	» 9	9 56 »	15.3	»	»
»	» 28	7 41 »	16.4	»	»	»	» 10	6 47 »	15.3	»	»
»	» 28	8 2 »	16.4	»	»	»	» 11	8 4 »	17.1	»	»
»	» 29	6 44 »	16.6	»	»	»	» 12	6 50 »	21.4	»	»
»	» 29	8 11 »	24.2	»	»	»	» 14	6 39 »	17.1	»	»
»	Dec. 1	8 10 »	17.2	»	»	»	» 14	9 43 »	17.4	»	»
»	» 4	7 9 »	18.9	»	»	»	» 15	6 48 »	19.5	»	»
»	» 5	6 42 »	15.8	»	»	»	» 15	8 17 »	18.1	»	»
»	» 6	6 40 »	15.4	»	»	»	» 16	7 14 »	21.5	»	»
»	» 6	8 18 »	15.8	»	»	»	» 17	6 44 »	16.8	»	»
»	» 7	9 27 »	14.1	»	»	»	» 19	0 19 a	8.4	»	»
»	» 8	8 22 »	15.1	»	»	»	» 20	6 42 p	16.7	»	»
»	» 9	6 40 »	14.1	»	»	»	» 20	8 9 »	19.4	»	»
»	» 9	8 17 »	15.3	»	»	»	» 21	6 46 »	16.4	»	»
»	» 11	6 36 »	13.5	»	»	»	» 21	9 40 »	15.0	»	»
»	» 11	8 14 »	23.6	»	»	»	» 22	11 56 »	17.3	»	»
»	» 12	6 27 »	14.5	»	»	»	» 25	0 13 a	16.3	»	»
»	» 12	8 2 »	15.9	»	»	»	» 27	6 45 p	16.8	»	»
»	» 13	6 29 »	11.3	»	»	»	» 28	0 5 a	16.7	»	»
»	» 13	8 11 »	16.0	»	»	»	» 28	0 25 »	5.7	»	»
»	» 14	6 39 »	13.9	»	»	»	» 28	7 4 p	18.8	»	»
»	» 14	7 0 »	14.6	»	»	»	» 28	11 52 »	15.1	»	»
»	» 18	6 40 »	18.5	»	»	»	March 2	6 35 »	17.1	»	»
»	» 18	8 13 »	17.4	»	»	»	» 3	6 29 »	16.9	»	»
»	» 19	6 30 »	14.9	»	»	»	» 3	7 59 »	17.4	»	»

Table CXLVIII (continued).

Year	Date	Gr. M. T.	B'_{d_0}	I	Obs.	Year	Date	Gr. M. T.	B'_{d_0}	I	Obs.
		h. m.	° ′					h. m.	° ′		
1906	March 5	6 39 p	47 13.2	S	W	1906	March 15	6 40p	47 17.6	S	W
»	» 6	6 36 »	26.3	»	»	»	» 15	7 55 »	16.1	»	»
»	» 7	6 47 »	20.8	»	»	»	» 16	7 38 »	15.0	»	»
»	» 8	11 56 »	11.0	»	»	»	» 16	7 55 »	16.0	»	»
»	» 10	6 48 »	13.7	»	»	»	» 19	6 44 »	14.0	»	»
»	» 10	9 32 »	17.5	»	»	»	» 19	8 4 »	15.5	»	»
»	» 11	8 27 »	18.9	»	»	»	» 21	6 41 »	15.0	»	»
»	» 11	8 43 »	18.7	»	»	»	» 21	9 43 »	12.0	»	»
»	» 12	6 36 »	18.5	»	»	»	» 22	6 33 »	23.0	»	»
»	» 12	7 53 »	16.9	»	»	»	» 22	7 52 »	17.7	»	»
»	» 14	6 46 »	12.7	»	»	»	» 23	6 41 »	18.3	»	»
»	» 14	7 59 »	7.5	»	»	»	» 23	7 2 »	18.5	»	»

In Table CXLIX, pages 284—289 we give hourly values for D_E, reduced from the d-curve, covering the interval from October the 18th 1905 to March the 31st 1906. As to the timing of the photograms, the reading of the ordinates, interpolation, character designations and the meaning of the three lines containing monthly means, we refer to pp. 104—111.

Determination of the Base-Line Value of the h-Curve at King Point.

For determination of the base-line value of the h-curve at King Point we have a very large material, consisting of data for H, obtained from deflections and oscillations, amounting respectively to 112 and 73 observations. As in the working out of data for H we have used deflections and oscillations separately, according to the formulae:

$$\log H = C_a - \log \sin \varphi_0$$
$$\log H = C_s - 2 \log T_0,$$

we shall also in the determination of the base-line value of the h-curve work out two series of values for B'_h. As was the case at Gjøahavn, we find also at King Point that increasing ordinate corresponds to increasing horizontal intensity, and have for the determination of the base-line value:

$$B'_h = H - \varepsilon_h h'$$

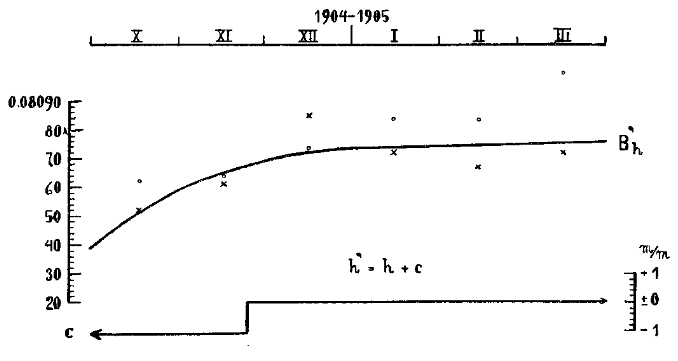


Fig. 34. The base-line value of the h-curve B'_h at King Point, and the curve for the correction c.

Table CL. — **Deflection.**

Year	Date	Gr. M. T.	B'_{h_0}	I	M.	Obs.	Year	Date	Gr. M. T.	B'_{h_0}	I	M.	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1905	Oct. 21	7 47 p.	0.08022 021	S	I	W	1906	Jan. 11	7 35 p	0.08062 058	S	I	W
»	» 24	7 27 »	0.08047 054	»	II	»	»	» 19	7 30 »	0.08068 071	»	II	»
»	» 25	7 20 »	0.08059 67	»	II	»	»	» 20	7 38 »	0.08059 059	»	I	»
»	» 30	7 20 »	0.08058 060	»	I	»	»	» 25	7 33 »	0.08064 063	»	I	»
»	» 31	7 20 »	0.08061 070	»	II	»	»	» 27	7 28 »	0.08084 087	»	II	»
»	Nov. 1	7 16 »	0.08053 059	»	II	»	»	» 29	7 21 »	0.08060 064	»	I	»
»	» 2	7 15 »	0.08065 066	»	II	»	»	Feb. 1	7 23 »	0.08099 086	»	II	»
»	» 7	7 28 »	0.08054 072	»	I	»	»	» 3	7 38 »	0.08038 098	»	I	»
»	» 8	7 28 »	0.08055 064	»	I	»	»	» 6	7 37 »	0.08014 056	»	I	»
»	» 9	7 24 »	0.08086 103	»	II	»	»	» 7	7 28 »	0.08079 072	»	II	»
»	» 11	7 21 »	0.08066 067	»	I	»	»	» 8	7 32 »	0.08024 067	»	I	»
»	» 14	7 27 »	0.08051 046	»	II	»	»	» 14	7 30 »	0.08073 076	»	II	»
»	» 20	7 37 »	0.08059 059	»	II	»	»	» 15	12 5 »	0.08073 095	»	I	»
»	» 22	7 45 »	0.08046 055	»	II	»	»	» 17	7 31 »	0.08072 076	»	II	»
»	» 25	7 29 »	0.08060 063	»	I	»	»	» 20	7 26 »	0.08075 070	»	II	»
»	» 29	7 29 »	0.08065 038	»	I	»	»	» 21	7 30 »	0.08058 049	»	I	»
»	Dec. 5	7 51 »	0.08077 077	»	II	»	»	» 27	7 36 »	0.08118 056	»	I	»
»	» 6	7 32 »	0.08075 072	»	I	»	»	March 2	7 20 »	0.08069 071	»	II	»
»	» 9	7 30 »	0.08077 089	»	I	»	»	» 3	7 14 »	0.08066 074	»	I	»
»	» 11	7 32 »	0.08074 083	»	II	»	»	» 5	7 23 »	0.08061 082	»	II	»
»	» 12	7 18 »	0.08077 079	»	I	»	»	» 6	7 18 »	0.08117 063	»	I	»
»	» 13	7 25 »	0.08109 066	»	II	»	»	» 8	7 8 »	0.08065 090	»	II	»
»	» 18	7 31 »	0.08063 087	»	I	»	»	» 10	7 32 »	0.08071 079	»	I	»
»	» 19	7 23 »	0.08111 095	»	II	»	»	» 12	7 16 »	0.08062 066	»	II	»
»	» 20	7 19 »	0.08100 144	»	I	»	»	» 15	7 18 »	0.08058 066	»	I	»
»	» 21	7 24 »	0.08075 077	»	II	»	»	» 19	7 22 »	0.08080 086	»	II	»
1906	Jan. 9	7 36 »	0.08064 075	»	I	»	»	» 21	7 18 »	0.08068 054	»	I	»
»	» 10	7 36 »	0.08088 087	»	II	»	»	» 22	7 12 »	0.08068 072	»	II	»

Table CLI. — **Oscillation.**

Year	Date	Gr. M. T.	B'_{h_0}	I	M.	Obs.
		h. m.	C. G. S.			
1905	Oct. 25	12 2 p	0.08081	S	II	W
		12 22 »	040			
»	» 31	11 18 »	0.08067	»	»	»
		11 35 »	059			
		11 52 »	061			
»	Nov. 1	11 43 »	0.08064	»	»	»
		12 0 »	063			
		12 22 »	063			
»	» 2	11 22 »	0.08060	»	»	
		11 42 »	055			
		12 2 »	050			
»	» 7	11 46 »	0.08075	»	I	»
		12 7 »	082			
		12 29 »	078			
»	» 8	9 29 »	0.08075	»	»	»
		11 41 »	077			
		12 2 »	076			
		12 23 »	076			
»	» 9	11 28 »	0.08062	»	II	»
		11 46 »	074			
»	» 17	7 24 »	0.08035	»	I	»
»	» 21	7 43 »	0.08057	»	I	»
		9 46 »	048			
		11 32 »	062			
»	» 22	11 48 »	0.08082	»	II	»
		12 6 »	064			
		12 25 »	080			
»	» 23	7 59 »	0.08048	»	I	»
		8 20 »	043			
		9 35 »	057			
»	» 28	11 29 »	0.08064	»	II	»
		11 46 »	089			
»	» 29	9 40 »	0.08064	»	I	»
		11 37 »	057			
		12 2 »	054			
»	Dec. 5	11 25 »	0.08079	»	II	»
		11 41 »	070			
		11 59 »	074			
1905	Dec. 6	11 27 p	0.08069	S	I	W
		11 50 »	077			
		12 12 »	079			
»	» 7	11 23 »	0.08074	»	II	»
		11 40 »	060			
»	» 12	11 32 »	0.08088	»	I	»
		11 54 »	060			
»	» 12	11 30 »	0.08071	»	II	»
		11 47 »	055			
		12 4 »	054			
»	» 14	9 26 »	0.08054	»	II	»
		9 44 »	060			
		11 34 »	064			
		11 51 »	120			
»	» 18	11 34 »	0.08080	»	I	»
		11 54 »	079			
»	» 20	11 26 »	0.08087	»	I	»
		11 46 »	052			
»	» 21	11 31 »	0.08086	»	II	»
		11 59 »	081			
1906	Jan. 10	11 35 »	0.08086	»	II	»
		11 54 »	078			
»	» 11	11 48 »	0.08070	»	I	»
		12 10 »	075			
»	» 24	11 41 »	0.08070	»	II	»
		11 52 »	078			
»	» 25	11 39 »	0.08103	»	I	»
		12 1 »	103			
»	Feb. 14	11 53 »	0.08086	»	II	»
		12 13 »	083			
»	Mar. 21	8 1 »	0.08099	»	I	»
		12 20 »	083			
		12 47 »	118			
»	» 22	11 39 »	0.08137	»	II	»
		12 5 »	145			

The results of the calculations are to be found in the two tables CL and CLI, emerging respectively from observations of deflection and oscillation. The arrangement of Table CL is exactly the same as in Table CI, pp. 145—148, and we may therefore as regards the meaning of the various columns refer to page 144.

In the relation between curve and base-line of the h-records there has taken place only a single abrupt change and this alteration amounts only to 1.1 mm. The point of time when the change took place is uncertain, but the most probable date seems to be the 25th of November 1905. In Fig. 34 above, we give the curve for the value of B'_h, and the correction c, used in the reduction of hourly means of the h-curve at King Point. Monthly means for B'_h, emerging from calculations based on deflections and oscillations, are in the graph respectively marked with $\times$ and $\circ$. Hourly values for horizontal intensity at King Point are to be found in Table CLII, pp. 290—295, covering the interval from October the 18th 1905 to March the 31st 1906. Regarding the timing of the photograms, the reading of the ordinates, interpolation, the meaning of the three mean values at the bottom of the tables and the character designations, we refer to pp. 104—111.

Determination of the Base-Line Value of the z-Curve at King Point.

The absolute value for vertical intensity is in the usual way extracted by aid of the formula:

$$Z = H \times tg\, I, \qquad \text{(I)}$$

where I is the observed angle of inclination (cf. pp. 172—173), and the value for H obtained from reduction of the h-curve. The ordinate z is here, as at Gjøahavn, negative and rising curve corresponds to increasing vertical intensity.

For the base-line determination we have:

$$B'_z = \check{Z} + \varepsilon_z z' \qquad \text{(II)}$$

where z is assumed to be corrected for temperature influence. The question regarding the effect of variation of the temperature has been fully discussed in the chapter "*The Temperature Coefficient of the h- and z-Variometer at Gjøahavn*", page 112, where for Gjøahavn we came to the result that the Lloyd's Balance was over-compensated.

The Register Journal of King Point does not say anything regarding the compensation, nor has anything been said about how Lloyd's Balance was put in working order at King Point. The records at King Point seem to point in the direction that equilibrium had been obtained by changing the intensity of force between the compensation magnet and the weight magnet. As, moreover, no attempt was made to collect any special material for statistical determination of the temperature coefficient of the z-curve at King Point, this coefficient will have to be valued theoretically. Reasoning in the same way as we did at Gjøahavn, (cf. pp. 123—124), Lloyd's Balanse must have been under-compensated at King Point. For the value of the vertical component Z is at King Point smaller than at Gjøahavn, and if therefore Wiik increased the magnet distance r (formula (I) page 123), he removed the over-compensation which the instrument is supposed to have had at Gjøahavn, and probably brought about under-compensation. If this reasoning is correct, the z-ordinate will acquire an increased numerical value with increasing temperature and we get:

$$z = z' + \tau_z (t - t_0), \qquad \text{(III)}$$

where, as before mentioned, $t_0 = -10°$ C and the temperature coefficient has been put at:

$$\tau_z = -5.9$$

where the sign of the formula presupposes the minus sign attached to the ordinate. In the estimation of the numerical value of the temperature coefficient we have reasoned in an analogous way to what we did at Gjøahavn (cf. page 124).

For calculation of the absolute values for *Z*, to be used for determination of the base-line value of the z-curve at King Point, we have only the 28 data for *I*, obtained with the Dover and tabulated in Table CXXXVIII, p. 283, Obs. Details of the calculations for base-line values of the z-curve at King Point will be found in Table CLIII,

Table CLIII.

Year	Date	Gr. M. T.	Z	B'_{z_0}	Obs.	Year	Date	Gr. M. T.	Z	B'_{z_0}	Obs.
		h. m.	C. G. S.	C. G. S.				h. m.	C. G. S.	C. G. S.	
1905	Oct. 19	7 21 p 8 17 »	0.58842 8913	0.60222 278	W	1905	Dec. 15	6 53 p 7 42 »	0.58950 9020	0.60416 464	W
»	Nov. 3	7 0 » 7 47 »	0.58888 8677	0.60266 050	»	1906	Jan. 17	7 14 » 8 2 »	0.58956 9058	0.60428 530	»
»	» 10	6 57 » 7 40 »	0.58790 8741	0.60115 066	»	»	Feb. 2	7 8 » 7 48 »	0.58974 9054	0.60464 541	»
»	» 18	7 5 » 7 51 »	0.59076 9098	0.60382 414	»	»	» 9	6 56 » 7 38 »	0.59046 9126	0.60547 607	»
»	» 24	6 56 » 7 35 »	0.58983 9173	0.60385 581	»	»	» 20	11 58 » 12 37 »	0.58978 8982	0.60450 458	»
»	Dec. 1	7 0 » 7 41 »	0.59294 9168	0.60748 620	»	»	Mar. 3	11 43 » 12 22 »	0.59227 9174	0.60683 640	»
»	» 8	6 57 » 7 42 »	0.58803 8912	0.60280 386	» [1]	»	» 15	0 16 a 1 3 »	0.59320 9398	0.60744 826	»

[1] Abrupt change: $^{9}/_{12}$, 23^{25} p.

where the headings of the columns will be understood without further explanation. An abrupt change in the relation between the curve and the base-line occurred on the 9th of December 1905 at 23^{h} 25^{m} Gr. M. T. and this change can be measured rather exactly, it amounted to 2.2 mm. The scale value of the z-curve also changed abruptly and the values used in the reduction of the z-curve will be seen in Fig. 35.

In Table CLIV, pages 296—301, we give hourly values for *Z*, reduced from the z-curve, covering the interval October the 18th 1905 to March the 31st 1906. Regarding

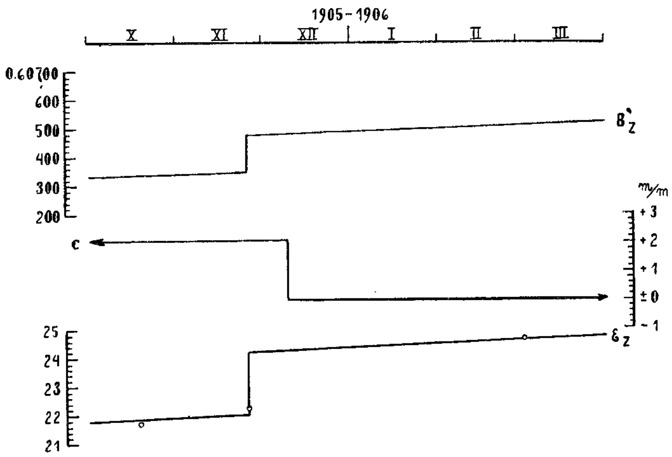


Fig. 35. Reduction constants of the z-curve at King Point.

the timing of the photograms, the reading of the ordinates, interpolation, the meaning of the three mean values at the bottom of the tables and the character designations, we refer to pp. 104—111.

Quick-Run Records at King Point.

In Table CLV we give the ordinates of the d- h- and z-curves for every five minutes of the five quick-run records registered at King Point. The ordinates are given in mm. Regarding what rising figure means, we refer respectively for the *d*-, *h*- and *z*-curves to p. 139, 144 and 151.

Table CLV. — **Quick-Run Readings. King Point.** Gr. M. T.

1905 Nov. 6. p.				1905 Nov. 13. p.				1905 Nov. 15. p.			
Hour	*D*	*H*	*Z*	Hour	*D*	*H*	*Z*	Hour	*D*	*H*	*Z*
h m				h m				h m			
7 15–20	35.8	26.4	60.2	7 15–20	36.8	35.8	62.0	9 20–25	24.0	87.0	81.0
20–25	35.0	26.2	59.6	20–25	35.8	34.2	62.0	25–30	31.7	69.0	75.1
25–30	36.0	32.5	60.3	25–30	36.5	32.8	62.0	30–35	34.0	60.5	69.8
30–35	36.2	36.0	61.7	30–35	36.6	35.8	62.6	35–40	40.0	36.0	66.0
35–40	36.8	34.8	61.7	35–40	36.4	31.7	61.2	40–45	41.2	13.0	61.0
40–45	36.9	33.8	61.6	40–45	35.8	32.6	61.2	45–50	39.2	20.0	61.3
45–50	36.1	34.7	61.4	45–50	36.8	35.4	61.4	50–55	40.9	31.5	63.8
50–55	36.1	35.4	60.8	50–55	36.6	35.2	62.5	55–60	42.8	36.0	65.0
55–60	36.5	35.0	60.6	55–60	35.5	34.2	62.1	10 0– 5	41.0	29.0	65.5
8 0– 5	36.0	36.8	60.7	8 0– 5	35.5	36.0	62.1	5–10	43.6	27.9	65.0
5–10	36.1	36.6	60.7	5–10	35.7	32.5	61.3	10–15	44.0	21.2	62.8
10–15	36.1	35.3	60.1	10–15	36.8	32.0	61.0	15–20	38.2	22.5	59.0
15–20	36.1	36.4	60.0	15–20	37.3	31.4	60.8	20–25	38.2	35.5	61.8
20–25	36.0	36.1	59.9	20–25	35.5	31.8	60.6	25–30	41.2	50.2	65.1
25–30	36.0	35.3	59.7	25–30	36.6	30.6	60.7	30–35	36.0	41.5	64.1
30–35	36.0	34.8	59.2	30–35	36.8	32.6	60.8	35–40	36.2	21.5	58.2
35–40	35.7	34.2	58.8	35–40	36.7	31.3	60.7	40–45	39.0	20.2	56.7
40–45	35.3	34.8	58.8	40–45	37.8	32.5	60.7	45–50	42.4	20.5	57.5
45–50	34.0	34.4	58.8	45–50	37.6	37.2	61.2	50–55	44.2	34.0	60.9
50–55	35.0	35.8	59.1	50–55	34.4	33.0	61.0	55–60	43.0	35.3	61.7
55–60	36.0	34.6	59.0	55–60	35.6	32.9	61.2	11 0– 5	40.8	31.0	60.6
9 0– 5	36.6	34.2	59.1	9 0– 5	36.4	33.2	61.3	5–10	41.6	31.5	59.8
								10–15	40.9	31.7	59.9

1906 Feb. 28. p.				1906 Feb. 15. p.			
Hour	*D*	*H*	*Z*	Hour	*D*	*H*	*Z*
h m				h m			
7 25–30	32.8	21.4	59.8	6 50–55	29.1	32.6	47.2
30–35	34.1	25.5	60.8	55–60	30.5	30.5	45.8
35–40	33.3	29.3	62.5	7 0– 5	28.6	28.3	44.7
40–45	32.5	31.8	63.1	5–10	30.5	30.0	44.9
45–50	32.2	32.0	63.6	10–15	33.5	22.0	41.5
50–55	28.4	27.6	63.3	15–20	31.0	27.4	42.9
55–60	31.6	22.5	60.6	20–25	30.0	25.6	43.5
8 0– 5	33.6	22.5	58.7	25–30	29.3	26.5	45.0
5–10	34.3	22.9	58.5	30–35	29.3	25.2	45.2
10–15	33.0	23.4	60.4	35–40	31.5	20.0	44.0
15–20	34.7	20.9	59.5	40–45	32.1	5.1	41.0
20–25	36.5	21.5	58.6	45–50	25.4	11.6	45.4
25–30	35.7	22.8	59.4	50–55	29.1	6.6	45.1
30–35	34.7	20.6	59.2	55–60	33.6	4.1	41.3
35–40	35.5	21.5	59.5	8 0– 5	32.2	1.5	45.2
40–45	35.4	24.5	60.4	5–10	28.5	22.0	53.2
45–50	34.8	26.9	60.5	10–15	28.5	29.5	58.1
50–55	33.6	27.5	61.2	15–20	29.8	33.0	58.8
55–60	33.5	26.6	60.5	20–25	31.3	36.5	60.0
9 0– 5	33.7	26.5	59.9	25–30	32.3	36.6	60.5
5–10	33.3	24.6	59.1	30–35	31.7	37.2	61.2
10–15	34.4	26.5	58.0	35–40	31.5	34.5	61.1
				40–45	31.9	32.2	60.1

Extracts from the Tables of Hourly Means of D, H, Z.

Table CLVI contains for the six months, October 1905 — March 1906, monthly means for the magnetic elements D, I, H, Z and F.

Table CLVI.

Year	Month	D	I	H	Z	F
		° ′	° ′	C. G. S.	C. G. S.	C. G. S.
1905	Oct.	42 26 E	81 51.3	0.08451	0.59051	0.59653
»	Nov.	28 »	52.6	435	074	671
»	Dec.	25 »	51.8	445	065	672
1906	Jan.	23 »	51.1	456	062	658
»	Feb.	25 »	51.8	444	060	665
»	March	24 »	50.8	460	052	655
Mean		42°25′ E	81°51′.6	0.08448	0.59061	0.59662

Table CLVII contains, under the headings A_D, A_H, A_Z, monthly means of daily range of the three elements D, H, and Z.

Daily means of the same three elements are given in the three tables CLVIII, CLIX and CLX, and the diurnal variation, expressed in residuals of the monthly means, will, for the elements D, H, Z, be found in the three tables CLXI, CLXII, CLXIII.

As mentioned in No. 1 of Part. I, page 13, Wiik began to feel ill in the middle of March 1906, but kept on working up to the 22nd, when he took his last absolute observation. Already one week later, on the 30th of March, he died. The variation instruments were kept going till the 31st of March 1906.

Table CLVII.

Year	Month	A_D	A_H	A_Z
		′	γ	γ
1905	Oct.	101	388	337
»	Nov.	173	630	512
»	Dec.	94	373	289
1906	Jan.	79	324	244
»	Feb.	172	629	475
»	March	121	501	396
Mean		123′	474 γ	376 γ

When Wiik was to be buried, Amundsen resolved to turn the variation house into a tomb. After the instruments had been removed and packed up, Wiik's corpse was laid in the room on the 9th of May and the door was blocked up with stones. A tall cross was erected outside the house, facing the sea. No magnetic observations were taken till the 5th of May, when Amundsen began his before-mentioned series, which terminated in the last days of June.

On the 12th of July a vain attempt was made to get out of the ice, but they did not succeed in getting farther than to Herschel Island. After several more attempts to force their way through the ice, they succeeded at last on the 14th of August and on the 19th they rounded Point Barrow, the northern point of the American Continent where in 1882—1883 there had been a magnetic station. On the 1st of September 1906 the Expedition arrived at Nome, by which the Expedition may be regarded as concluded.

Table CLVIII.
Summary of Daily Means. D.

Date	1905			1906		
	X	XI	XII	I	II	III
	° ′	° ′	° ′	° ′	° ′	° ′
1	42 —	42 27 E	42 24 E	42 24 E	42 26 E	42 25 E
2	—	26 »	27 »	24 »	24 »	24 »
3	—	24 »	25 »	24 »	27 »	25 »
4	—	35 »	**38** »	**20** »	27 »	26 »
5	—	22 »	24 »	**20** »	24 »	26 »
6	—	29 »	25 »	**20** »	26 »	24 »
7	—	26 »	25 »	21 »	25 »	25 »
8	—	26 »	27 »	21 »	27 »	23 »
9	—	29 »	25 »	21 »	21 »	23 »
10	—	26 »	**21** »	22 »	23 »	**22** »
11	—	27 »	22 »	22 »	23 »	25 »
12	—	41 »	**21** »	23 »	25 »	25 »
13	—	30 »	26 »	25 »	23 »	24 »
14	—	25 »	24 »	27 »	**20** »	24 »
15	—	**43** »	25 »	25 »	30 »	23 »
16	—	33 »	**21** »	25 »	27 »	**30** »
17	—	23 »	24 »	22 »	**20** »	**22** »
18	25 E	**19** »	24 »	21 »	23 »	25 »
19	29 »	26 »	24 »	24 »	32 »	26 »
20	29 »	26 »	31 »	23 »	22 »	24 »
21	29 »	30 »	**21** »	25 »	23 »	23 »
22	23 »	23 »	24 »	22 »	22 »	23 »
23	24 »	37 »	22 »	23 »	22 »	23 »
24	23 »	29 »	24 »	24 »	**41** »	26 »
25	27 »	27 »	24 »	22 »	31 »	24 »
26	27 »	32 »	22 »	25 »	**20** »	23 »
27	20 »	26 »	22 »	22 »	24 »	27 »
28	32 »	28 »	29 »	23 »	33 »	26 »
29	25 »	29 »	27 »	25 »	—	23 »
30	26 »	26 »	25 »	25 »	—	25 »
31	26 »	—	24 »	**39** »	—	23 »
Mean	42°26′ E	42°28′ E	42°25′ E	42°23′ E	42°25′ E	42°24′ E

Table CLIX.
Sumary of Daily Means. H.

Date	1905			1906		
	X	XI	XII	I	II	III
	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.
1	0.08 —	0.08465	0.08**479**	0.08463	0.08451	0.08440
2	—	466	456	450	465	469
3	—	462	463	455	456	460
4	—	416	**369**	458	476	452
5	—	428	458	468	457	444
6	—	425	452	473	451	453
7	—	446	455	454	444	446
8	—	466	439	456	453	461
9	—	432	452	453	470	**426**
10	—	444	462	451	460	454
11	—	451	469	465	475	461
12	—	411	464	450	472	472
13	—	416	380	432	474	484
14	—	431	436	429	472	454
15	—	443	454	440	391	474
16	—	**310**	457	471	432	427
17	—	404	429	471	**482**	476
18	459	461	435	462	477	455
19	469	442	433	425	363	463
20	467	443	382	469	467	481
21	444	405	471	452	467	472
22	465	450	439	464	468	464
23	451	378	466	472	467	471
24	448	433	465	469	386	458
25	405	469	454	466	349	466
26	448	420	471	456	407	**491**
27	465	448	464	**476**	458	449
28	405	438	406	475	**348**	478
29	467	459	437	465	—	442
30	462	**478**	425	465	—	468
31	461	—	464	**379**	—	462
Mean	0.08451	0.08435	0.08445	0.08456	0.08444	0.08460

Table CLX.
Summary of Daily Means. Z.

Date	1905			1906		
	X	XI	XII	I	II	III
	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.
1	0.59 —	0.59052	0.59052	0.59066	0.59053	0.59030
2	—	049	045	084	056	060
3	—	042	056	066	044	055
4	—	084	**136**	054	031	027
5	—	**031**	076	067	054	054
6	—	069	077	076	056	084
7	—	054	083	071	071	040
8	—	050	087	074	055	063
9	—	048	081	087	035	059
10	—	073	—	076	050	039
11	—	061	053	057	043	034
12	—	**173**	036	081	033	043
13	—	105	**028**	085	032	044
14	—	084	052	076	034	046
15	—	141	062	072	077	048
16	—	137	051	054	**028**	078
17	—	060	067	046	030	055
18	037	036	046	045	033	**085**
19	036	073	054	072	089	056
20	032	057	124	051	059	047
21	039	103	051	047	047	041
22	047	072	066	043	049	051
23	053	095	059	053	056	050
24	057	081	053	043	**206**	063
25	042	053	050	049	060	084
26	059	085	056	053	077	**015**
27	055	067	053	**040**	060	037
28	112	066	073	042	167	044
29	048	053	077	048	—	042
30	044	046	071	046	—	049
31	051	—	072	**107**	—	074
Mean	0.59051	0.59074	0.59065	0.59062	0.59060	0.59052

Table CLXI. — **Diurnal Variation of D.** **King Point,** Gr. M. T.

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1905	10	−3	−4	−6	−5	−5	−4	−6	−6	−8	−8	−3	−2	+3	+7	+5	+8	+12	+11	+12	+7	+3	0	−3	−5
»	11	−6	−5	−5	−7	−6	−7	−7	−11	−14	−10	−13	−6	+3	+10	+12	+16	+24	+18	+18	+8	+8	0	−6	−6
»	12	−5	−5	−5	−5	−5	−4	−4	−7	−6	−8	−3	−2	0	+5	+5	+10	+15	+13	+9	+5	+1	−2	−5	−5
1906	1	−2	−3	−4	−4	−3	−3	−3	−3	−3	−4	−5	−2	+4	+5	+6	+7	+11	+10	+7	+3	0	−1	−2	−3
»	2	−5	−6	−6	−6	−9	−9	−8	−7	−9	−10	−13	−5	+2	+7	+12	+15	+18	+19	+18	+12	+5	0	−2	−4
»	3	−6	−9	−9	−8	−4	−5	−6	−6	−7	−9	−10	−4	−3	+7	+6	+10	+15	+17	+16	+12	+8	+3	−1	−3
Mean		−4.5	−5.3	−5.8	−5.8	−5.3	−5.3	−5.7	−6.7	−7.8	**−8.2**	−7.8	−3.5	+1.5	+6.8	+7.7	+11.0	**+15.8**	+14.7	+13.3	+7.8	+4.2	0.0	−3.2	−4.3

Table CLXII. — **Diurnal Variation of H.** **King Point.** Gr. M. T.

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1905	10	+27	+24	+35	+35	+31	+35	+25	+15	−21	−7	+1	−5	−43	−2	−14	−31	−30	−58	−17	−12	−6	+3	+6	+10
»	11	+43	+49	+60	+55	+58	+55	+35	+2	−37	−40	−41	−6	−17	−28	−23	−39	−56	−71	−54	−27	−9	+19	+26	+44
»	12	+33	+37	+37	+36	+39	+36	+30	+10	−4	−16	−14	−8	0	−34	−33	−34	−46	−39	−31	−21	−9	−8	+5	+25
1906	1	+13	+22	+29	+28	+31	+31	+27	+16	+11	+2	−16	−49	−24	−21	−18	−19	−32	−27	−13	+1	+6	+4	−1	+6
»	2	+42	+43	+51	+54	+63	+46	+43	+36	+10	−10	−81	−50	−33	−15	−30	−46	−44	−68	−46	−22	+1	+9	+20	+31
»	3	+31	+47	+52	+47	+47	+52	+34	−9	−9	−29	−38	−31	−24	−11	−4	−16	−27	−25	−31	−23	−19	−25	+2	+16
Mean		+32	+37	+44	+42	+45	+42	+32	+12	−8	−17	−32	−25	−25	−18	−20	−31	−39	−48	−32	−17	−6	0	+10	+22

Table CLXIII. — **Diurnal Variation of Z.** **King Point.** Gr. M. T.

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1905	10	−3	0	−7	−10	−12	−15	−28	−29	−19	−23	−5	+20	+59	+46	+31	+29	+35	+18	−28	−21	−18	−15	−6	−1
»	11	−14	−24	−29	−28	−38	−38	−43	−47	−42	−15	+19	+26	+53	+54	+54	+65	+63	+47	+13	0	−9	−34	−19	−16
»	12	−9	−5	−8	−7	−14	−17	−19	−15	−17	−7	−2	+24	+28	+49	+43	+38	+32	+1	−14	−21	−26	−16	−11	−10
1096	1	+1	+2	−4	+1	−4	−6	−17	−22	−28	−23	+8	+38	+30	+30	+27	+23	+21	−4	−13	−20	−19	−14	−5	−4
»	2	−25	−28	−29	−27	−39	−33	−50	−51	−40	−24	+43	+55	+57	+58	+61	+53	+45	+44	+20	−5	−26	−25	−30	−28
»	3	−1	−8	−22	−28	−34	−40	−31	−37	−32	−16	+23	+31	+54	+57	+44	+52	+45	+45	−6	−18	−17	−15	−12	−5
Mean		−8	−10	−13	−16	−24	−25	−31	−34	−30	−18	+14	+32	+47	+49	+43	+43	+40	+20	−5	−14	−19	−20	−14	−11

THE MAGNETIC NORTH POLE

Introduction.

Gauss has defined the magnetic pole as a place where the value of the horizontal intensity is zero. At such a place the inclination needle points vertically and, as there does not exist any directive force, the declination needle may point in whatever direction it is placed in. In agreement with Professor Neumayer, Amundsen was advised to put his base-station at a place where the inclination was about 89°. For approximate calculations of the distance between a station and the magnetic pole Professor Schmidt for the situation of this point gives the formula:

$$a = \frac{90° - I}{0'.5}, \tag{I}$$

where we get the distance a expressed in miles. Measurements at Gjøahavn gave, as we have seen, a mean value of $I = 89°17'$, which according to the formula (I) gives a distance of 86 miles. The declination needle pointed more or less due north by which Amundsen concluded that the pole lay near the west coast of *Boothia Felix* at about 70° N latitude or nearly at the spot where James Ross in 1831 had placed it.

Looking through the results from Gjøahavn, we see that during magnetic storms it sometimes happened that the h-variometer indicated values corresponding to $H = 0$, which means that the pole-point-of-the-moment passed the station. On the other hand, the h-variometer registered values of H which go up to 0.013 C. G. S. From this we may conclude that the magnetic pole-point-of-the-moment may be displaced in the direction N—S by a range of about 150 miles. The displacement of the pole-point in the direction E—W may also be considerable, as for Gjøahavn we have, as extreme values for D: $D_{max} = 126°$ W and $D_{min} = 57°$ E. It may, however, in this connection be remembered, that very small values for H, reduced from the h-curves and stated in the tables p.p. 240—258, may be considered rather doutful (cp. p. 136),

In spite of this large displacement of the pole-point we may be entitled to speak of a *mean magnetic pole point*, and geographical co-ordinates for such mean pole-point have, as we know, been calculated by various scientists during the last hundred years, but the results of the calculations show that the data obtained vary considerably[1]. However, later calculations agree better and as a good average we may put the value given by Dr. Nippoldt[2], which applies to 1900:

$$\varphi = 69°\ 18'\ \text{N and } \lambda = 96°\ 27'\ \text{W}$$

Looking at the monthly means of H and I at Gjøahavn, (cp. Table CXVIII) we see that they indicate a slight variation from year to year. The declination at Gjøahavn shows a considerable movement in easterly direction, but as the isogonic lines lie very close together in this region, the geographical displacement of the lines is small. As far as we can judge from the Gjøahavn records there thus seems to be a slight movement of the pole-point towards NW.

Reliable co-ordinates for the mean pole cannot of course be extracted from the material collected at the base-station alone, and it was therefore agreed that Amundsen should undertake a magnetic survey of the region about the supposed pole-point. According to the Instructions Amundsen should make absolute measurements for D, H and I at as many field stations as circumstances allowed. He was recommended to make long series of observations, "during several days", at each station, so that exact mean values might be extracted. From the Introduction, p. 7, it will be seen that Amundsen had

[1] E. Mascart: Traité de Magnétisme Terrestre, Paris 1900, p. 327.
[2] A. Nippoldt: Göschen No. 175, 1912.

for this survey only one short summer at his disposal and as he followed the Instructions regarding exact work, we cannot expect data for many stations. A sufficiently large number of stations has in fact only been obtained for the immediate neighbourhood of Gjøahavn, where reliable data for H and D can be extracted for 13 stations. For this region, between 68° and 69° north latitude, and 95° and 97° west longitude, the collected material may even suffice for construction of charts illustrating the position of the isogonic lines and isodynames for horizontal intensity. An attempt to draw the lines for equal declination will be seen in the sketch given in Fig. 36.

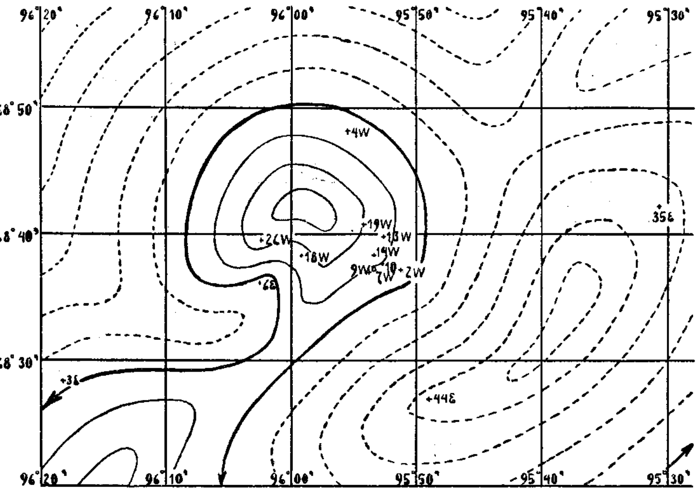


Fig. 36. Isogonic lines for the region between 68° and 69° north and 95° and 97° west, referred to the year 1904.5.

Owing to the complicated course the lines seem to have in this region, it will be very difficult to give any true picture of the situation, but the isodynames for H, given in Fig. 37, may perhaps give an idea of the conditions.

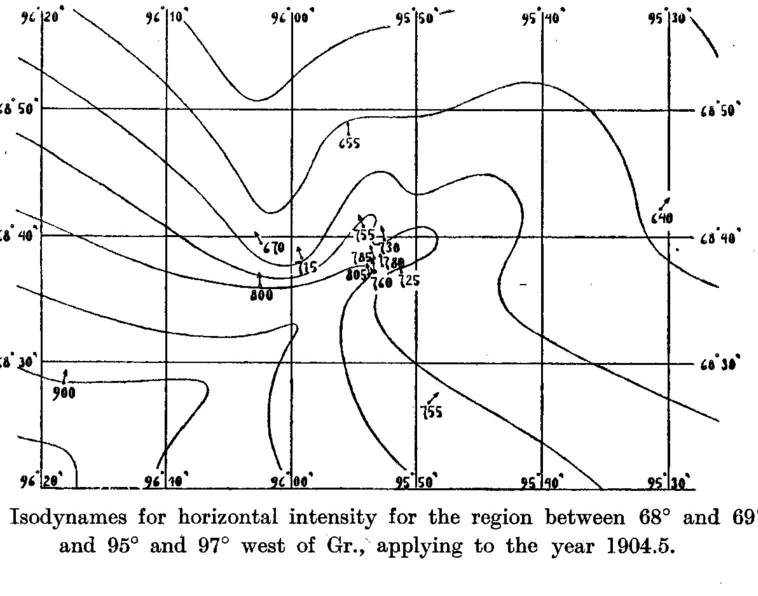


Fig. 37. Isodynames for horizontal intensity for the region between 68° and 69° north and 95° and 97° west of Gr., applying to the year 1904.5.

In the immediate neighbourhood of the magnetic pole Amundsen has put three stations, but the region between 69° and 70° north latitude is only represented by a single station. The state of affairs east and west of the pole is unknown, as no stations were put there. For two of the stations in the neighbourhood of the pole there were besides observations for D, H and I, also made observations for total intensity.

Small as is the number of stations in the neighbourhood of the pole, the collected material seems to give decided hints regarding the present geographical co-ordinates of the magnetic pole. On studying the data collected, we have formed the opinion that the mean pole point of 1904 is situated more towards the north than what calculation according to formula (I) (page 190) seems to indicate, and in accordance with the before-mentioned decrease in the value for westerly declination at Gjøahavn during the year 1904, we have also found that the data collected for the stations in the neighbourhood of the pole point to the conclusion that the pole moves towards the east.

Before discussing the question of the present position of the pole point, however, we shall in the following pages deal with the material collected by Amundsen and the reduction of these data. To begin with we give in Table CLXIV the geographical co-ordinates of the field stations and the number of observations taken at each station.

Table CLXIV.

Geographical Position			Number of Observations			
Station	φ	λ	D	H	I	F
	° ′	° ′				
I	69 23.7	95 21.8	3	12	5	1
II	70 25.2	96 18.0	2	12	4	1
III	70 42.1	96 15.0	0	0	2	0
IV	70 55.1	96 21.0	2	10	4	1
1	68 26.9	95 49.0	6	30	3	1
2	68 28.4	96 18.2	16	60	0	0
3	68 42.2	95 30.7	11	34	0	0
4	68 48.1	95 55.5	5	24	0	0
5	68 40.8	95 54.2	6	24	0	0
6	68 39.8	95 52.6	7	24	0	0
7	68 38.3	95 53.4	32	42	0	0
8	68 38.3	95 59.2	4	20	0	0
9	68 39.5	96 2.4	3	18	0	0
10	68 37.7	95 52.7	2	14	0	0
11	68 36.1	96 2.5	6	14	0	0
12	68 37.0	95 53.8	3	14	0	0
13	68 37.2	95 51.2	4	14	0	0
Iglu I	68 37.4	95 52.4	9	6	0	0
Iglu II	68 37.5	95 52.4	6	4	0	0
Sum			127	376	18	4

The total material of field observations is, as we see, not small, but the number of stations on Boothia Felix was much too small, and it is therefore regrettable that Amundsen met with an accident, mentioned in the Introduction, which made it impossible for him to make the intended observations at *Victoria Harbour*, *Ross's* headquarters in 1831. As we know, circumstances also prevented Amundsen from taking magnetic observations at other stations to which he had intended to travel. Thus in the Introduction allusion has been made to a plan he had concerning observation at a station on the north-east coast of King William's Land, but owing to the weather conditions this plan could not be realised either. However, as things are, we shall have to make the most possible out of the observations available, and in the following pages we shall deal with the observations collected.

On the Reduction of the Observations.

Declination. — The reduction of the observations for declination has been made in the usual way by aid of the formula:

$$D = M - (\delta + a), \quad \text{(I)}$$

where a means the azimuth of the *Mark*, determined in each case by aid of an astronomical observation in connection with determination of the geographical position of the station. The astronomical material has, as we know, been treated by Professor *Geelmeuyden*, and the results of the geographical co-ordinates of the stations and the azimuth of the *Mark* have already been stated in the astronomical part in Part. I, to which we refer. In some cases observations were taken at one and the same station on two, and sometimes three, different occasions, whereby a different *Mark* was used. Regarding the torsion of the thread of the instrument employed we refer to pp. 57—60, where we see, that the directly observed angle of declination D' will have to be corrected by the formula:

(II) $$D = D' + \varrho,$$

where the angular correction ϱ is found by the formula:

(III) $$tg\ \varrho = \frac{\theta'}{H}$$

We have already seen that the material used for determination of θ' was taken from the observations of deflection, from which the angular effect of the torsion ϱ may be extracted, while the corresponding value of H in formula (III) was reduced from the register. As already mentioned, the Zschau was used for field work, but from November 1903 to January 1904 this instrument was used as standard instrument at the base-station. For this period we have thus fairly good material for calculation of the value of the torsion constant θ'. After January 1904 the Zschau was moved about to the various field stations and could only be controlled at the base-station during the short periods between each expedition to the field stations. When discussing the torsional correction of the declination observations at Gjøahavn, we have seen that the instrument was apt to change torsion whenever it was moved, and it is therefore clear that we shall not get reliable data for θ' solely by making use of the material collected during the control measurements at Gjøahavn. These data can only show the value θ' had before the instrument was taken away and after it had been put up again on the tripod in the Absolute House at Gjøahavn. To supplement the control material collected at Gjøahavn, we have therefore also tried to make use of the material afforded by the observations of deflection actually taken at the various field stations. When using this material for calculation of the torsion constant we can by no means expect the same accuracy for the data for θ' as when using the control material, because in case of the field stations we shall for H in formula (III) be forced to use a much less correct value, namely, the average value for H at the station in question. It is clear that the accuracy of H will largely influence the exactness with which we are able to determine the correction for the torsional effect of the thread and the inexactness will of course increase with decreasing absolute value of the directive force, which at the station nearest the pole goes so far down that here we have an average for H equal to 0.00150 C. G. S. The material concerning the torsion of the thread of the Zschau shows that it had its highest value during the two months June and July 1904, and fortunately much less torsion during April and May, when the stations about the magnetic pole were occupied.

In Table CLXV we give corresponding data for ϱ and H for the thread of the Zschau, and under the heading θ' the calculated value of the constant has been added.

As to the sign E in Table CLXV it means here, as before, that torsion of the thread tends to decrease the angle of westerly declination.

In Table CLXVI the observations for declination, taken at the field stations, have been assembled in chronological order. Besides year and day there will be found columns stating the instrument used, the observer and the sign for the station, whereby the geographical co-ordinates will appear from the data given in Table CLXIV, p. 192. Under the heading D'_S the directly observed angle of declination has been entered, and

Table CLXV.

Year	Date	ϱ	H	θ'	Year	Date	ϱ	H	θ'
		° ′	C. G. S.	γ			° ′	C. G. S.	γ
1903	Nov. 23	5 11	0.00692	63 E	1904	June 24	9 34	0.00660	111 E
»	» 23	4 48	721	60 »	»	» 24	12 36	648	145 »
»	» 24	3 5	752	40 »	»	» 24	8 29	640	95 »
»	» 24	2 48	774	38 »					
»	Dec. 1	4 12	686	50 »	1904	June 28	4 49	0.00629	53 E
»	» 1	3 39	688	44 »	»	» 28	6 58	645	79 »
»	» 11	3 14	733	41 »	»	» 29	5 58	746	78 »
»	» 11	4 36	733	59 »	»	» 29	11 44	752	(156) »
»	» 17	4 4	747	53 »	»	July 4	3 58	722	50 »
»	» 17	4 34	747	60 »	»	» 4	10 24	728	(133) »
1904	Jan. 5	5 20	749	70 »	»	» 4	6 47	778	93 »
»	» 5	3 33	772	48 »	»	» 4	4 30	770	61 »
1904	Mar. 17	2 51	0.00769	38 E	1904	July 9	—	0.00726	—
»	» 17	3 38	769	49 »	»	» 9	8 17	690	100 E
»	April 13	7 8	402	47 »	»	» 11	8 58	700	110 »
»	» 13	6 26	400	45 »	»	» 11	12 28	700	155 »
»	May 5	7 20	298	38 »	»	» 12	5 40	656	65 »
»	» 5	0 3	288	(0) »	»	» 12	7 56	678	94 »
»	» 5	8 6	292	42 »					
»	» 5	9 59	280	49 »	1904	Aug. 2	5 47	0.00818	(83)E
					»	» 2	0 33	844	8 »
1904	June 6	5 2	0.00819	72 E	1905	Mar. 1	1 58	591	20 W
»	» 6	4 38	855	69 »	»	» 1	6 30	625	(71) E
»	» 7	1 16	774	(17) »	»	» 1	2 46	577	28 »
»	» 7	4 39	812	66 »	»	» 1	4 15	567	42 W
					»	» 1	0 58	657	11 E
1904	June 11	7 46	0.00844	115 E	»	» 1	12 10	625	(134) »
»	» 11	11 44	868	180 »	»	» 3	1 49	434	14 »
»	» 11	7 55	890	124 »	»	» 3	5 26	432	41 W
»	» 11	7 45	898	122 »					
»	» 18	15 50	584	166 »	1905	Mar. 17	2 30	0.00606	26 W
»	» 18	16 23	584	172 »	»	» 17	0 3	630	0 »
»	» 18	16 41	566	170 »	»	» 17	1 46	612	19 »
»	» 18	15 6	590	159 »	»	» 17	4 21	612	46 »
»	» 24	12 32	573	127 »	»	» 25	0 38	670	7 E
»	» 24	11 32	565	116 »	»	» 25	14 55	684	(182) »
»	» 24	6 16	570	62 »	»	May 10	7 39	719	(96) »
»	» 24	15 32	612	170 »	»	» 10	0 20	723	4 »
»	» 24	6 0	650	68 »					

under the heading ϱ we find the angular correction, which gives us the true declination, D_S. The value for the torsion constant θ' and the value of the directive force in question are also added, and besides these data we have under D_G tabulated corresponding data for declination at the base-station Gjøahavn.

As the observations at the various stations were taken at different times, we shall have to reduce the mean value of the element in question to a chosen epoch, and we have for this purpose decided on the middle of 1904. The question will then be how to obtain a mean value for the magnetic elements of the stations and how to reduce this mean to the epoch 1904.5. As for Gjøahavn, the value for declination for 1904.5 may be put at:

$$D_{G_m} = 7° \, 30' \text{ W}$$

The question will firstly be how to find a mean value D_{sm} corresponding to D_{G_m} for each of the stations. For two stations where the mean value of H is different we cannot extract the value D_S simply by comparison between simultaneous observations at the station in question and at Gjøahavn, but such direct comparison may be made if for both places we calculate the values of the components X and Y, where:

$$X = H_m \cos D \text{ and } Y = H_m \sin D,$$

Fieldstations. — Declination. Table CLXVI.

Date		L.M.T.	Gr.M.T.	D'_S		θ'	H_S	ϱ		D_S		X_S	Y_S	D_G		X_G	Y_G	St	I	S	O
		h. m.	h. m.	°		γ	C.G.S.	°		°		C.G.S.	C.G.S.	°		C.G.S.	C.G.S.				
1904	12/4	7 47	14 8	25.1	W	43	0.00446	5.5	E	30.6	W	+ 0.00344	− 0.00204	5.5	W	+ 0.00756	− 0.00073	I	Z	D	A
»	12/4	18 38	0 58	34.4	»	»	427	5.8	»	40.2	»	306	258	10.2	»	748	093	»	»	d	»
»	13/4	10 46	17 7	30.8	»	»	388	6.3	»	37.1	»	319	241	7.0	»	754	093	»	»	d	»
»	13/4	17 19	23 40	35.3	»	»	405	6.0	»	41.3	»	301	264	9.4	»	750	124	»	»	D	»
»	14/4	6 23	0 44	27.5	»	»	443	5.5	»	33.0	»	335	218	6.2	»	756	082	»	»	d	»
»	14/4	9 28	15 49	28.7	»	»	391	6.2	»	34.9	»	328	229	6.4	»	755	085	»	»	D	»
»	29/4	12 55	19 20	41.0	E	43	0.00322	7.6	E	33.4	E	+ 0.00276	+ 0.00182	8.0	W	+ 0.00753	− 0.00106	II	Z	d	A
»	29/4	15 4	21 29	51.9	»	»	330	7.3	»	44.6	»	235	232	13.1	»	740	172	»	»	d	»
»	29/4	19 26	1 51	33.9	»	»	380	6.1	»	27.8	»	292	154	14.4	»	736	189	»	»	d	»
»	30/4	17 48	0 13	43.3	»	»	366	6.6	»	36.7	»	265	197	11.8	»	744	155	»	»	d	»
»	30/4	19 3	1 28	38.3	»	»	427	5.8	»	32.5	»	278	177	13.7	»	738	180	»	»	d	»
»	30/4	21 0	3 25	29.8	»	»	453	5.5	»	24.3	»	301	136	16.4	»	729	215	»	»	D	»
»	5/5	11 16	17 42	90.8	W	43	0.00271	9.5	E	100.3	W	− 0.00036	− 0.00197	7.5	W	+ 0.00753	− 0.00099	IV	Z	D	A
»	5/5	16 42	23 7	96.7	»	»	285	8.7	»	105.4	»	053	193	10.7	»	747	141	»	»	d	»
»	5/5	18 55	1 20	91.2	»	»	254	10.5	»	101.7	»	041	196	10.3	»	748	136	»	»	d	»
»	6/5	8 18	14 44	80.9	»	»	354	6.8	»	87.7	»	008	200	7.4	»	754	098	»	»	d	»
»	6/5	15 14	21 39	98.3	»	»	298	8.1	»	106.4	»	056	192	10.7	»	747	141	»	»	D	»
»	6/5	16 14	22 39	100.8	»	»	326	7.5	»	108.3	»	063	190	11.3	»	745	149	»	»	d	»
»	6/6	15 33	21 57	51.2	E	68	0.00803	4.9	E	46.3	E	+ 0.00539	+ 0.00564	3.8	W	+ 0.00758	− 0.00050	1	Z	D	A
»	6/6	18 2	0 24	47.7	»	»	768	5.1	»	42.6	»	574	528	6.0	»	756	079	»	»	d	»
»	7/6	13 32	19 55	50.5	»	»	809	4.9	»	45.6	»	546	557	5.0	»	757	066	»	»	d	»
»	8/6	9 47	16 10	47.3	»	128	756	9.6	»	37.7	»	617	477	6.6	»	754	087	»	»	d	»
»	8/6	12 42	19. 6	48.8	»	»	743	9.8	»	39.0	»	606	491	8.4	»	752	111	»	»	D	»
»	8/6	16 51	23 14	48.5	»	»	734	9.9	»	38.6	»	610	487	9.6	»	749	127	»	»	d	»
»	9/6	10 21	16 45	46.6	»	»	802	9.1	»	37.5	»	619	475	6.7	»	755	089	»	»	D	»
»	11/6	9 24	15 49	17.6	E	128	0.00811	9.0	E	8.6	E	+ 0.00850	+ 0.00129	3.2	W	+ 0.00759	+ 0.00042	2	Z	D	A
»	11/6	10 3	16 29	20.2	»	»	830	8.8	»	11.4	»	843	170	3.5	»	759	046	»	»	d	»
»	11/6	18 43	1 8	8.1	»	»	877	8.3	»	0.2	W	800	003	10.3	»	748	136	»	»	d	»
»	11/6	20 37	3 2	9.1	»	»	925	7.9	»	1.2	»	860	018	10.2	»	748	135	»	»	D	»
»	13/6	8 54	15 19	4.5	»	»	843	8.6	»	4.1	»	858	061	5.6	»	756	074	»	»	D	»
»	13/6	9 28	15 53	14.5	»	»	845	8.6	»	5.9	E	855	088	6.4	»	755	095	»	»	d	»
»	13/6	19 30	1 55	9.6	»	»	938	7.8	»	1.8	»	860	027	9.2	»	750	122	»	»	D	»
»	14/6	12 31	18 56	15.6	»	»	878	8.3	»	7.3	»	853	109	5.8	»	756	077	»	»	D	»
»	18/6	9 42	16 4	65.0	E	128	0.00533	13.5	E	51.5	E	+ 0.00405	+ 0.00509	5.3	W	+ 0.00757	− 0.00070	3	Z	D	A
»	18/6	19 54	2 16	52.9	»	»	599	12.1	»	40.8	»	492	425	9.8	»	749	129	»	»	d	»
»	19/6	0 37	6 59	51.0	»	»	639	11.3	»	39.7	»	500	415	8.2	»	752	108	»	»	d	»
»	19/6	12 58	19 20	50.3	»	»	617	11.7	»	38.6	»	508	406	5.9	»	756	078	»	»	D	»
»	20/6	11 36	17 58	48.8	»	»	693	10.5	»	38.3	»	510	403	3.4	»	759	045	»	»	D	»
»	20/6	17 55	0 17	44.1	»	»	623	11.6	»	32.5	»	548	349	8.4	»	752	111	»	»	d	»
»	21/6	19 23	1 45	45.3	»	»	574	12.6	»	32.7	»	547	351	13.8	»	738	181	»	»	D	»
»	22/6	0 41	7 3	48.5	»	»	727	9.5	»	39.0	»	505	409	1.2	»	760	016	»	»	D	»
»	23/6	9 4	15 28	11.5	E	128	0.00738	9.9	E	1.6	E	+ 0.00670	− 0.00019	4.0	W	+ 0.00758	− 0.00053	4	Z	d	A
»	23/6	12 32	18 58	7.1	»	»	632	11.4	»	4.3	W	668	050	7.8	»	753	103	»	»	D	»
»	23/6	18 56	1 20	5.2	»	»	629	11.5	»	6.2	»	666	072	9.5	»	750	125	»	»	d	»
»	24/6	8 40	15 6	11.4	»	»	582	12.4	»	1.0	»	670	012	5.7	»	756	075	»	»	D	»
»	24/6	17 19	23 45	8.0	»	»	646	10.9	»	2.9	»	669	034	7.3	»	754	097	»	»	D	»
»	25/6	8 4	14 30	10.5	»	»	711	10.2	»	0.3	E	670	004	3.5	»	759	046	»	»	D	»
»	25/6	10 57	17 21	15.1	»	»	664	10.9	»	4.2	»	668	049	2.8	»	759	037	»	»	d	»
»	25/6	19 22	1 48	3.5	»	»	648	11.2	»	6.7	W	665	078	9.1	»	750	120	»	»	D	»
»	27/6	8 35	14 59	9.8	W	68	0.00700	5.6	E	15.4	W	+ 0.00699	− 0.00193	4.0	W	+ 0.00758	− 0.00053	5	Z	D	A
»	27/6	16 58	23 22	18.6	»	»	695	5.6	»	24.2	»	661	297	11.0	»	746	145	»	»	d	»
»	27/6	19 44	2 8	22.3	»	»	746	5.2	»	27.5	»	643	335	14.0	»	737	184	»	»	D	»
»	28/6	8 40	15 4	10.3	»	»	695	5.6	»	15.9	»	697	199	2.9	»	759	038	»	»	D	»
»	38/6	11 26	17 50	9.5	»	»	659	5.9	»	15.4	»	699	193	3.3	»	759	044	»	»	d	»
»	28/6	20 4	2 28	17.1	»	»	729	5.4	»	22.5	»	670	277	9.7	»	749	128	»	»	D	»
»	29/6	8 23	14 47	10.2	»	»	647	6.1	»	16.3	»	696	203	3.0	»	759	040	»	»	D	»
»	29/6	17 17	23 41	11.6	»	»	774	5.1	»	16.7	»	694	208	5.6	»	756	074	»	»	D	»
»	30/6	18 11	0 34	5.5	W	68	0.00760	5.1	E	10.6	W	+ 0.00708	− 0.00132	6.6	W	+ 0.00755	− 0.00085	6	Z	D	A
»	1/7	8 48	15 11	0.1	E	»	930	4.3	»	4.2	»	718	053	0.7	»	760	009	»	»	D	»
»	1/7	17 0	23 23	4.7	W	»	780	5.0	»	9.7	»	710	121	5.6	»	756	074	»	»	D	»
»	2/7	8 34	14 57	1.1	W	»	711	5.5	»	6.6	»	715	083	2.3	»	759	031	»	»	D	»
»	2/7	16 44	23 7	8.5	W	»	711	5.5	»	14.0	»	699	174	7.4	»	754	098	»	»	D	»

Fieldstations—Declination.

Table CLXVI. (continued)

Date		L.M.T.	Gr.M.T.	D'_S		θ'	H_S	ϱ		D_S		X_S	Y_S	D_G		X_G	Y_G	St	I	S	O
		h. m.	h. m.	°		γ	C.G.S.	°		°		C.G.S.	C.G.S.	°		C.G.S.	C.G.S.				
1904	2/7	19 11	1 34	8.4	W	68	0.00735	5.3	E	13.7	W	+ 0.00700	— 0.00171	7.6	W	+ 0.00753	— 0.00101	6	Z	d	A
»	4/7	8 33	14 56	3.8	»	»	778	5.0	»	8.8	»	712	110	4.8	»	757	064	»	»	D	»
»	4/7	17 6	23 29	4.6	»	»	745	5.2	»	9.8	»	709	123	6.0	»	756	079	»	»	D	»
»	6/7	8 30	14 56	1.2	W	100	0.00894	6.4	E	7.6	W	+ 0.00734	— 0.00098	0.3	E	+ 0.00760	— 0.00004	7	Z	D	A
»	6/7	9 48	16 11	4.7	E	»	777	7.4	»	2.7	»	739	035	5.0	»	757	066	»	»	d	»
»	6/7	11 16	17 39	10.2	W	»	522	10.8	»	21.0	»	691	265	6.0	W	756	079	»	»	d	»
»	7/7	8 14	14 38	2.8	»	»	697	8.2	»	11.0	»	726	141	0.9	»	760	012	»	»	D	»
»	7/7	16 52	23 16	13.1	»	»	655	8.7	»	21.8	»	687	275	13.8	»	738	181	»	»	D	»
»	8/7	8 20	16 44	2.7	»	»	758	7.5	»	10.2	»	728	131	3.0	»	759	040	»	»	D	»
»	8/7	16 52	23 14	12.2	»	»	767	7.4	»	19.6	»	697	243	11.0	»	746	145	»	»	d	»
»	8/7	19 40	2 4	12.0	»	»	786	7.3	»	19.3	»	698	245	11.9	»	744	157	»	»	D	»
»	9/7	8 14	14 38	2.9	»	»	789	7.2	»	10.1	»	729	130	3.7	»	758	049	»	»	D	»
»	11/7	8 28	14 52	15.9	W	100	0.00665	8.6	E	24.5	W	+ 0.00678	— 0.00309	6.6	W	+ 0.00755	— 0.00087	8	Z	D	A
»	11/7	11 42	18 7	19.4	»	»	671	8.5	»	27.9	»	658	349	10.2	»	748	135	»	»	d	»
»	11/7	17 49	0 14	16.8	»	»	703	8.1	»	24.9	»	676	314	8.7	»	751	115	»	»	d	»
»	12/7	8 20	14 44	12.0	»	»	697	8.2	»	20.2	»	699	257	4.1	»	758	054	»	»	D	»
»	12/7	10 13	16 38	19.2	»	»	663	8.6	»	27.8	»	659	347	7.1	»	754	094	»	»	d	»
»	12/7	16 1	22 26	20.4	»	»	696	8.2	»	28.6	»	654	357	9.1	»	750	120	»	»	d	»
»	12/7	19 28	1 52	22.6	»	»	681	8.3	»	30.9	»	639	383	12.2	»	743	160	»	»	D	»
»	13/7	8 18	14 43	14.3	»	»	700	8.1	»	22.4	»	689	284	4.5	»	758	060	»	»	d	»
»	13/7	10 46	17 10	11.3	»	»	803	7.1	»	18.4	»	707	235	2.8	»	759	037	»	»	D	»
»	2/8	18 30	0 54	11.1	E	10	0.00865	0.7	E	10.4	E	+ 0.00762	+ 0.00140	3.2	W	+ 0.00759	— 0.00042	11	Z	D	A
»	3/8	8 24	14 48	23.6	»	»	1065	0.5	»	23.1	»	713	304	9.0	E	751	+ 119	»	»	D	»
»	3/8	9 31	15 55	19.6	»	»	1027	0.6	»	19.0	»	733	252	14.6	»	735	+ 192	»	»	d	»
»	3/8	16 29	22 53	8.5	»	»	0598	0.9	»	7.6	»	768	103	20.6	W	711	— 267	»	»	D	»
»	4/8	9 22	15 46	22.8	»	»	896	0.6	»	22.2	»	718	293	7.4	E	754	+ 098	»	»	D	»
»	4/8	10 48	17 12	27.5	»	»	842	0.7	»	26.8	»	692	349	8.0	»	753	+ 106	»	»	d	»
»	5/8	9 46	16 10	13.4	»	»	919	0.6	»	12.8	»	756	172	5.1	W	757	— 068	»	»	D	»
»	5/8	10 53	17 17	13.2	»	»	861	0.7	»	12.5	»	757	168	6.1	»	756	— 081	»	»	d	»
»	5/8	17 23	23 47	10.8	»	»	801	0.7	»	10.1	»	763	136	4.3	»	758	— 057	»	»	d	»
»	6/8	9 6	15 30	16.5	»	»	605	0.9	»	15.6	»	746	208	2.7	»	759	— 036	»	»	D	»
»	8/8	18 10	0 35	3.6	E	10	0.00946	0.6	E	3.0	E	+ 0.00859	+ 0.00045	6.6	W	+ 0.00755	— 0.00087	2	Z	D	A
»	9/8	9 23	15 48	4.2	»	»	862	0.7	»	3.5	»	858	+ 053	8.7	»	751	115	»	»	D	»
»	9/8	18 19	0 44	1.5	»	»	940	0.6	»	0.9	»	860	+ 014	10.0	»	748	132	»	»	d	»
»	9/8	19 40	2 5	0.9	W	»	776	0.8	»	1.7	W	860	— 026	13.0	»	741	171	»	»	d	»
»	10/8	9 30	15 55	6.0	E	»	1006	0.6	»	5.4	E	856	+ 091	2.8	»	759	037	»	»	D	»
»	10/8	11 25	17 50	6.7	»	»	1024	0.5	»	6.2	»	855	+ 093	6.6	»	755	087	»	»	d	»
»	11/8	9 40	16 5	6.6	»	»	1063	0.5	»	6.1	»	855	+ 091	1.6	»	760	021	»	»	D	»
»	11/8	10 51	17 16	6.9	»	»	998	0.6	»	6.3	»	855	+ 094	3.4	W	759	045	»	»	d	»
»	11/8	18 37	1 2	3.5	»	»	897	0.7	»	2.8	»	859	+ 042	7.0	»	754	093	»	»	d	»
1905	22/2	10 17	16 42	5.2	E	10	0.00945	0.6	E	4.6	E	+ 0.00857	+ 0.00069	6.6	W	+ 0.00755	— 0.00087	2	Z	D	A
»	22/2	12 2	18 28	8.5	»	»	843	0.7	»	7.8	»	852	117	5.2	»	757	069	»	»	d	»
»	22/2	13 26	19 51	7.2	»	»	834	0.7	»	6.5	»	854	097	5.7	»	756	075	»	»	d	»
»	22/2	14 50	21 15	6.2	»	»	949	0.6	»	5.6	»	856	084	6.6	»	755	087	»	»	d	»
»	23/2	10 17	16 42	8.6	»	»	947	0.6	»	8.0	»	852	120	2.4	»	759	032	»	»	D	»
»	23/2	15 24	21 50	3.9	»	»	949	0.6	»	3.3	»	859	050	7.3	»	754	097	»	»	d	»
»	23/2	17 7	23 32	2.8	»	»	931	0.6	»	2.2	»	859	033	9.0	»	751	119	»	»	d	»
»	28/2	10 49	17 13	21.9	W	10	0.00656	0.9	E	22.8	W	+ 0.00687	— 0.00289	3.4	W	+ 0.00759	— 0.00045	9	Z	D	A
»	28/2	12 28	18 52	27.3	»	»	605	0.9	»	28.2	»	657	352	7.7	»	753	— 102	»	»	d	»
»	28/2	13 45	20 9	29.3	»	»	558	1.1	»	30.4	»	643	377	8.8	»	751	— 116	»	»	d	»
»	1/3	11 44	18 8	17.3	»	»	579	1.1	»	18.4	»	707	235	0.6	E	760	+ 008	»	»	d	»
»	1/3	13 11	19 35	19.7	»	»	659	0.9	»	20.6	»	697	262	0.5	W	760	— 007	»	»	d	»
»	1/3	16 40	23 4	29.6	»	»	585	1.0	»	30.6	»	641	379	7.7	»	753	— 102	»	»	d	»
»	2/3	10 18	16 42	0.3	E	»	720	0.8	»	0.5	»	745	007	20.8	E	710	+ 270	»	»	D	»
»	2/3	11 21	17 46	17.4	W	»	427	1.3	»	18.7	»	706	239	22.3	»	703	+ 288	»	»	d	»
»	2/3	13 6	19 30	16.5	»	»	322	1.8	»	18.3	»	707	234	1.0	W	760	— 013	»	»	d	»
»	2/3	14 38	21 2	20.8	»	»	155	3.7	»	24.5	»	678	309	11.7	»	744	— 154	»	»	d	»
»	17/3	9 52	16 15	52.9	E	10	0.00760	0.8	E	52.1	E	+ 0.00479	+ 0.00615	5.1	W	+ 0.00757	— 0.00068	1	Z	D	A
»	17/3	13 28	19 51	55.7	»	»	836	0.7	»	55.0	»	447	639	5.8	»	756	077	»	»	d	»
»	17/3	15 31	21 54	52.6	»	»	760	0.8	»	51.8	»	482	613	7.6	»	753	101	»	»	d	»
»	17/3	16 55	23 17	47.3	»	»	792	0.7	»	46.6	»	536	567	8.5	»	752	112	»	»	d	»
»	18/3	9 37	16 0	52.9	»	»	776	0.8	»	52.1	»	479	615	6.6	»	755	087	»	»	D	»

[1]) Magnet-box standing under the instrument.

Fieldstations. — Declination. Table CLXVI. (continued)

Date		L.M.T.	Gr.M.T.	D'_S		θ'	H_S	ϱ		D_S		X_S	Y_S	D_G		X_G	Y_G	St	I	S	O
		h. m.	h. m.	°		γ	C.G.S.	°		°		C.G.S.	C.G.S.	°		C.G.S.	C.G.S.				
1905	18/3	11 18	17 41	52.9	E	10	0.00780	0.7	E	52.2	E	+ 0.00478	+ 0.00616	5.8	W	+ 0.00756	— 0.00077	1	Z	d	A
»	18/3	14 37	21 0	47.5	»	»	826	0.7	»	46.8	»	534	569	6.5	»	755	087	»	»	D	»
»	18/3	16 7	22 30	48.0	»	»	845	0.7	»	47.3	»	529	573	7.0	»	754	093	»	»	d	»
»	19/3	9 54	16 18	47.2	»	»	947	0.6	»	46.6	»	536	567	0.8	»	760	011	»	»	D	»
»	25/3	9 48	16 0	41.6	E	10	0.00670	0.9	E	40.7	E	+ 0.00493	+ 0.00424	3.7	W	+ 0.00758	— 0.00049	3	Z	D	A
»	25/3	12 0	18 22	42.4	»	»	650	0.9	»	41.5	»	487	431	5.4	»	757	072	»	»	d	»
»	25/3	14 7	20 29	41.8	»	»	663	0.9	»	40.9	»	491	426	4.7	»	757	062	»	»	d	»
»	25/3	15 47	22 9	41.4	»	»	662	0.9	»	40.5	»	494	422	5.1	»	757	068	»	»	d	»
»	25/3	17 30	23 52	41.1	»	»	647	0.9	»	40.2	»	496	420	6.2	»	756	082	»	»	D	»
»	26/3	10 6	16 28	42.9	»	»	650	0.9	»	42.0	»	483	435	4.3	»	758	057	»	»	D	»
»	26/3	12 18	18 40	41.7	»	»	675	0.9	»	40.8	»	492	425	3.4	»	759	045	»	»	D	»
»	26/3	15 28	21 50	40.6	»	»	646	0.9	»	39.7	»	500	415	6.0	»	756	079	»	»	d	»
»	26/3	17 1	23 23	41.4	»	»	618	1.0	»	40.4	»	495	421	8.5	»	752	112	»	»	D	»
»	27/3	10 23	16 45	46.7	»	»	672	0.9	»	45.8	»	453	466	4.3	E	758	057	»	»	D	»
»	30/3	11 46	18 9	11.0	W	10	0.01015	0.6	E	11.6	W	+ 0.00725	+ 0.00149	1.7	W	+ 0.00760	— 0.00023	7	Z	D	A
»	30/3	16 16	22 39	15.5	»	»	845	0.7	»	16.2	»	711	206	6.0	»	756	— 029	»	»	D	»
»	31/3	11 16	17 39	12.8	»	»	882	0.7	»	13.5	»	720	173	4.2	»	758	— 056	»	»	D	»
»	31/3	16 21	22 44	15.9	»	»	916	0.6	»	16.5	»	710	210	7.1	»	754	— 094	»	»	D	»
»	31/3	17 4	23 27	19.0	»	»	727	0.8	»	19.8	»	696	251	9.7	»	749	— 128	»	»	D	»
»	1/4	10 9	16 32	1.9	»	»	1240	0.5	»	2.4	»	739	031	8.4	E	752	+ 111	»	»	D	»
»	3/4	10 7	16 30	12.3	»	»	735	0.8	»	13.1	»	721	168	1.4	W	760	— 019	»	»	D	»
»	3/4	16 22	22 45	20.7	»	»	721	0.8	»	21.5	»	689	271	10.6	»	747	— 014	»	»	D	»
»	3/4	17 7	23 30	19.1	»	»	745	0.8	»	19.9	»	696	252	10.2	»	748	— 013	»	»	D	»
»	4/4	10 7	16 30	16.3	»	»	567	1.1	»	17.4	»	706	221	3.7	»	758	— 049	»	»	D	»
»	4/4	17 7	23 30	12.7	»	»	752	0.7	»	13.4	»	720	171	9.5	»	756	— 125	»	»	D	»
»	5/4	10 47	17 10	7.2	»	»	705	0.8	»	8.0	»	733	103	1.6	E	760	+ 021	»	»	d	»
»	5/4	16 1	22 24	26.0	»	»	645	0.9	»	26.9	»	660	335	11.4	W	745	— 150	»	»	d	»
»	6/4	10 8	16 31	15.2	»	»	681	0.8	»	16.0	»	711	204	1.0	»	760	— 013	»	»	D	»
»	6/4	10 53	17 16	9.6	»	»	636	0.9	»	10.5	»	728	135	0.3	E	760	+ 004	»	»	D	»
»	7/4	10 8	16 31	13.7	»	»	828	0.7	»	14.4	»	717	184	5.5	W	757	— 073	»	»	D	»
»	11/4	17 43	0 6	17.1	»	»	873	0.7	»	17.8	»	705	226	8.2	»	752	— 108	»	»	D	»
»	12/4	11 23	17 46	12.2	»	»	860	0.7	»	19.2	»	699	243	0.5	»	760	— 007	»	»	d	»
»	13/4	10 43	17 6	13.7	»	»	797	0.7	»	14.4	»	717	184	5.5	»	757	— 073	»	»	D	»
»	14/4	11 28	17 51	15.0	»	»	830	0.7	»	15.7	»	712	200	7.3	»	754	— 097	»	»	d	»
»	27/4	10 53	17 16	8.4	W	10	0.00657	0.9	E	9.3	W	+ 0.00730	— 0.00120	3.8	W	+ 0.00758	— 0.00050	10	Z	D	A
»	27/4	15 28	21 51	11.3	»	»	719	0.8	»	12.1	»	724	155	8.4	»	752	— 111	»	»	D	»
»	27/4	17 1	23 24	10.4	»	»	763	0.8	»	11.2	»	726	144	7.1	»	754	— 094	»	»	D	»
»	28/4	10 46	17 9	5.4	»	»	848	0.7	»	6.1	»	736	079	2.4	»	759	— 032	»	»	d	»
»	28/4	11 28	17 51	4.3	»	»	807	0.7	»	5.0	»	737	064	4.6	»	758	— 061	»	»	d	»
»	28/4	14 59	21 22	11.2	»	»	739	0.8	»	12.0	»	724	154	8.2	»	752	— 108	»	»	d	»
»	28/4	16 9	22 32	11.9	»	»	722	0.8	»	12.7	»	722	163	9.7	»	749	— 128	»	»	d	»
»	28/4	17 9	23 32	4.9	»	»	675	0.9	»	5.8	»	736	075	12.8	»	741	— 168	»	»	d	»
»	29/4	10 33	16 56	7.8	»	»	556	1.1	»	8.9	»	731	114	1.4	»	760	— 019	»	»	d	»
»	29/4	12 14	18 37	0.9	»	»	599	1.0	»	1.9	»	740	025	4.8	E	757	+ 064	»	»	d	»
»	2/5	10 34	16 57	6.8	W	10	0.00819	0.7	E	7.5	W	+ 0.00749	— 0.00096	0.5	W	+ 0.00760	— 0.00007	12	Z	D	A
»	2/5	16 34	22 57	15.7	»	»	773	0.8	»	16.3	»	725	212	10.8	»	747	142	»	»	d	»
»	3/5	10 6	16 29	5.6	»	»	796	0.7	»	6.3	»	750	083	3.1	»	759	041	»	»	d	»
»	3/5	10 44	17 7	4.9	»	»	746	0.8	»	5.7	»	751	075	3.0	»	759	040	»	»	d	»
»	3/5	11 12	17 35	6.1	»	»	739	0.8	»	6.9	»	750	091	2.7	»	759	036	»	»	d	»
»	3/5	16 37	23 0	13.4	»	»	733	0.8	»	14.2	»	732	185	14.8	»	735	194	»	»	d	»
»	4/5	11 12	17 35	9.1	»	»	767	0.8	»	9.9	»	744	130	4.1	»	758	054	»	»	d	»
»	4/5	16 24	22 47	9.5	»	»	823	0.7	»	10.2	»	743	135	7.1	»	754	094	»	»	d	»
»	5/5	10 32	16 55	11.0	»	»	716	0.8	»	11.8	»	739	154	6.1	»	756	081	»	»	D	»
»	5/5	16 17	22 40	9.6	»	»	851	0.7	»	10.3	»	743	135	5.1	»	757	068	»	»	D	»
»	10/5	10 18	16 41	7.4	E	10	0.00752	0.8	E	6.6	E	+ 0.00755	— 0.00087	3.2	W	+ 0.00759	— 0.00042	13	Z	D	A
»	10/5	11 32	17 55	5.5	»	»	745	0.8	»	4.7	»	757	062	2.7	»	759	— 036	»	»	d	»
»	10/5	17 2	23 25	5.3	»	»	737	0.8	»	4.5	»	758	060	6.2	»	756	— 082	»	»	d	»
»	11/5	10 52	17 16	6.8	»	»	735	0.8	»	6.0	»	756	079	4.9	»	757	— 065	»	»	d	»
»	11/5	15 10	21 33	10.6	»	»	718	0.8	»	9.8	»	749	129	3.8	»	758	— 050	»	»	d	»
»	11/5	16 14	22 37	6.4	»	»	695	0.8	»	5.8	»	756	077	5.7	»	756	— 075	»	»	d	»
»	12/5	10 39	17 2	15.0	»	»	789	0.7	»	14.3	»	736	188	6.4	E	755	+ 085	»	»	D	»
»	12/5	11 19	17 42	16.0	»	»	800	0.7	»	15.3	»	733	201	0.4	»	760	+ 005	»	»	D	»
»	12/5	17 44	0 7	5.1	»	»	740	0.8	»	4.3	»	758	057	4.7	W	757	— 062	»	»	D	»

where for Gjøahavn we put $H_{Gm} = 0.00760$ C. G. S. and for the station in question we shall have to use an approximation H_{Sm}. As to how this approximation H_{Sm} has been obtained we refer to page 202, where approximate mean values for H at all the stations will be seen tabulated in Table CLXXI. In Table CLXVI the required data for the station, as well as for Gjøahavn, are entered respectively under the headings X_S, Y_S and X_G, Y_G. To be able to obtain a good mean value D_{Sm}, or rather for X_{Sm} and Y_{Sm}, it is of importance to have a large material and this material ought to contain data with sufficiently high and low stand. As sometimes the material for declination collected for a station seems to be somewhat small, we have found it safer to supplement the actual declination observations with some data for declination extracted from the observations of deflection. These last data for declination are in Table CLXVI distinguished by the designation d in the column headed S, while in this column D stands for data for declination obtained in ordinary way. Regarding data for declination extracted from the deflections, we remember that usually there were taken three readings with free needle, besides sights to the mark, from which we see that we possess a very large supplementary material. It may be remarked that these data have a small error of collimation, but as we cannot expect such exact values that this error is of consequence, no correction has been applied.

Horizontal Intensity. — The reduction has been made in the usual way adopted in this work, that is, by aid of the formula:

$$\text{(I)} \qquad \log H = C_a - \log \sin \varphi_0$$

As to the corrections necessary in the reduction we refer to pp. 43—45, whereby we may remark that correction for change in declination during the observation has been omitted. The values of the constants C_a and b_a have been taken from the tables XXVII, XXVIII, XXIX, XXX, pp. 73—74, in all cases where the observations were taken in ordinary way. Sometimes, however, the observer found it convenient to employ the deflector in a twisted position on the bar, in the manner mentioned in the Instructions page 18. As twisted deflector reduces the deflecting force of the magnet, the value for C_a, for the bar distance in question, must be reduced by a certain quantity $\triangle C_a$, the value of which is a function of the angle of twist α. For calculation of this quantity we may put:

$$\text{(II)} \qquad \triangle C_a = C_a - (\log H + \log \sin \varphi_0'),$$

where φ_0' is the angle observed with the twisted deflector and H is an approximate mean

Table CLXVII.

Fieldstations. **Defl. 4, Zschau.**

Date		φ	$\sin \varphi_0$	Station H	Station H_0	Gjøahavn H	Gjøahavn H_0	C_a, $\alpha = 0$	C_a, $\alpha > 0$	r	α	St
		° ′	log	C. G. S.	C. G. S.	C. G. S.	C. G. S.	log	log		°	
1904	20/6	48 29.8	9.87724	0.00569	0.00628	0.00720	0.00774	7.76217	7.63235	l_E	45	3
		47 12.3	.86742	592		742			.63974			
»	23/6	37 59.3	9.79130	0.00635	0.00656	0.00755	»	7.76216	7.59407	»	»	4
		37 52.6	.79031	624		746			.58549	»		
»	28/6	33 33.7	9.74905	0.00704	0.00781	0.00712	»	»	7.59662	»	»	5
		33 14.6	.74223	716		732			.59714			
»	4/7	29 9.6	9.69188	0.00778	0.00740	0.00818	0.00781	7.76215	7.58286	»	»	6
		29 59.0	.70212	741		782			.57194			
»	8/7	34 6.1	9.75169	0.00703	0.00855	0.00700	»	»	7.59865	»	»	7
		33 34.6	.74522	686		690			.58154			
»	11/7	34 26.8	9.75441	0.00700	0.00704	0.00774	»	»	7.59951	»	»	8
		34 54.5	.75930	701		777			.60502			

Table CLXVII (continued).

Fieldstations.

Defl. 6, Zschau.

Date		φ	sin φ₀	Station H	Station H₀	Gjøahavn H	Gjøahavn H₀	C_a α = 0	C_a α > 0	r	α	St
		° ′	log	C. G. S.	C. G. S.	C. G. S.	C. G. S.	log	log		°	
1904	23/6	32 12.6	9.72743	0.00634	0.00656	0.00748	0.00774	7.77990	7.52952	l_E	55	4
		31 36.6	.71997	638		752			.52479			
»	29/6	32 45.8	9.73496	0.00657	0.00781	0.00672	»	7.77987	7.55253	»	»	5
		30 46.2	.71084	659		674			.52953			
»	2/7	34 41.3	9.75787	0.00710	0.00740	0.00750	0.00781	7 77985	7.60913	»	45	6
		35 44.6	.76905	733		773			.63415			
»	7/7	34 2.9	9.74903	0.00703	0.00855	0.00700	»	7.77981	7.59599	»	»	7
		33 52.9	.74715	730		715			.61047			
»	11/7	43 34.8	9.83940	0.00644	0.00704	0.00674	»	7.77978	7.64829	»	»	8
		46 0.9	.85802	642		678			.66556			

Defl. 7, Zschau.

Date		φ	sin φ₀	Station H	Station H₀	Gjøahavn H	Gjøahavn H₀	C_a α = 0	C_a α > 0	r	α	St
1904	23/6	30 17.4	9.70314	0.00634	0.00656	0.00756	0.00774	7.76950	7.50523	l_E	55	4
		30 6.6	.70077	634		756			.50286			
»	29/6	29 24.1	9.69308	0.00661	0.00781	0.00675	»	7.76940	7.51328	»	»	5
		30 4.5	.70209	680		692			.53460			
»	2/7	32 58.9	9.73826	0.00736	0.00740	0.00776	0.00781	7.76930	7 60514	»	45	6
		32 24.0	.73123	736		776			.59811			
»	7/7	32 0.3	9.72521	0.00727	0.00855	0.00713	»	7.76907	7.58674	»	»	7
		31 30.2	.71909	758		730			.59876			
»	11/7	41 57.8	9.82613	0.00668	0.00704	0.00718	»	7.76890	7.65091	»	»	8
		37 49.2	.78850	672		726			.61587			

Defl. 2, Zschau.

Date		φ	sin φ₀	Station H	Station H₀	Gjøahavn H	Gjøahavn H₀	C_a α = 0	C_a α > 0	r	α	St
1904	14/6	43 4.4	9.83459	0.00950	0.00944	0.00780	0.00774	7.97620	7.81231	l_E	55	2
		41 59.3	.82555						.80327			
»	21/6	45 18.9	9.85256	0.00580	0.00628	0.00730	»	7.97619	7.61599	»	»	3
		50 44.9	.88980						.65323			
»	23/6	51 18.6	9.89334	0.00625	0.00656	0.00750	»	7 97619	7.68922	»	»	4
		46 5.4	.86594						.66182			
»	28/6	39 13.3	9.80223	0.00690	0,00781	0.00700	»	7.97617	7 64108	»	65	5
		39 32.6	.80519						.64404			
»	2/9	33 26.7	9.74279	0.00735	0.00740	0.00775	0.00781	7.97616	7.60908	»	»	6
		28 23.9	.67896						.54525			
»	7/9	34 55.3	9.75867	0.00730	0.00855	0.00715	»	7.97615	7.62199	»	»	7
		35 54.2	.76909						.63241			

Defl. 3, Zschau.

Date		φ	sin φ₀	Station H	Station H₀	Gjøahavn H	Gjøahavn H₀	C_a α = 0	C_a α > 0	r	α	St
1904	14/6	39 17.7	9.80169	0.00950	0.00944	0.00780	0.00774	7.98375	7.77941	l_E	55	2
		36 15.6	.77213						.74985			
»	21/6	51 7.9	9.89253	0.00580	0.00628	0.00730	»	7.98368	7.65596	»	»	3
		42 29.6	.83069						.59412			
»	23/6	46 0.0	9.85807	0.00625	0.00656	0.00750	»	7.98366	7.65395	»	»	4
		53 47.1	.90788						.70376			
»	28/6	34 37.9	9.75657	0.00690	0.00781	0.00700	»	7.98361	7.59542	»	65	5
		33 36.5	.74474						.58359			
»	2/7	28 52.1	9.68635	0.00735	0.00740	0.00775	0.00781	7.98357	7.55264	»	»	6
		30 26.0	.70756						.57385			

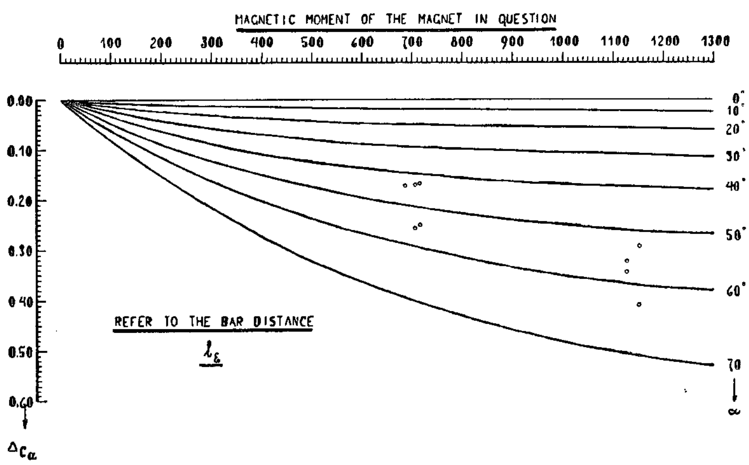
value for the station in question, obtained by aid of observations of deflection made in the ordinary way, in which case C_a is known. As in most cases the observations were taken in the ordinary way, we shall always be able to extract a usable approximation H_S. In Table CLXVII we have collected the material at hand for determination of the constant C'_a for the magnets used for observation with twisted deflector. Under φ', the angle of deflection actually observed at the station in question is to be found, and the logarithmical value of sin φ_0' has been entered in the next column. H_0 represents the mean value of the horizontal intensity for the month in which the observation was taken. For Gjøahavn this value has been taken from the Table CXV, p. 162, and for the station in question an approximate mean value has been estimated from the observations taken at the same station with the deflector put on the bar without twist.

By aid of the register at Gjøahavn on the one hand, and the observed angle of deflection on the other hand, we may form an idea as to the value of the horizontal intensity at the moment of observation. Such values have been entered for Gjøahavn and for the station in question under the heading H. For C_a there are also two columns, one with the known value when the observation was made in the ordinary way, where $\alpha = 0$, and one giving the value emerging from calculation with the formula:

$$\text{(III)} \qquad C'_a = C_a - \triangle C_a = \log H + \log \sin \varphi_0'$$

where $\alpha > 0$, the angle of twist having the value entered under the heading α. φ' is the observed angle of deflection. It will be seen that in all cases where a twisted deflector was used the bar distance corresponded to l_E, and the deflectors used on these occasions were: 2, 3, 4, 6 and 7.

In Table CLXVIII we have, for each of the five deflectors used, given nder the heading M the value of the magnetic moment. Under the heading C'_a we give the mean value obtained for this quantity for the different values of α, 0°, 25°, 45° 55°, 65°, emerging from calculation with formula (III), and finally the correction difference $C_a - C'_a = \triangle C_a$, corresponding to the above-stated values for the angle of twist α. From this table it is easy to see that $\triangle C_a$ is a function of the magnetic moment of the deflector in question, and we have for the relation between M and $\triangle C_a$ made the graph shown in Fig. 38. Judging from the position of the points in comparison with the values of the angles of twist α, we may draw curves in the way seen in the figure, representing the relation between $\triangle C_a$ and M for every 10 degrees of twist, all of the cases referring to the bar-distance l_E.



38. Relation between the magnetic moment of a magnet and the effect produced by employing twisted deflector.

Table CLXVIII.

Defl.	M	C'_a				$\triangle_{C_a} = C_a - C'_a$		
		$a = 0°$	$a = 45°$	$a = 55°$	$a = 65°$	$a = 45°$	$a = 55°$	$a = 65°$
	C. G. S.	log	log	log	log	log	log	log
3	1150	7.98370	—	7.68950	7.57640	—	0.29420	0.40730
2	1125	.97620	—	.65500	.63390	—	.32120	.34200
6	715	.77990	7.61250	.52790	—	0.16740	.25200	—
7	705	.76920	.60090	.51340	—	.16830	.25580	—
4	685	.76215	.59130	—	—	.17085	—	—

From the curves drawn in Fig. 38 we have finally extracted data for the quantity $\triangle C_a$ given in Table CLXIX.

Table CLXIX.

M	$a = 30°$	$a = 40°$	$a = 50°$	$a = 60°$	$a = 70°$
C. G. S.					
1200	0.113	0.181	0.257	0.374	0.514
1000	.105	.168	.250	.349	.476
800	.100	.152	.224	.314	.431
600	.087	.129	.188	.269	.367

In Table CLXX, p. 302, we give the observations for horizontal intensity taken at the field stations. As all the headings are the same as used both for Gjøahavn and for King Point, we need say nothing regarding the meaning, except that, similar to what was done for the declination, we have also in this case calculated values for the components X and Y for the field stations, as well as for Gjøahavn. The formulae used in this case are:

(IV) $$X = H \cos D_m \text{ and } Y = H \sin D_m$$

For Gjøahavn we have used $D_{G_m} = 7°30'$ W, and as corresponding values for D_{S_m} at the stations we have employed those given in Table CLXX. As to how the approximate values D_m and H_m, given in Table CLXXI, have been obtained, we may remark that this was done by means of a preliminary reduction of the field observations, comparing D_S with D_G and H_S with H_G. Judging from the variation the Gjøahavn records show, we can get an idea of the most probable mean value for the station in question, and with the thus estimated values, in combination with the geograpical co-ordinates of the stations, we have tried to draw approximate lines for the isogones and isodynames of the region in question, which to a certain degree served as control of the estimated values. The approximations for D_m and H_m, given in Table CLXXI are in fact derived from this first attempt at making out a map of the said lines for equal values of D and H.

Inclination. — The reduction of the inclination observations has been made in the customary way by aid of formulae 41 and 42 (cf. p. 49). As to the index correction of the observations taken with the Dover, this was, both for Gjøahavn and for King Point, put equal to zero, and for the region about the pole we may even for the observations taken with the Fox Circle use the observed values without correction for index error. In Table CLXXII we give the observations of inclination taken at the five stations I, II, III, IV and 1. At the rest of the stations no observations were taken. Corresponding data for I at Gjøahavn and the station in question will be seen entered in the table. Under the column headed I the sign for the instrument used will be found, and under N the sign for the needle employed has been added.

To obtain mean values for I for the stations we ought not to compare corresponding values for I for the station in question and for Gjøahavn. Corresponding values for

Z_S and Z_G ought to be determined for this purpose. However, in this case, where the values for vertical intensity, on account of the location, are so uncertain, it will nevertheless be better to compare values for I_S and I_G, whereby for Gjøahavn we put $I_{G_m} = 89° 17'$.

Table CLXXI.

Station	H_m	D_m
	C. G. S.	°
I	0.00400	33 W
II	330	54 E
IV	200	94 W
1	780	42 E
2	860	2 »
3	650	32 »
4	670	4 W
5	725	20 »
6	720	14 »
7	740	10 »
8	745	10 »
9	745	16 »
10	740	10 »
11	775	4 E
12	755	3 W
13	760	3 »

Table CLXXII.

Date		Gr.M.T.	I_S	I_G	St.	I	N	D	O
		h. m.	° ′	° ′					
1904	11/4	16 22	89 34.9	89 10.0	I	D	I	—	A
»	»	18 2	52.1	33.9	»	»	II	—	»
»	»	21 30	43.6	28.2	»	F	A	—	»
»	»	22 15	40.5	25.8	»	»	»	N	»
»	»	22 58	40.6	24.2	»	»	»	S	»
»	28/4	23 30	89 35.3	89 16.8	II	D	II	—	»
»	30/4	2 7	35.2	17.6	»	F	A	N	»
»	»	2 31	24.8	17.4	»	»	»	S	»
»	»	3 54	33.0	16.8	»	»	»	—	»
»	3/5	17 17	89 51.9	89 26.7	III	D	II	—	»
»	»	18 49	51.6	25.8	»	»	I	—	»
»	5/5	15 35	89 48.1	89 18.6	IV	D	II	—	»
»	6/5	18 2	36.7	19.3	»	F	A	—	»
»	»	18 44	36.7	19.6	»	»	»	N	»
»	»	19 16	14.2	20.1	»	»	»	S	»
»	9/6	—	89 14.2	89 15.7	1	F	A	—	»
»	»	—	12.0	15.6	»	»	»	N	»
»	»	—	14.2	15.6	»	»	»	S	»

Total Intensity. — The reduction of the observations for total intensity has been made in the usual way according to the two formulae (48) and (49) given on page 51, where the value of the constants R has been taken from Table LVI, p. 98 and β from page 99. There has, as we see, only been taken one observation at each of the four stations *I*, *II*, *IV* and 1, wherefore these observations tell us very little regarding the eventual mean value F_{S_m}. As usually, F_{G_m} denotes the mean value of this element at the base station Gjøahavn.

Remarks on the Calculation of Final Mean Values for the Magnetic Elements of the Field Stations. — To be able to decide on mean values for the magnetic elements of the field stations we have, as before pointed out, calculated the components X and Y by aid of the formulae:

(IV)
$$X = H \cos D$$
$$Y = H \sin D,$$

putting in these formulae respectively when declination and horisontal intensity are concerned: $H = H_m$ and $D = D_m$. For each station we have thus obtained two sets of values for X_m and Y_m. Calculating corresponding values for the base station Gjøahavn we are now enabled to make the before-mentioned comparison and find the final mean values X_{S_m} and Y_{S_m} for the stations. As values for the said components we have:

$$X_{G_m} = 0.00754 \text{ C. G. S.}$$
$$Y_{G_m} = 0.00099 \text{ C. G. S.}$$

The comparison between corresponding data for the field stations and Gjøahavn has been made graphically, and this comparison shows that the variation of X (Y) at the different stations is not always of the same magnitude as the variation of corresponding data extracted from the Gjøahavn records. Putting, for sake of comparison, the variation of the magnetic elements at X and Y at Gjøahavn equal to 1, we have for the stations found the figures given in Table CLXXIlI, where a_X and a_Y represent the variations in X and Y respectively, expressed in relative figures, the absolute value of which depends on the known variation at Gjøahavn. Drawing a straight line through the analytic points of the graphs, the inclination of which line corresponds to the figures given in Table CLXXIII, we can directly obtain the mean values X_{S_m} and Y_{S_m}, corresponding to X_{G_m} and Y_{G_m}, and the resulting data will be found in Table CLXXIV. It will be seen that the data for X_{S_m} and Y_{S_m} sometimes come out with very different values in the two mentioned cases, where H and D are the observed elements and where in the formulae (IV) we have put D_m and H_m respectively. This is of course largely dependent on the approximations used, taken from Table CLXXI above. As these data depend on uncertain judgment, they may perhaps be changed on an eventual recalculation, so that the data for X and Y agree better in the two cases. After having decided, from the data given in Table CLXXIV, on the adopted mean values for X and Y for the various stations, we may calculate D by putting:

Table CLXXIII.

Station	a_X	a_Y
I	+ 0.7	+ 1.4
II	+ 1.5	+ 1.2
IV	− 1.2	− 2.1
1	+ 1.0	+ 1.1
2	+ 1.2	+ 1.2
3	+ 1.1	+ 1.2
4	+ 1.2	+ 0.9
5	+ 1.4	+ 1.0
6	+ 0.9	+ 1.2
7	+ 1.2	+ 1.1
8	+ 1.3	+ 1.1
9	+ 1.1	+ 1.0
10	+ 1.4	+ 0.9
11	+ 1.4	+ 1.0
12	+ 1.0	+ 1.0
13	+ 1.0	+ 1.0

Table CLXXIV.

St.	H observed		D observed		Adopted Mean	
	X	Y	X	Y	X	Y
	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.
I	+ 0.00341	− 0.00223	+ 0.00325	− 0.00248	+ 0.00336	− 0.00240
II	+ 270	+ 330	+ 302	+ 267	+ 281	+ 288
IV	− 057	− 280	− 057	− 281	− 057	− 280
1	+ 0.00577	+ 0.00520	+ 0.00574	+ 0.00510	+ 0.00577	+ 0.00510
2	+ 902	+ 063	+ 853	+ 030	+ 886	+ 050
3	+ 507	+ 332	+ 503	+ 398	+ 505	+ 365
4	+ 646	− 046	+ 667	− 049	+ 653	− 048
5	+ 725	− 243	+ 682	− 250	+ 711	− 248
6	+ 715	− 176	+ 706	− 163	+ 712	− 167
7	+ 753	− 131	+ 713	− 195	+ 740	− 174
8	+ 664	− 116	+ 672	− 313	+ 667	− 215
11	+ 821	+ 060	+ 739	+ 086	+ 794	+ 077
2	+ 938	+ 037	+ 858	+ 033	+ 911	+ 034
2	+ 931	+ 027	+ 852	+ 059	+ 905	+ 048
9	+ 564	− 155	+ 682	− 357	+ 603	− 290
1	+ 517	+ 430	+ 497	+ 593	+ 510	+ 539
3	+ 577	+ 346	+ 486	+ 394	+ 547	+ 378
7	+ 818	− 140	+ 707	− 253	+ 781	− 215
10	+ 783	− 126	+ 732	− 146	+ 766	− 139
12	+ 818	− 047	+ 742	− 165	+ 793	− 126
13	+ 712	− 029	+ 744	− 041	+ 723	− 037

$$tg\, D = \frac{X}{Y}$$

and H by putting:

$$H = \frac{X}{\cos D} = \frac{Y}{\sin D}$$

and the results we have come to will be found in Table CLXXV, where also the values obtained for I and F have been entered. It is of course very difficult to have any decided opinion as to the most probable values of the magnetic elements at the various stations, referred to 1904.5, but we should think that the mean values given in Table CLXXV are fairly reliable for H, D and I. However, for the total intensity F the values are of course more doubtful. Besides station 1, observations of inclination and total intensity have been taken only at the stations near the magnetic pole, and for these stations we may put $F = Z$. Regarding station *III* we may remark that the value for inclination

Table CLXXV.

St.	φ	λ	D	I	F	H	Z	X	Y
	° ′	° ′	° ′	° ′	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.
I	69 23.7	95 21.8	35 30 W	89 36	0.60550	0.00410	0.60550	+ 0.00334	− 0.00238
II	70 25.2	96 18.0	45 40 E	34	.60750	395	.60750	+ 276	+ 283
III	70 42.1	96 15.0	120 0 E	52	*.60680*	*140*	*.60680*	− *070*	+ *121*
IV	70 55.9	96 21.0	101 30 W	38	.60630	285	.60630	− 057	− 279
1	68 26.9	95 49.0	44 0 E	89 15	0.60370	0.00755	—	+ 0.00543	+ 0.00524
2	68 28.4	96 18.2	2 50 E	—	—	900	—	+ 899	+ 044
3	68 42.2	95 30.7	35 15 E	—	—	645	—	+ 527	+ 372
4	68 48.1	95 55.5	4 10 W	—	—	655	—	+ 653	− 048
5	68 40.8	95 54.2	19 15 W	—	—	755	—	+ 713	− 198
6	68 39.8	95 52.6	13 10 W	—	—	730	—	+ 711	− 166
7	68 38.3	95 53.4	14 20 W	—	—	785	—	+ 761	− 194
8	68 38.3	95 59.2	17 50 W	—	—	715	—	+ 681	− 219
9	68 39.5	96 2.4	25 40 W	—	—	670	—	+ 604	− 290
10	68 37.7	95 52.7	10 15 W	—	—	780	—	+ 768	− 139
11	68 36.1	96 2.5	5 30 E	—	—	800	—	+ 796	+ 077
12	68 37.0	95 53.8	9 0 W	—	—	805	—	+ 795	− 126
13	68 37.2	95 51.2	2 55 W	—	—	725	—	+ 724	− 037

is the only one actually observed, while the values for H and F are interpolated and the value for D partly so. As to how the value for D has been obtained we may remark, that after Amundsen had taken an observation for longitude at St. III, he put up the magnetometer, intending to observe the declination. The station proved, however, to be situated too near the magnetic pole, and the directive force was therefore too weak to allow observation of either declination or deflection. The observation of inclination was, however, carried out, and for this element he got, as will be seen in Table CLXXV, $I = 89°52'$. From the following quotation from a note written by Amundsen in the observation book, we get a good hint regarding the most probable value of the declination at St. III. He writes: "Have not been able to obtain any observation with the cylinder magnet, as it could not be brought to take any defined position. It seemed, however, to tend towards a direction between SE and S." According to this note we may perhaps put the directly observed angle at something like 145° E. It is, however, clear that the torsional effect must have been very great in this case, and if we put the directive force at 100 γ, and $\theta = 43$ E, we get $\varrho = 23°16'$, from which the most probable value of the declination at St. III may be put at:

$$D = 145° - 23° = 122° \; E$$

In Table CLXXV we have finally put $D = 120°$ E and $H = 0.00140$ C. G. S.

Attempt to fix the Co-ordinates of the Magnetic Pole referred to 1904.5.

We have, on the basis of data given in Table CLXXV, made several attempts to draw magnetic charts for the neighbourhood of the pole, but with the far too few stations such charts have no importance, except as giving hints regarding the co-ordinates of the pole. Besides what can be seen from these charts, we shall draw attention to some facts regarding the values of the magnetic elements of the stations II, III and IV, which in our opinion give good hints regarding the geographical co-ordinates of the magnetic pole. At St. II the needle pointed towards NE. At St. IV so many measurements were taken that the variation of the measured elements could be distinctly followed in comparison with the corresponding variation at Gjøahavn, and this brought to light the interesting fact that the variations of D and H were contrary at the two stations. When H increased at Gjøahavn, it decreased at St. IV, when the declination tended towards west at Gjøahavn, it tended towards east at St. IV. From Table CLXXIII, p. 203, we see that a_X and a_Y have negative signs.

On considering what is stated above, we can scarcely doubt that the magnetic pole of 1904.5 lies to the south of St. IV, and this seems also to be the case with St. III, though in this case we have not any definite measurements except those for the inclination, which show that observations were taken in the immediate neighbourhood of the pole.

From what has been said it is clear that we cannot form a decided opinion as to the exact co-ordinates of the pole, but we may nevertheless be allowed to hazard the following assertions as more or less probable:

Amundsen's magnetic pole of 1904.5: $\varphi = 70°30'$ N
$\lambda = 95°30'$ W

For sake of comparison we may for the epoch 1831 give Ross's data:

James Ross's magnetic pole of 1831: $\varphi = 70°15'$ N
$\lambda = 96°45'$ W

If we may be allowed to judge from these data the mean pole point seems thus to have moved in the direction NE.

OBSERVATIONS
AND
HOURLY VALUES

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OBSERVATIONSS AND HOURLY VALUES

Explanation of the Headings and Signs used in the following tables.

As a common rule, year, day of the month, (local mean time) and Greenwich mean time, are stated in the first three (four) columns, respectively headed: Year, Date, (L. M. T.) and Gr. M. T.

The columns giving declination, horizontal intensity, total intensity and inclination are respectively headed: D, H, F and I. Sometimes D', H', F' and I' are used, meaning that the directly observed values must have a correction, usually placed between the two columns and headed "Corr."

Declination. D_W and D_E stand respectively for westerly and easterly declination. The magnets employed are stated under the heading Mgt. or M, with the signs explained on pp. 21—22.

Horizontal Intensity. In the column headed Defl. the designation of the magnet employed (used as deflector by deflection observations and oscillating needle by observations of oscillation) has been stated. In case of deflection, the bar distance used is stated under the same heading with the designations explained pp. 22—23. In some cases the magnet, used as suspended needle, is also added under the heading M.

Total Intensity. The needles used as inclination magnets are stated under the heading N, with use of the designation explained on page 23 and page 49. The deflector employed is stated under the heading Defl., with the sign explained on page 49.

Inclination. The headings and signs are the same as mentioned for total intensity.

Under the heading I or Instr., the instrument employed is stated with the abbreviations: Z, S, D, F.C. and E.I., standing for Zschau, Seemann, Dover, the Fox Circle and the Earth Inductor, respectively.

Under the heading Obs. the observers: Amundsen, Wiik and Godfred Hansen are stated under the initials A, W and H.

Hourly values: Regarding the tables giving hourly values for D, H and Z, during the stay at Gjøahavn and King Point, it may be especially pointed out, that the data given in these tables *are mean values* (cp. p, 108), *referring to the time interval between the two hourmarks.* Thus means data given under the headings 1, 2, etc. the hourly mean values for the intervals 0—1, 1—2, etc.

ABSOLUTE OBSERVATIONS AT GODHAVN AND BEECHEY ISLAND

Table I (p. 52). **Declination.** **Godhavn.**

Year	Date	L. M. T.	Gr. M. T.	D_W	I	Mgt.	Obs.
		h. m.	h. m.	° ′			
1903	July 27	16 30	20 4	62 39.6	S	D_m	W
»	» 27	17 15	20 49	62 16.5	»	»	»
»	» 27	18 21	21 55	62 47.7	»	C_{II}	»
»	» 27	21 5	24 39	62 16.9	Z	D_m	»
»	» 28	9 23	12 56	61 20.1	»	C_I	»
»	» 28	11 3	14 37	61 46.7	»	A_m	»

Table II (p. 52). **Deflection.** **Godhavn.**

Year	Date	L. M. T.	Gr. M. T.	H	I	Defl.		Obs.
		h. m.	h. m.	C. G. S.				
1903	July 28	13 38 14 17	17 11 17 51	0.08261 8283	Z	7	k_E	W
»	» 29	10 33 11 6	14 7 14 39	0.08271 8323	»	»	»	»
»	» 29	11 47 12 6	15 21 15 40	0.08207 8213	»	6	»	»
»	» 29	13 56 14 12	17 30 17 45	0.08274 8301	»	»	»	»
»	» 29	15 59 16 18	19 32 19 51	0.08149 8149	»	5	»	»
»	» 29	18 27 18 44	22 0 22 17	0.08214 8141	»	»	»	»
»	» 29	20 36 20 59	24 10 24 32	0.08262 8239	»	4	»	»
»	» 30	10 40 10 58	14 13 14 32	0.08255 8237	»	»	»	»
»	» 30	11 32 11 54	15 6 15 28	0.08268 8356	»	3	»	»
»	» 30	14 1 14 24	17 35 17 58	0.08436 8405	»	»	»	»
»	» 30	15 5 15 22	18 39 18 56	0.08189 8182	»	2	»	»
»	» 30	17 49 18 5	21 23 21 38	0.08186 8189	»	»	»	»
»	» 30	20 21 20 53	23 55 24 27	0.07987 8171	S	II	»	»
»	» 30	21 23 21 50	24 57 25 23	0.08182 8163	»	»	»	»
»	» 31	11 53 12 7	15 27 15 41	0.08006 8062	»	I	»	»

Table III (p. 52). **Oscillation.** **Godhavn.**

Year	Date	L. M. T.	Gr. M. T.	*H*	I	M.	Obs.
		h. m.	h. m.	C. G. S.			
1903	July 28	17 7	20 40	0.08181	Z	7	W
		17 23	20 56	8196			
»	» 29	12 50	16 23	0.08215	»	6	»
		13 7	16 40	8191			
»	» 29	16 58	20 31	0.08157	»	5	»
		17 30	21 4	8209			
»	» 30	8 20	11 54	0.08111	»	4	»
		8 38	12 11	8168			
»	» 30	12 41	16 15	0.08146	»	3	»
		12 58	16 32	8155			
»	» 30	16 59	20 32	0.08261	»	2	»
		17 18	20 52	8246			
»	» 31	8 17	11 51	0.08350	S	II	»
		8 41	12 15	8368			

Table IV (p. 52). **Horizontal Intensity.** **Godhavn.**

Year	Date	L. M. T.	Gr. M. T.	*H*	kind	M	Obs.	Year	Date	L. M. T.	Gr. M. T.	*H*	kind	M	Obs.
		h. m.	h. m.	C. G. S.						h. m.	h. m.	C. G. S.			
1903	July 28	13 38	17 11	0.08261	d	7	W	1903	July 30	10 40	14 13	255	d	4	W
»	» 28	14 17	17 51	283	»	»	»	»	» 30	10 58	14 32	237	»	»	»
»	» 28	17 7	20 40	181	o	»	»	»	» 30	11 32	15 6	268	»	3	»
»	» 28	17 23	20 56	196	»	»	»	»	» 30	11 54	15 28	356	»	»	»
»	» 29	10 33	14 7	271	d	»	»	»	» 30	12 41	16 15	146	o	»	»
»	» 29	11 6	14 39	323	»	»	»	»	» 30	12 58	16 32	155	»	»	»
»	» 29	11 47	15 21	207	»	6	»	»	» 30	14 1	17 35	436	d	»	»
»	» 29	12 6	15 40	213	»	»	»	»	» 30	14 24	17 58	405	»	»	»
»	» 29	12 50	16 23	215	o	»	»	»	» 30	15 5	18 39	189	»	2	»
»	» 29	13 7	16 40	191	»	»	»	»	» 30	15 22	18 56	182	»	»	»
»	» 29	13 56	17 30	274	d	»	»	»	» 30	16 59	20 32	261	o	»	»
»	» 29	14 12	17 45	301	»	»	»	»	» 30	17 18	20 52	246	»	»	»
»	» 29	15 59	19 32	149	»	5	»	»	» 30	17 49	21 23	186	d	»	»
»	» 29	16 18	19 51	149	»	»	»	»	» 30	18 5	21 38	189	»	»	»
»	» 29	16 58	20 31	157	o	»	»	»	» 30	20 21	23 55	(987)*	»	II	»
»	» 29	17 30	21 4	209	»	»	»	»	» 30	20 53	24 27	171	»	»	»
»	» 29	18 27	22 0	214	d	»	»	»	» 30	21 23	24 57	182	»	»	»
»	» 29	18 44	22 17	141	»	»	»	»	» 30	21 50	25 23**	163	»	»	»
»	» 29	20 36	24 10	262	»	4	»	»	» 31	8 17	11 51	350	o	»	»
»	» 29	20 59	24 32	239	»	»	»	»	» 31	8 41	12 15	368	»	»	»
»	» 30	8 20	11 54	111	o	»	»	»	» 31	11 53	15 27	066	d	I	»
»	» 30	8 38	12 11	168	»	»	»	»	» 31	12 7	15 41	062	»	»	»

* means 0.07987. ** means $1^h\ 23^m$ next day.

Table V (p. 53). **Inclination.** **Godhavn.**

Year	Date	L. M. T.	Gr. M.T.	I'	Corr.	I	Inst.	M	Obs.
		h. m.	h. m.	° '	'	° '			
1903	July 29	10 59	14 33	81 46.2	0.0	81 46.2	D	II	A
»	» 29	11 44	15 18	42.2	0.0	42.2	»	I	»
»	» 30	10 21	13 55	48.7	5.0	42.7	F	A	»

Table VI (p. 53). **Total Intensity.** **Godhavn.**

Year	Date	L. M. T.	Gr. M. T.	F	Defl.	N	Obs.
		h. m.	h. m.	C. G. S.			
1903	July 30	12 10	15 43	0.58300	N & S	A	A
»	» 30	13 0	16 33	0.57530	»	B	»

Table VII (p. 54). **Declination.** **Beechey.**

Year	Date	L. M. T.	Gr. M. T.	D_W	I	N	Obs.
		h. m.	h. m.	° '			
1903	Aug. 23	15 32	21 25	128 2.2	Z	C_I	W
»	» 24	6 28	12 21	41.2	»	»	»
»	» 24	7 20	13 13	41.7	»	»	»

Table VIII (p. 54). **Inclination.** **Beechey.**

Year	Date	L. M. T.	Gr. M. T.	I	Inst	N	Obs.
		h. m.	h. m.	° '			
1903	July 23	18 45	24 38	88 17.5	D	I	A
»	» 23	19 30	25 23	22.6	»	II	»

Table IX (p. 54). **Total Intensity.** **Beechey.**

Year	Date	L. M. T.	Gr. M. T.	F	Defl.	N	Obs.
		h. m.	h. m.	C. G. S.			
1903	July 23	16 50	22 43	0.58975	N&S	B	A

ABSOLUTE OBSERVATIONS AT GJØAHAVN

Table XV (p. 61). **Declination.** **Gjøahavn.**

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′		
1903	Nov. 11	4 54 p	1 27 W	3 40 W	5 7 W	Z	W
»	» 16	7 3 »	3 34 »	4 10 »	7 44 »	»	»
»	» 20	6 49 »	5 22 »	4 16 »	9 48 »	»	A
»	» 24	5 39 »	4 34 »	3 47 »	8 21 »	»	»
»	» 28	5 21 »	4 36 »	4 5 »	8 41 »	»	»
»	Dec. 1	5 37 »	5 29 »	4 7 »	9 36 »	»	»
»	» 3	5 56 »	1 15 »	4 28 »	5 43 »	»	»
»	» 7	10 16 »	5 55 »	4 2 »	9 57 »	»	»
»	» 8	5 31 »	0 23 »	4 21 »	4 44 »	»	»
»	» 9	4 58 »	3 28 »	3 59 »	7 27 »	»	»
»	» 9	10 56 »	4 58 »	3 55 »	8 53 »	»	»
»	» 10	5 49 »	2 12 »	3 57 »	6 9 »	»	»
»	» 12	3 21 »	3 32 »	3 55 »	7 27 »	»	»
»	» 15	9 32 »	5 13 »	4 13 »	9 26 »	»	»
»	» 16	6 30 »	5 11 »	4 11 »	9 22 »	»	»
»	» 17	6 21 »	2 55 »	3 58 »	6 53 »	»	»
»	» 18	4 38 »	3 52 »	3 56 »	7 48 »	»	»
»	» 19	4 54 »	4 23 »	3 57 »	8 20 »	»	»
»	» 21	4 21 »	3 10 »	3 50 »	7 0 »	»	»
»	» 23	4 21 »	3 50 »	3 56 »	7 46 »	»	»
»	» 29	4 38 »	4 1 »	3 55 »	7 56 »	»	»
»	» 31	4 50 »	4 9 »	4 13 »	8 22 »	»	»
1904	Jan. 4	6 34 »	1 25 »	3 57 »	5 22 »	»	»
»	» 6	4 26 »	3 25 »	3 56 »	7 21 »	»	»
»	» 7	4 12 »	4 18 »	3 57 »	8 15 »	»	»
»	» 9	4 29 »	3 5 »	3 54 »	6 59 »	»	»
»	» 13	4 11 »	3 47 »	4 4 »	7 51 »	»	»
»	» 15	6 20 »	6 50 »	3 49 »	10 39 »	»	»
»	» 17	9 53 »	7 19 »	1 7 »	8 26 »	S	»
»	» 17	10 35 »	7 34 »	1 9 »	8 43 »	»	»
»	» 25	10 29 »	9 12 »	0 0 »	9 12 »	Z	»
»	» 26	4 20 »	8 30 »	0 0 »	8 30 »	»	»
»	» 26	5 12 »	7 39 »	1 9 »	8 48 »	S	»
»	» 28	6 12 »	4 41 »	1 47 »	6 28 »	Z	»
»	Feb. 4	9 54 »	11 56 »	1 41 »	13 37 »	»	»
»	» 5	10 34 »	10 40 »	1 39 »	12 18 »	»	»

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	°		
1904	Feb. 5	11 34 p	11 7 W	1 37 W	12 44 W	Z	A
»	» 6	11 59 »	9 9 »	1 33 »	10 41 »	»	»
»	» 17	10 24 »	9 9 »	1 34 »	10 43 »	»	»
»	» 17	11 7 »	7 14 »	1 33 »	8 47 »	»	»
»	» 17	11 50 »	7 41 »	1 32 »	9 13 »	»	»
»	» 18	0 22 a	8 18 »	1 32 »	9 50 »	»	W
»	» 19	5 20 p	8 4 »	1 35 »	9 37 »	»	A
»	» 19	5 24 »	7 29 »	1 9 »	8 38 »	S	»
»	» 19	10 28 »	7 39 »	1 33 »	9 11 »	Z	»
»	» 20	4 55 »	6 53 »	1 8 »	8 1 »	S	»
»	» 20	4 36 »	7 5 »	1 32 »	8 38 »	Z	»
»	» 23	5 25 »	2 22 »	1 34 »	3 56 »	S	W
»	March 7	4 56 »	6 55 »	1 35 »	8 30 »	»	»
»	» 7	5 31 »	4 52 »	1 36 »	6 28 »	»	»
»	» 8	9 53 »	7 33 »	1 31 »	9 4 »	»	»
»	» 10	5 9 »	6 59 »	1 36 »	8 35 »	»	»
»	» 11	5 24 »	6 24 »	1 28 »	7 52 »	»	»
»	» 12	5 29 »	5 54 »	1 27 »	7 21 »	»	»
»	» 14	4 28 »	6 20 »	1 34 »	7 54 »	»	»
»	» 15	4 34 »	6 46 »	1 33 »	8 19 »	»	»
»	» 16	5 4 »	4 32 »	1 34 »	6 6 »	»	»
»	» 17	4 35 »	5 43 »	1 30 »	7 13 »	»	»
»	» 18	7 9 »	6 7 »	3 41 »	9 48 »	Z	»
»	» 22	7 6 »	5 51 »	3 16 »	9 7 »	»	»
»	» 23	6 59 »	2 31 »	3 12 »	5 43 »	»	»
»	» 29	5 15 »	0 24 »	3 3 »	3 28 »	»	»
»	April 12	5 49 »	1 21 »	1 0 »	2 21 »	S	»
»	» 14	5 35 »	0 52 »	1 4 »	1 56 »	»	»
»	» 15	5 11 »	5 9 »	1 5 »	6 14 »	»	»
»	» 18	7 20 »	4 27 E	1 34 »	2 53 E	»	»
»	» 20	5 49 »	5 54 W	1 7 »	7 1 W	»	»
»	» 20	11 53 »	8 49 »	1 8 »	9 57 »	»	»
»	» 23	5 47 »	2 40 »	1 2 »	3 42 »	»	»
»	» 29	5 33 »	0 14 »	1 3 »	1 17 »	»	»
»	May 5	5 12 »	6 43 »	1 10 »	7 53 »	»	»
»	» 6	7 12 »	7 51 »	1 16 »	9 7 »	»	»

Table XV (continued). **Declination.** **Gjøahavn.**

Year	Date	Gr. M. T.	D'	ϱ	D	I	Obs.	Year	Date	Gr. M. T.	D'	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′					h. m.	° ′	° ′	° ′		
1904	May 7	7 13 p	5 8 W	1 9 W	6 17 W	S	W	1904	July 20	10 0 p	0 17 W	2 28 W	2 45 W	S	W
»	» 10	5 12 »	5 54 »	1 11 »	7 5 »	»	»	»	» 21	4 0 »	3 37 »	2 9 »	6 6 »	»	»
»	» 11	5 10 »	7 37 »	1 11 »	8 48 »	»	»	»	» 22	3 55 »	2 56 »	2 51 »	5 47 »	»	»
»	» 12	7 18 »	0 53 »	1 10 »	2 3 »	»	»	»	» 23	4 5 »	0 6 E	3 19 »	3 13 »	»	»
»	» 14	7 13 »	10 11 »	1 31 »	11 42 »	»	»	»	» 25	9 56 »	5 9 W	0 32 »	5 41 »	»	»
»	» 20	0 15 a	9 55 »	1 11 »	11 6 »	»	»	»	» 30	4 33 »	0 22 »	0 29 »	0 51 »	»	»
»	» 20	5 20 p	2 8 E	1 2 »	1 6 E	»	»	»	Aug. 1	4 21 »	5 44 »	0 35 »	6 19 »	»	»
»	» 20	11 47 »	7 54 W	1 8 »	9 2 W	»	»	»	» 2	4 14 »	0 50 »	0 35 »	1 25 »	»	»
»	» 21	5 20 »	2 12 »	1 9 »	3 21 »	»	»	»	» 3	4 1 »	7 56 E	0 28 »	7 28 E	»	»
»	» 26	11 57 »	7 16 »	1 8 »	8 24 »	»	»	»	» 4	3 56 »	8 13 »	0 30 »	7 43 »	»	»
»	» 30	4 14 »	1 11 »	3 42 »	4 52 »	Z	»	»	» 5	5 32 »	4 51 W	0 31 »	5 22 W	»	»
»	» 31	4 3 »	2 19 »	3 36 »	5 55 »	»	»	»	» 6	4 10 »	5 24 »	0 39 »	6 4 »	»	»
»	June 1	4 15 »	0 24 E	3 35 »	3 9 »	»	»	»	» 8	4 4 »	4 44 »	0 36 »	5 20 »	»	»
»	» 2	11 21 »	8 53 W	1 8 »	10 1 »	S	»	»	» 9	4 10 »	7 24 »	0 34 »	7 58 »	»	»
»	» 3	5 9 »	3 56 »	1 13 »	5 9 »	»	»	»	» 10	4 0 »	4 93 »	0 34 »	4 23 »	»	»
»	» 8	5 30 »	6 19 »	1 11 »	7 30 »	»	»	»	» 11	4 37 »	2 33 »	0 33 »	3 6 »	»	»
»	» 11	0 3 a	5 49 »	1 4 »	6 53 »	»	»	»	» 12	4 23 »	4 52 »	0 32 »	5 24 »	»	»
»	» 11	11 41 p	8 51 »	1 9 »	10 0 »	»	»	»	» 13	3 52 »	1 42 E	0 30 »	1 12 E	»	»
»	» 13	11 59 »	6 57 »	1 7 »	8 4 »	»	»	»	» 15	4 46 »	1 25 W	0 28 »	1 52 W	»	»
»	» 20	4 53 »	3 35 »	1 3 »	4 38 »	»	»	»	» 17	4 31 »	3 29 E	0 35 »	2 54 E	»	»
»	» 21	5 31 »	2 14 E	1 2 »	1 12 E	»	»	»	» 18	5 0 »	4 20 W	0 38 »	458 W	»	»
»	» 22	11 39 »	6 0 W	1 7 »	7 7 W	»	»	»	» 19	4 32 »	5 20 »	0 32 »	5 33 »	»	»
»	» 24	5 11 »	5 13 »	1 14 »	6 27 »	»	»	»	» 20	5 11 »	7 4 »	0 35 »	7 39 »	»	»
»	» 25	4 32 »	1 39 »	1 3 »	2 42 »	»	»	»	» 22	4 18 »	5 17 »	0 34 »	5 51 »	»	»
»	» 29	5 1 »	6 53 »	1 16 »	8 9 »	»	»	»	» 23	4 5 »	5 32 »	0 36 »	6 8 »	»	»
»	» 30	4 16 »	3 23 »	1 22 »	4 45 »	»	»	»	» 24	4 4 »	4 30 »	0 37 »	5 7 »	»	»
»	July 1	10 7 »	8 33 »	1 12 »	9 45 »	»	»	»	» 25	4 3 »	6 15 »	0 35 »	6 50 »	»	»
»	» 2	4 26 »	4 4 »	1 4 »	5 8 »	»	»	»	» 26	4 12 »	6 6 »	0 36 »	6 42 »	»	»
»	» 4	4 30 »	2 42 »	1 5 »	3 47 »	»	»	»	» 27	4 57 »	4 28 »	0 32 »	5 1 »	»	»
»	» 5	4 35 »	5 52 »	1 10 »	7 2 »	»	»	»	» 29	4 4 »	2 22 »	0 33 »	2 55 »	»	»
»	» 6	4 19 »	6 24 E	1 6 »	5 18 E	»	»	»	» 30	4 6 »	2 22 E	0 30 »	1 52 E	»	»
»	» 7	4 10 »	0 42 W	1 10 »	1 52 W	»	»	»	» 31	3 44 »	2 45 W	0 42 »	3 27 W	Z	»
»	» 8	6 56 »	0 3 »	1 11 »	1 14 »	»	»	»	Sept. 2	4 12 »	2 15 »	0 43 »	2 58 »	»	»
»	» 9	4 13 »	1 56 »	2 49 »	4 45 »	»	»	»	» 3	5 51 »	0 14 »	0 43 »	0 57 »	»	»
»	» 12	4 33 »	4 31 »	2 36 »	7 7 »	»	»	»	» 5	4 4 »	0 57 »	0 41 »	1 38 »	»	»
»	» 13	4 27 »	2 23 E	2 26 »	0 3 »	»	»	»	» 6	3 59 »	2 17 »	0 40 »	2 57 »	»	»
»	» 14	4 10 »	7 29 »	2 8 »	5 21 E	»	»	»	» 7	4 0 »	5 16 »	0 50 »	6 6 »	»	»
»	» 15	10 4 »	1 40 W	2 53 »	4 33 W	»	»	»	» 8	4 21 »	0 49 »	0 12 »	1 1 »	S	»
»	» 16	5 43 »	3 31 »	2 29 »	6 0 »	»	»	»	» 9	4 2 »	0 32 »	0 13 »	0 45 »	»	»
»	» 17	5 49 »	2 5 »	2 22 »	4 27 »	»	»	»	» 10	4 41 »	3 22 »	0 13 »	3 35 »	»	»
»	» 19	4 41 »	0 32 »	2 15 »	2 47 »	»	»	»	» 12	4 11 »	0 47 »	0 13 »	1 0 »	»	»

Table XV (continued). **Declination.** **Gjøahavn.**

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′		
1904	Sept. 13	3 56 p	6 45 W	0 14 W	7 W	S	W
»	» 14	4 2 »	4 35 »	0 13 »	4 46 »	»	»
»	» 15	3 56 »	0 8 »	0 12 »	0 20 »	»	»
»	» 16	4 7 »	3 19 »	0 17 »	3 36 »	»	»
»	» 17	4 5 »	6 18 »	0 14 »	6 32 »	»	»
»	» 19	5 33 »	8 16 »	0 14 »	8 30 »	»	»
»	» 20	4 2 »	5 45 »	0 14 »	5 59 »	»	»
»	» 21	4 1 »	4 42 »	0 14 »	4 56 »	»	»
»	» 22	4 12 »	4 37 »	0 14 »	4 51 »	»	»
»	» 23	9 54 »	7 9 »	0 14 »	7 23 »	»	»
»	» 26	3 57 »	0 54 »	0 14 »	1 8 »	»	»
»	» 27	3 47 »	5 40 »	0 14 »	5 54 »	»	»
»	» 28	3 42 »	6 22 »	0 15 »	6 37 »	»	»
»	» 29	4 0 »	4 35 »	0 13 »	4 48 »	»	»
»	» 30	3 48 »	5 16 »	0 14 »	5 30 »	»	»
»	Oct. 1	3 54 »	1 30 »	0 13 »	1 43 »	»	»
»	» 3	3 51 »	5 45 »	0 14 »	5 59 »	»	»
»	» 4	3 58 »	6 22 »	0 14 »	6 36 »	»	»
»	» 5	3 55 »	5 3 »	0 15 »	5 18 »	»	»
»	» 6	4 3 »	6 41 »	0 14 »	6 55 »	»	»
»	» 7	4 8 »	2 44 E	0 14 »	2 30 E	»	»
»	» 8	5 19 »	1 47 »	0 14 »	1 33 »	»	»
»	» 10	3 55 »	6 37 W	0 14 »	6 51 W	»	»
»	» 11	3 52 »	6 5 »	0 27 »	6 32 »	»	»
»	» 12	3 58 »	2 59 »	0 28 »	3 27 »	»	»
»	» 13	4 40 »	1 6 E	0 24 »	0 42 E	»	»
»	» 14	4 1 »	1 55 W	0 27 »	2 22 W	»	»
»	» 15	3 55 »	4 45 »	0 27 »	5 12 »	»	»
»	» 17	3 56 »	5 48 »	0 29 »	6 17 »	»	»
»	» 18	3 56 »	6 3 »	0 28 »	6 31 »	»	»
»	» 19	3 46 »	5 58 »	0 29 »	6 27 »	»	»
»	» 20	3 39 »	4 15 »	0 27 »	4 42 »	»	»
»	» 21	4 14 »	3 38 E	0 30 »	3 8 E	»	»
»	» 22	4 1 »	0 13 »	0 28 »	0 15 W	»	»
»	» 24	5 34 »	3 10 W	0 26 »	3 36 »	»	»
»	» 25	5 14 »	2 28 »	0 26 »	2 53 »	»	»
»	» 26	5 20 »	6 26 »	0 27 »	6 53 »	»	»
»	» 27	4 0 »	0 49 E	0 28 »	0 21 E	»	»
»	» 28	5 53 »	0 25 W	0 27 »	0 52 W	»	»
»	» 29	4 28 »	3 22 »	0 26 »	3 47 »	»	»
»	» 31	4 3 »	5 9 »	0 28 »	5 37 »	»	»
»	Nov. 1	4 0 »	0 57 E	0 26 »	0 31 E	»	»
»	» 2	4 22 »	3 14 W	0 33 »	3 47 W	»	»
»	» 3	4 1 »	6 9 »	0 29 »	6 38 »	»	»
»	» 5	4 16 »	1 11 E	0 31 »	0 40 E	»	»
»	» 7	4 5 »	2 32 W	0 26 »	2 58 W	»	»
»	» 8	3 54 »	2 34 »	0 26 »	3 0 »	»	»

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′		
1904	Nov. 9	4 7 p	3 51 W	0 27 W	4 18 W	S	W
»	» 10	3 55 »	5 51 »	0 27 »	6 18 »	»	»
»	» 12	3 47 »	6 20 »	0 28 »	6 48 »	»	»
»	» 14	4 34 »	6 12 »	0 29 »	6 41 »	»	»
»	» 15	4 46 »	6 58 »	0 28 »	7 26 »	»	A
»	» 17	5 25 »	5 1 »	0 33 »	5 34 »	»	»
»	» 17	11 41 »	7 52 »	0 28 »	8 20 »	»	»
»	» 18	6 35 »	3 4 »	0 26 »	3 30 »	»	»
»	» 19	10 30 »	7 17 »	0 27 »	7 44 »	»	»
»	» 21	5 22 »	6 45 »	0 27 »	7 13 »	»	»
»	» 22	6 12 »	6 33 »	0 27 »	7 0 »	»	»
»	» 23	5 43 »	7 18 »	0 29 »	7 46 »	»	»
»	» 24	6 34 »	7 3 »	0 28 »	7 31 »	»	»
»	» 25	6 44 »	8 56 »	0 30 »	9 26 »	»	»
»	» 26	5 22 »	1 40 E	0 31 »	1 9 E	»	»
»	» 28	6 18 »	7 15 W	0 27 »	7 42 W	»	»
»	» 28	11 56 »	6 38 »	0 27 »	7 5 »	»	»
»	» 29	4 41 »	5 47 »	0 27 »	6 14 »	»	»
»	» 30	6 9 »	6 45 »	0 28 »	7 13 »	»	»
»	Dec. 1	4 37 »	0 7 E	0 27 »	0 20 »	»	»
»	» 1	11 55 »	7 27 W	0 27 »	7 54 »	»	»
»	» 2	6 43 »	3 40 »	0 28 »	4 8 »	»	»
»	» 2	11 49 »	7 8 »	0 27 »	7 35 »	»	»
»	» 3	0 14 a	7 14 »	0 27 »	7 41 »	»	»
»	» 3	4 45 p	3 29 »	0 29 »	3 58 »	»	»
»	» 3	5 32 »	5 2 »	0 27 »	5 29 »	»	»
»	» 3	6 23 »	9 47 »	0 30 »	10 17 »	»	»
»	» 5	6 16 »	3 40 »	0 29 »	4 9 »	»	»
»	» 6	0 2 a	9 54 »	0 28 »	10 22 »	»	»
»	» 6	6 21 p	6 53 »	0 27 »	7 20 »	»	»
»	» 6	11 46 »	6 57 »	0 27 »	7 24 »	»	»
»	» 7	6 6 »	6 46 »	0 27 »	7 13 »	»	»
»	» 7	11 47 »	6 59 »	0 27 »	7 26 »	»	»
»	» 8	4 22 »	5 4 »	0 27 »	5 31 »	»	»
»	» 8	11 42 »	6 56 »	0 27 »	7 23 »	»	»
»	» 9	4 37 »	5 10 »	0 29 »	5 39 »	»	»
»	» 9	5 17 »	6 52 »	0 29 »	7 21 »	»	»
»	» 9	10 37 »	6 45 »	0 27 »	7 12 »	»	»
»	» 10	6 7 »	6 37 »	0 29 »	7 6 »	»	»
»	» 12	4 32 »	5 4 »	0 27 »	5 31 »	»	»
»	» 13	0 7 a	7 19 »	0 27 »	7 46 »	»	»
»	» 13	6 12 p	6 45 »	0 28 »	7 12 »	»	»
»	» 14	0 17 a	6 24 »	0 27 »	6 51 »	»	»
»	» 14	6 22 p	2 33 »	0 31 »	3 4 »	»	»
»	» 14	10 48 »	8 53 »	0 29 »	9 22 »	»	»
»	» 15	4 38 »	3 33 »	0 27 »	4 0 »	»	»
»	» 15	5 18 »	2 47 »	0 27 »	3 13 »	»	»

Table XV (continued). **Declination.** **Gjøahavn.**

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′		
1904	Dec. 16	0 18 a	8 17 W	0 28 W	8 45 W	S	A
»	» 16	4 28 p	3 39 »	0 30 »	4 9 »	»	»
»	» 16	5 18 »	3 27 »	0 29 »	3 56 »	»	»
»	» 16	5 48 »	6 42 »	0 30 »	7 12 »	»	»
»	» 17	6 33 »	7 54 »	0 27 »	6 22 »	»	»
»	» 19	6 48 »	7 42 »	0 28 »	8 11 »	»	»
»	» 20	6 28 »	7 22 »	0 29 »	7 50 »	»	»
»	» 21	6 23 »	6 38 »	0 27 »	7 5 »	»	»
»	» 22	6 13 »	5 49 »	0 28 »	6 17 »	»	»
»	» 23	6 19 »	6 48 »	0 27 »	7 15 »	»	»
»	» 27	6 4 »	6 35 »	0 27 »	7 2 »	»	»
»	» 28	7 29 »	6 57 »	0 29 »	7 26 »	»	»
»	» 30	6 34 »	6 55 »	0 28 »	7 23 »	»	»
1905	Jan. 2	6 35 »	5 40 »	0 27 »	6 7 »	»	»
»	» 3	6 20 »	7 6 »	0 27 »	7 33 »	»	»
»	» 3	11 45 »	7 34 »	0 27 »	8 1 »	»	»
»	» 4	6 10 »	4 55 »	0 28 »	5 23 »	»	»
»	» 5	4 40 »	0 10 »	0 29 »	0 39 »	»	»
»	» 5	5 20 »	0 55 »	0 34 »	1 29 »	»	»
»	» 5	10 55 »	11 4 »	0 30 »	11 34 »	»	»
»	» 5	11 35 »	15 30 »	0 31 »	16 2 »	»	»
»	» 6	0 15 a	17 42 »	0 34 »	18 15 »	»	»
»	» 6	5 35 p	6 23 »	0 28 »	6 51 »	»	»
»	» 7	6 10 »	8 8 »	0 29 »	8 37 »	»	»
»	» 9	5 21 »	6 29 »	0 28 »	6 57 »	»	»
»	» 9	11 56 »	8 33 »	0 27 »	9 1 »	»	»
»	» 10	6 16 »	5 20 »	0 28 »	5 48 »	»	»
»	» 10	10 36 »	8 34 »	0 28 »	9 2 »	»	»
»	» 11	4 36 »	1 12 »	0 28 »	1 41 »	»	»
»	» 11	11 53 »	7 10 »	0 27 »	7 37 »	»	»
»	» 12	4 46 »	1 15 »	0 27 »	1 42 »	»	»
»	» 12	6 35 »	4 53 »	0 31 »	5 24 »	»	»
»	» 12	11 46 »	7 18 »	0 27 »	7 45 »	»	»
»	» 13	5 6 »	6 10 »	0 27 »	6 38 »	Z	»
»	» 13	6 11 »	6 28 »	0 28 »	6 56 »	S	»
»	» 13	6 55 »	5 27 »	0 28 »	5 55 »	»	»
»	» 14	5 46 »	0 2 »	0 30 »	0 32 »	»	»
»	» 14	6 6 »	1 24 »	0 30 »	1 54 »	»	»
»	» 14	6 26 »	3 14 »	0 31 »	3 45 »	»	»
»	» 16	5 52 »	6 10 »	0 28 »	6 38 »	»	»
»	» 16	6 37 »	4 59 »	0 28 »	5 27 »	»	»
»	» 16	10 47 »	7 55 »	0 28 »	8 22 »	»	»
»	» 16	11 27 »	8 18 »	0 28 »	8 46 »	»	»
»	» 18	4 57 »	5 10 »	0 27 »	5 38 »	»	»
»	» 18	10 47 »	7 29 »	0 28 »	7 57 »	»	»
»	» 18	11 27 »	7 28 »	0 27 »	7 55 »	»	»
»	» 19	0 9 a	7 49 »	0 27 »	8 17 »		»

Year	Date	Gr. M. T.	D′	ϱ	D	I	Obs.
		h. m.	° ′	° ′	° ′		
1905	Jan. 19	5 7 p	3 13 W	0 29 W	3 42 W	S	A
»	» 19	5 47 »	2 46 »	0 30 »	3 16 »	»	»
»	» 20	4 27 »	5 20 »	0 28 »	5 48 »	»	»
»	» 20	10 22 »	9 9 »	0 29 »	9 38 »	»	»
»	» 20	11 2 »	8 10 »	0 29 »	8 38 »	»	»
»	» 23	4 7 »	6 19 »	0 27 »	6 46 »	»	»
»	» 28	5 58 »	2 29 »	0 26 »	2 55 »	»	H
»	Feb. 3	10 16 »	8 14 »	0 28 »	8 42 »	»	A
»	» 3	11 21 »	12 33 »	0 34 »	13 7 »	»	»
»	» 4	5 39 »	0 43 E	0 26 »	0 17 E	»	»
»	» 6	6 34 »	5 58 W	0 30 »	6 28 W	»	»
»	» 14	9 40 »	9 56 »	0 0 »	9 56 »	»	»
»	» 15	4 38 p	2 44 W	0 0 »	2 44 W	»	»
»	» 15	5 22 »	3 29 »	0 0 »	3 29 »	»	»
»	» 16	5 13 »	1 33 »	0 0 »	1 33 »	»	»
»	March 3	4 43 »	1 28 »	0 0 »	1 28 »	»	H
»	» 7	10 20 »	10 25 »	0 51 »	9 34 »	»	A
»	» 8	4 28 »	4 7 E	0 42 »	4 49 E	»	»
»	» 10	4 36 »	0 29 W	0 44 »	0 15 »	»	»
»	» 22	4 35 »	3 47 »	0 45 »	3 2 W	»	»
»	» 22	5 15 »	3 53 »	0 46 »	3 7 »	»	»
»	» 23	5 30 »	3 40 »	0 42 »	2 58 »	»	»
»	» 30	4 39 »	1 34 »	0 42 »	0 52 »	»	»
»	» 30	10 54 »	7 27 »	0 46 »	6 41 »	»	»
»	» 31	4 49 »	2 4 »	0 44 »	1 20 »	»	»
»	April 3	4 44 »	2 13 »	0 24 »	2 37 »	»	»
»	» 3	11 44 »	9 20 »	0 25 »	9 45 »	»	»
»	» 4	4 44 »	4 19 »	0 31 »	4 50 »	»	W
»	» 4	11 44 »	9 34 »	0 25 »	9 59 »	»	»
»	May 1	9 47 »	12 33 »	0 28 »	13 1 »	»	»
»	» 2	10 5 »	8 51 »	0 25 »	9 16 »	»	»
»	» 4	3 59 »	4 38 »	0 25 »	5 3 »	»	»
»	» 4	11 31 »	9 0 »	0 24 »	9 24 »	»	»
»	» 5	10 5 »	6 39 »	0 24 »	7 3 »	»	»
»	» 8	5 18 »	0 44 »	0 26 »	1 10 »	»	»
»	» 8	11 10 »	7 22 »	0 23 »	7 45 »	»	»
»	» 9	3 49 »	3 46 »	0 23 »	4 9 »	»	»
»	» 24	4 14 »	0 14 E	0 21 »	0 7 »	»	»
»	» 24	4 40 »	0 15 »	0 21 »	0 6 »	»	»
»	» 25	6 44 »	6 3 W	0 24 »	6 27 »	»	»
»	» 25	11 34 »	6 50 »	0 24 »	7 14 »	»	»
»	» 26	6 42 »	4 41 E	0 28 »	4 13 E	»	»
»	» 26	11 28 »	13 18 W	0 26 »	12 44 W	»	»
»	» 29	6 56 »	2 32 »	0 21 »	2 53 »	»	»
»	» 30	6 50 »	1 34 E	0 21 »	1 33 E	»	»
»	» 30	11 30 »	11 14 W	0 26 »	11 40 W	»	»

Table XXXII (p. 74). **Horizontal Intensity. (Deflection).** **Gjøahavn.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1903	Nov. 13	6 15 p	0.00733 730	Z	5	W	1904	April 23	10 59 »	0.00779 768	S	I	W
»	» 16	4 27 »	0.00730 731	»	»	»	»	» 29	11 10 p	0.00672 750	»	I	»
»	» 23	6 8 »	0.00710 721	»	4	»	»	May 4	11 33 »	0.00687 707	»	II	»
»	» 24	7 8 »	0.00751 771	»	»	A	»	» 10	10 56 »	0.00753 774	»	I	»
»	Dec. 1	7 34 »	0.00686 684	»	»	»	»	» 11	10 51 »	0.00795 811	»	II	»
»	» 11	5 47 »	0.00739 746	»	»	»	»	» 13	10 55 »	0.00600 662	»	I	»
»	» 11	10 43 »	0.00750 743	»	5	»	»	» 19	10 3 »	0.00684 726	»	II	»
»	» 15	5 59 »	0.00698 662	»	»	»	»	» 20	10 47 »	0.00745 741	»	I	»
»	» 17	11 34 »	0.00744 748	»	8	»	»	» 26	10 57 »	0.00732 738	»	II	»
»	» 18	10 27 »	0.00741 738	»	9	»	»	» 27	11 13 »	0.00647 645	»	I	»
»	» 21	11 3 »	0.00740 743	»	8	»	»	» 31	5 2 »	0.00670 674	Z	9	»
»	» 29	10 21 »	0.00695 716	»	9	»	»	» 31	9 49 »	0.00633 642	»	8	»
1904	Jan. 5	5 49 »	0.00737 769	»	4	»	»	» 31	11 28 »	0.00655 665	»	5	»
»	» 16	5 22 »	0.00626 670	»	8	»	»	June 8	10 45 »	0.00718 736	S	II	»
»	» 19	6 10 »	0.00746 750	S	I	»	»	» 9	5 0 »	0.00785 785	»	I	»
»	» 19	11 18 »	0.00745 748	»	II	»	»	» 11	10 52 »	0.00767 770	»	II	»
»	» 29	5 42 »	0.00760 785	Z	8	»	»	» 13	5 13 »	0.00723 731	»	I	»
»	» 30	10 35 »	0.00661 729	»	9	»	»	» 13	10 59 »	0.00775 768	»	II	»
»	Feb. 8	10 58 »	0.00704 729	»	8	»	»	» 20	5 53 »	0.00807 806	»	I	»
»	» 9	10 46 »	0.00705 706	»	9	»	»	» 20	11 6 »	0.00774 785	»	II	»
»	» 15	5 34 »	0.00816 746	»	8	»	»	» 22	5 27 »	0.00701 701	»	»	»
»	» 15	10 49 »	0.00724 710	»	9	»	»	» 24	11 10 »	0.00798 784	»	I	»
»	March 8	11 1 »	0.00734 747	S	II	W	»	» 25	5 19 »	0.00740 730	»	II	»
»	» 10	10 48 »	0.00746 748	»	I	»	»	» 30	5 10 »	0.00643 661	»	I	»
»	» 12	10 51 »	0.00738 738	»	II	»	»	July 2	5 25 »	0.00819 805	»	II	»
»	» 15	9 56 »	0.00758 756	»	»	»	»	» 4	5 13 »	0.00783 764	»	I	»
»	» 17	10 6 »	0.00763 765	Z	4	»	»	» 4	10 52 »	0.00681 759	»	II	»
»	» 18	4 46 »	0.00724 664	»	5	»	»	» 5	10 30 »	0.00787 787	»	I	»
»	» 18	10 1 »	0.00713 715	»	8	»	»	» 8	11 2 »	0.00732 756	»	»	»
»	» 22	5 0 »	0.00750 766	»	9	»	»	» 9	10 57 »	0.00656 644	»	II	»
»	April 12	10 56 »	0.00832 817	S	I	»	»	» 12	10 20 »	0.00748 775	»	I	»
»	» 14	11 11 »	0.00765 755	»	II	»	»	» 14	5 23 »	0.00948 1072	»	II	»
»	» 18	11 9 »	0.00644 691	»	I	»	»	» 15	11 7 »	0.00665 690	»	I	»
»	» 20	10 55 »	0.00738 754	»	II	»	»	» 20	10 53 »	0.00813 790	»	»	»

Table XXXII (continued). **Horizontal Intensity.** **Gjøahavn.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1904	July 21	0 9 a	0.00825 811	S	II	W	1904	Sep. 8	10 13 p	0.00690 705	S	I	W
»	» 21	9 59 p	0.00768 769	»	I	»	»	» 9	4 56 »	0.00831 845	»	II	»
»	» 22	4 51 »	0.00723 727	»	II	»	»	» 9	10 44 »	0.00796 786	»	I	»
»	» 22	10 16 »	0.00754 758	»	I	»	»	» 10	10 1 »	0.00754 764	»	II	»
»	» 30	10 56 »	0.00707 695	»	I	»	»	» 12	5 6 »	0.00775 739	»	I	»
»	Aug. 2	10 7 »	0.00769 819	»	II	»	»	» 12	10 34 »	0.00757 777	»	II	»
»	» 4	10 42 »	0.00733 758	»	I	»	»	» 13	4 43 »	0.00758 743	»	I	»
»	» 5	10 17 »	0.00693 698	»	II	»	»	» 13	9 44 »	0.00769 764	»	II	»
»	» 6	10 47 »	0.00698 736	»	I	»	»	» 14	4 51 »	0.00794 781	»	I	»
»	» 8	10 32 »	0.00757 775	»	II	»	»	» 15	10 24 »	0.00755 760	»	II	»
»	» 9	5 3 »	0.00721 691	»	I	»	»	» 17	4 55 »	0.00698 691	»	I	»
»	» 9	10 21 »	0.00802 785	»	II	»	»	» 19	9 37 »	0.00759 763	»	II	»
»	» 11	10 47 »	0.00788 783	»	I	»	»	» 19	10 33 »	0.00759 754	»	I	»
»	» 12	10 29 »	0.00785 766	»	II	»	»	» 20	5 7 »	0.00703 724	»	II	»
»	» 13	10 11 »	0.00747 760	»	I	»	»	» 20	10 54 »	0.00744 768	»	I	»
»	» 15	10 40 »	0.00817 802	»	II	»	»	» 21	4 54 »	0.00769 768	»	II	»
»	» 17	10 42 »	0.00800 743	»	I	»	»	» 21	10 19 »	0.00736 718	»	I	»
»	» 18	10 37 »	0.00691 692	»	II	»	»	» 22	10 58 »	0.00766 723	»	II	»
»	» 19	10 53 »	0.00786 779	»	I	»	»	» 26	9 45 »	0.00768 774	»	I	»
»	» 19	11 33 »	0.00781 767	»	II	»	»	» 27	4 36 »	0.00746 744	»	II	»
»	» 20	10 43 »	0.00700 707	»	I	»	»	» 27	10 0 »	0.00781 782	»	I	»
»	» 22	10 59 »	0.00693 720	»	II	»	»	» 28	9 31 »	0.00774 779	»	II	»
»	» 23	4 8 »	0.00654 694	»	I	»	»	» 29	9 37 »	0.00732 730	»	I	»
»	» 23	10 5 »	0.00718 739	»	II	»	»	» 30	9 56 »	0.00758 773	»	II	»
»	» 24	5 3 »	0.00665 687	»	I	»	»	Oct. 1	4 51 »	0.00806 836	»	I	»
»	» 25	5 1 »	0.00686 687	»	II	»	»	» 1	10 6 »	0.00775 741	»	II	»
»	» 25	11 3 »	0.00777 769	»	I	»	»	» 3	9 53 »	0.00784 790	»	I	»
»	» 26	5 6 »	0.00687 689	»	II	»	»	» 4	4 45 »	0.00753 760	»	II	»
»	» 27	10 30 »	0.00772 772	»	I	»	»	» 4	10 8 »	0.00749 742	»	I	»
»	» 27	10 50 »	0.00866 —	»	II	»	»	» 5	9 30 »	0.00773 759	»	II	»
»	» 30	5 9 »	0.00736 768	»	I	»	»	» 6	10 16 »	0.00734 728	»	I	»
»	Sep. 5	4 59 »	0.00807 777	Z	9	»	»	» 11	4 39 »	0.00748 743	»	II	»
»	» 5	10 37 »	0.00797 758	»	8	»	»	» 11	10 20 »	0.00751 758	»	I	»
»	» 6	4 58 »	0.00803 785	»	5	»	»	» 12	4 50 »	0.00753 748	»	II	»

Table XXXII (continued). **Horizontal Intensity.** **Gjøahavn.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1904	Oct. 12	9 38 p	0.00767 770	S	I	W	1904	Dec. 2	5 29 »	0.00768 744	S	II	A
»	» 14	4 47 »	0.00738 728	»	II	»	»	» 2	10 52 p	0.00766 769	»	I	»
»	» 15	4 40 »	0.00754 746	»	I	»	»	» 5	5 10 »	0.00719 698	»	II	»
»	» 18	4 41 »	0.00730 726	»	II	»	»	» 5	10 58 »	0.00719 727	»	I	»
»	» 18	9 34 »	0.00751 749	»	I	»	»	» 6	5 11 »	0.00777 758	»	II	»
»	» 19	4 34 »	0.00707 698	»	II	»	»	» 6	10 50 »	0.00755 755	»	I	»
»	» 20	4 23 »	0.00740 740	»	I	»	»	» 7	5 5 »	0.00744 750	»	»	»
»	» 20	9 14 »	0.00725 725	»	II	»	»	» 7	10 54 »	0.00766 767	»	II	»
»	» 24	9 15 »	0.00756 771	»	I	»	»	» 8	5 17 »	0.00762 771	»	I	»
»	» 27	9 38 »	0.00753 762	»	II	»	»	» 8	10 40 »	0.00768 769	»	II	»
»	» 28	4 58 »	0.00782 786	»	I	»	»	» 9	11 37 »	0.00761 772	»	I	»
»	» 31	4 48 »	0.00767 812	»	II	»	»	» 10	4 59 »	0.00721 727	»	II	»
»	Nov. 1	4 53 »	0.00798 806	»	I	»	»	» 12	5 46 »	0.00733 725	»	I	»
»	» 3	5 2 »	0.00743 757	»	II	»	»	» 12	10 53 »	0.00761 763	»	II	»
»	» 7	4 55 »	0.00800 763	»	I	»	»	» 13	11 11 »	0.00755 757	»	I	»
»	» 8	4 49 »	0.00768 766	»	II	»	»	» 14	11 52 »	0.00698 696	»	II	»
»	» 9	4 59 »	0.00777 795	»	I	»	»	» 15	11 7 »	0.00704 745	»	I	»
»	» 10	4 51 »	0.00751 750	»	II	»	»	» 17	5 30 »	0.00778 746	»	I	»
»	» 12	4 35 »	0.00732 739	»	I	»	»	» 19	5 29 »	0.00746 732	»	II	»
»	» 15	10 59 »	0.00700 715	»	I	A	»	» 20	5 18 »	0.00734 679	»	I	»
»	» 16	5 46 »	0.00759 778	»	II	»	»	» 21	5 9 »	0.00735 746	»	II	»
»	» 17	3 44 »	0.00715 725	»	I	»	»	» 22	5 11 »	0.00734 735	»	I	»
»	» 18	5 22 »	0.00764 756	»	II	»	»	» 23	5 9 »	0.00749 749	»	II	»
»	» 18	10 45 »	0.00758 760	»	I	»	»	» 28	6 22 »	0.00757 744	»	II	»
»	» 21	10 50 »	0.00752 759	»	II	»	1905	Jan. 3	5 11 »	0.00742 749	»	I	»
»	» 22	10 43 »	0.00757 743	»	I	»	»	» 3	10 46 »	0.00758 758	»	II	»
»	» 23	10 58 »	0.00748 747	»	II	»	»	» 4	5 1 »	0.00651 679	»	I	»
»	» 24	5 36 »	0.00734 754	»	I	»	»	» 4	10 37 »	0.00685 709	»	II	»
»	» 25	5 34 »	0.00724 702	»	II	»	»	» 7	4 59 »	0.00712 681	»	I	»
»	» 28	10 57 »	0.00754 762	»	I	»	»	» 9	10 58 »	0.00755 758	»	II	»
»	» 29	6 2 »	0.00764 794	»	II	»	»	» 10	5 12 »	0.00720 719	»	I	»
»	» 30	5 6 »	0.00738 747	»	I	»	»	» 11	5 50 »	0.00685 669	»	I	»
»	» 30	10 59 »	0.00704 702	»	II	»	»	» 11	11 10 »	0.00766 765	»	II	»
	Dec. 1	10 57 »	0.00763 760	»	I	»	»	» 12	10 46 »	0.00735 754	»	I	»

Table XXXII (continued). **Horizontal Intensity.** **Gjøahavn.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1905	Jan. 13	10 49 p	0.00746 751	S	II	A	1905	March 15	4 51 p	0.00731 663	S	I	A
»	» 17	5 20 »	0.00664 675	»	II	»	»	» 21	5 4 »	0.00749 761	»	II	»
»	» 18	5 58 »	0.00750 745	»	I	»	»	» 23	4 34 »	0.00840 823	»	I	»
»	» 19	10 48 »	0.00698 712	»	II	»	»	April 4	10 29 »	0.00658 678	»	I	W
»	» 20	5 40 »	0.00736 734	»	I	»	»	» 28	10 28 »	0.00713 733	»	I	»
»	» 31	5 28 »	0.00733 754	»	I	H	»	May 5	10 27 »	0.00728 759	»	II	»
»	Feb. 1	5 35 »	0.00741 740	»	II	»	»	» 8	10 26 »	0.00725 733	»	I	»
»	» 3	5 4 »	0.00863 699	»	I	»	»	» 24	10 45 »	0.00767 781	»	II	»
»	» 4	10 39 »	0.00678 724	»	II	A	»	» 25	4 34 »	0.00687 732	»	I	»
»	» 6	5 18 »	0.00644 705	»	I	»	»	» 25	10 32 »	0.00801 729	»	II	»
»	» 6	10 35 »	0.00725 736	»	II	»	»	» 26	4 42 »	0.00630 636	»	I	»
»	» 15	9 46 »	0.00658 665	»	I	»	»	» 26	10 29 »	0.00623 649	»	II	»
»	» 16	9 52 »	0.00698 653	»	II	»	»	» 29	4 43 »	0.00688 640	»	I	»
»	March 3	7 50 »	0.00648 671	»	II	H	»	» 30	4 50 »	0.00716 791	»	II	»
»	» 8	5 14 »	0.00751 —	»	I	A	»	» 30	10 25 »	0.00672 664	»	I	»
»	» 10	5 17 »	0.00732 —	»	II	»	»	» 31	4 15 »	0.00652 636	»	II	»

HOURLY VALUES OF RECORDS FROM REGISTER INSTRUMENTS AT GJØAHAVN NOV. 1903 TO MAY 1905.

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November 1903.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn·
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	30.5	**85.0**	27.1	14.3	21.6	7.5	**-1.9**	-1.5	-1.2	-1.5	*-0.9*	*-0.1*	*0.7*	*1.6*	*2.4*	*3.2*	*4.4*	*6.0*	*5.9*	11.0	13.9	12.8	15.3	17.9	11.4	88.5	1 24 a	**-12.2**	2 1 a	100.7	2
2	12.8	12.2	12.0	10.4	11.6	12.5	16.6	**40.1**	11.5	9.8	7.6	6.8	5.6	1.9	0.0	3.3	**-0.8**	*3.4*	*5.6*	*10.5*	11.6	15.3	11.3	10.3	10.8	**125.9**	7 6 a	- 4.5	4 20 p	**130.4**	2
3	11.4	16.2	18.8	18.5	11.6	12.2	12.5	16.6	9.6	8.1	5.1	6.7	6.3	7.1	7.0	*4.5*	*12.4*	*7.7*	*5.0*	8.8	17.7	**20.5**	14.2	12.8	11.3	47.3	7 15 a	- 6.3	6 40 p	53.6	2
4	12.5	11.4	12.0	12.0	12.0	11.9	11.7	**36.2**	11.3	9.5	7.5	8.6	**5.9**	7.3	6.9	8.2	6.6	6.2	*9.4*	11.2	11.2	17.5	28.4	21.8	**12.4**	74.6	7 23 a	- 2.3	5 53 p	76.9	2
5	**23.7**	13.5	12.2	14.0	13.7	11.1	10.5	10.8	10.5	10.1	10.1	8.2	6.6	7.5	5.7	6.1	**5.6**	8.4	*12.0*	14.8	13.2	12.5	11.7	11.4	11.0	28.5	0 44 a	1.7	3 45 p	26.8	0
6	11.7	10.6	10.8	11.1	10.8	11.0	10.8	9.7	9.7	8.3	6.2	7.3	7.6	7.3	5.1	**3.5**	7.1	*7.6*	*10.1*	10.4	11.1	11.5	12.5	**12.7**	9.4	16.6	10 39 p	2.6	3 23 p	14.0	0
7	13.5	**18.5**	10.7	9.3	10.3	10.7	11.2	13.9	11.9	8.8	8.8	8.4	8.0	8.3	6.8	5.2	4.0	*3.5*	*5.5*	7.9	9.7	10.1	11.3	13.5	9.6	21.7	1 11 a	2.6	4 47 p	19.1	0
8	11.3	11.0	11.9	12.1	11.7	11.5	10.0	9.1	9.3	8.6	8.7	8.7	8.6	8.6	8.4	5.6	5.4	*4.3*	*3.5*	4.8	8.4	11.2	**13.2**	12.4	9.1	16.2	10 57 p	0.5	6 26 p	15.7	0
9	10.1	10.7	10.6	9.9	9.6	9.2	9.2	9.1	8.1	7.9	8.1	8.6	8.7	8.9	8.6	7.6	6.1	*5.7*	*2.6*	6.6	12.6	13.6	12.1	**16.9**	9.2	20.2	11 57 p	0.8	6 39 p	19.4	0
10	14.9	16.0	16.3	14.6	12.8	10.8	8.0	8.0	6.5	6.5	5.4	4.2	2.1	2.4	2.1	**-2.1**	2.6	6.3	*7.2*	8.6	12.0	16.8	18.4	**20.4**	9.2	30.6	11 17 p	-10.5	3 24 p	41.1	1
11	11.6	10.0	10.2	10.7	18.4	**26.0**	12.8	10.7	7.9	6.6	6.7	6.1	6.5	**3.4**	4.2	5.6	4.5	4.4	*4.9*	9.5	13.6	14.0	11.6	11.9	9.7	35.2	5 18 a	- 0.2	5 45 p	35.4	0
12	13.3	13.2	12.3	11.7	12.5	13.4	**13.7**	9.5	9.5	8.2	6.2	7.3	6.0	**4.0**	4.5	6.8	4.5	*8.7*	*8.6*	7.5	10.0	10.8	10.9	10.6	9.3	47.1	5 57 a	- 0.1	4 30 p	47.2	2
13	10.4	10.2	11.1	10.5	12.9	**14.1**	**14.1**	10.3	8.8	8.2	8.5	8.0	7.0	7.3	6.0	5.5	**4.2**	5.1	*6.8*	9.8	11.3	10.4	10.4	9.9	9.2	20.3	6 23 a	3.1	5 45 p	17.2	0
14	9.8	9.6	10.1	10.6	**11.3**	10.6	9.5	9.3	9.1	8.7	8.2	8.6	8.3	8.7	8.2	8.0	6.9	**5.6**	*7.2*	7.5	8.6	9.2	9.7	10.2	8.9	11.8	4 8 a	4.3	5 4 p	7.5	2
15	9.9	9.4	9.8	10.2	11.4	**11.7**	9.8	9.1	8.6	8.4	8.7	8.8	8.6	8.7	**8.5**	8.7	8.9	*9.1*	*8.7*	8.4	*8.7*	8.9	9.2	9.7	9.2	12.7	5 7 a	7.1	3 19 p	5.6	2
16	9.6	9.6	9.9	9.9	9.5	9.1	9.1	8.9	8.9	9.0	9.0	8.6	7.7	6.9	5.5	**4.4**	5.5	6.7	*7.8*	9.1	11.3	11.1	12.5	**12.9**	8.9	13.9	11 6 p	3.6	3 23 p	10.3	1
17	14.0	14.5	13.4	14.7	**14.8**	11.3	9.4	9.9	9.4	6.2	6.9	9.0	6.0	6.3	8.0	6.4	6.2	6.2	*2.6*	5.8	9.2	13.0	9.5	10.6	9.3	16.2	2 58 a	1.3	6 0 p	14.9	0
18	11.4	12.7	14.4	15.5	16.0	14.2	12.1	10.3	9.4	9.1	7.5	6.3	7.4	4.0	**3.4**	5.1	4.9	5.3	*13.3*	7.8	10.4	13.6	15.6	**23.0**	10.5	28.6	11 15 p	- 1.4	5 47 p	30.0	0
19	20.1	**34.1**	32.1	19.1	11.9	10.0	9.0	7.5	7.5	8.0	8.5	8.1	8.0	7.0	6.3	4.8	7.1	5.9	**3.5**	5.6	8.8	11.5	10.1	9.4	11.0	36.6	2 12 a	- 0.5	5 48 p	37.1	0
20	8.9	9.0	9.1	9.8	9.4	9.4	9.1	8.9	8.9	8.8	9.0	8.9	8.9	8.9	8.9	8.5	**8.0**	9.5	*10.1*	10.8	12.0	**13.5**	12.8	11.9	9.7	14.7	0 0 p	6.6	4 59 p	8.1	2
21	18.6	**20.0**	18.0	16.2	13.4	10.9	9.4	8.4	7.9	7.8	7.4	7.9	8.3	7.9	7.7	7.4	**7.0**	7.8	*10.4*	10.1	9.1	9.1	12.1	15.8	10.8	22.3	1 19 a	5.5	5 45 p	16.8	0
22	**16.5**	16.1	**16.5**	14.2	12.1	10.4	10.1	6.1	5.3	9.2	7.0	**4.9**	5.2	6.6	7.0	5.3	5.3	9.0	**9.4**	6.7	12.1	14.3	12.2	9.9	9.6	21.0	9 36 a	1.3	4 12 p	19.7	0
23	10.1	9.8	9.4	9.2	10.3	11.1	9.5	9.3	8.1	6.9	6.5	4.6	**3.4**	**3.4**	3.5	5.5	9.7	9.1	*8.8*	9.3	9.2	**12.0**	11.1	11.0	**8.4**	12.1	4 56 a	2.4	3 23 p	9.7	1
24	10.2	**11.6**	11.0	10.8	10.4	10.0	9.3	8.8	8.8	7.4	6.4	**6.2**	7.8	7.8	7.6	7.3	7.6	*8.1*	*9.0*	7.5	8.7	9.6	9.7	9.7	8.8	13.6	1 38 a	5.3	11 30 a	8.3	2
25	9.5	10.2	9.8	9.7	10.0	10.1	10.2	10.3	8.6	8.9	8.7	8.4	7.5	**6.9**	7.5	7.5	7.4	8.5	*8.7*	8.2	9.4	9.7	10.2	**10.9**	9.0	11.2	7 11 a	6.1	1 33 p	5.1	2
26	10.4	10.0	9.8	10.3	10.4	10.2	10.2	9.7	8.8	7.3	8.4	8.9	8.7	9.1	8.7	8.0	**5.9**	6.0	*8.6*	11.3	10.1	**11.7**	11.3	10.2	9.3	13.3	9 23 p	1.9	4 3 p	11.4	1
27	9.7	10.5	9.7	9.0	9.5	9.2	9.6	9.6	9.8	9.2	8.5	8.6	8.4	8.1	8.0	8.7	8.9	*8.9*	*7.0*	10.4	**10.7**	10.3	9.8	9.4	9.2	**10.9**	1 20 p	6.2	6 26 p	**4.7**	2
28	9.3	8.9	8.8	8.8	8.9	8.9	8.9	8.9	8.8	8.8	8.7	8.7	8.9	8.9	8.7	**8.3**	8.5	8.7	*9.9*	9.7	10.6	10.7	**12.0**	10.7	9.2	13.1	10 4 p	**7.7**	3 52 p	5.4	2
29	11.7	13.3	12.4	12.1	**13.6**	12.1	9.5	8.6	8.6	8.6	8.7	8.9	8.6	8.7	8.7	**8.3**	8.6	8.6	*9.4*	9.4	9.4	10.2	10.7	11.4	10.0	14.3	4 49 a	6.3	4 41 p	8.0	2
30	11.8	**12.1**	10.4	9.5	9.6	9.1	9.0	9.2	9.0	8.6	8.6	**6.2**	6.9	7.6	8.4	8.6	8.4	*7.0*	*7.4*	8.7	8.8	8.8	9.1	8.8	8.8	12.7	1 20 a	4.4	11 44 a	8.3	2
Mean 1	13.0	**15.3**	13.0	12.0	12.1	11.3	10.1	11.2	8.6	8.0	7.5	7.3	6.9	6.7	6.4	**6.1**	6.4	6.9	7.6	8.9	10.8	12.1	12.3	12.6	9.7	28.4		1.4		27.0	
» 2	12.0	**12.1**	11.7	11.6	11.4	10.9	10.3	9.8	9.0	8.4	7.9	7.8	7.5	7.4	7.1	**6.7**	7.0	7.3	8.0	8.7	10.5	11.5	11.4	11.9	9.5						
» 3	**12.0**	**12.0**	11.8	11.6	11.3	10.9	10.3	9.7	9.0	8.4	8.0	7.7	7.5	7.3	7.1	**6.8**	7.0	7.4	8.0	9.0	10.3	11.2	11.6	11.8							

December 1903. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	8.1	8.5	8.7	8.7	8.5	7.8	8.0	7.9	7.9	7.7	5.4	4.4	6.7	6.8	6.4	5.4	4.8	8.2	8.5	9.0	10.4	9.3	8.1	7.0	7.6	12.7	8 27 p	3.1	4 8 p	9.6	0
2	11.4	13.6	14.7	16.9	15.9	13.0	13.2	10.8	8.5	7.8	5.4	3.2	4.8	4.8	5.9	7.2	7.2	9.2	8.9	8.8	9.5	9.7	8.2	8.5	9.5	17.3	4 8 a	2.0	11 2 a	15.3	0
3	8.5	9.3	11.7	14.9	12.8	11.7	11.4	9.6	8.1	6.9	7.3	7.6	7.5	7.8	7.5	7.0	6.9	5.4	6.2	7.9	9.9	10.1	9.8	9.4	9.0	16.6	3 24 a	2.7	5 8 p	13.9	0
4	9.3	10.3	10.3	11.0	11.9	10.6	8.9	8.6	8.6	7.5	6.0	5.1	4.4	3.8	3.0	2.5	1.8	0.9	1.6	7.4	11.2	7.6	7.9	9.3	7.0	12.4	4 35 a	−10.2	5 37 p	22.6	2
5	11.2	10.4	8.0	7.9	7.9	8.2	8.2	7.6	7.7	6.8	2.4	3.3	3.6	3.7	3.2	2.2	1.2	4.1	5.6	7.5	11.2	8.4	8.4	9.3	6.6	11.9	0 1 a	−2.1	4 41 p	14.0	0
6	9.7	9.2	9.2	12.8	9.8	8.3	11.6	7.7	6.3	7.0	5.0	3.9	5.3	4.6	5.6	3.7	3.5	3.8	4.1	6.5	8.1	9.8	11.4	17.0	7.7	18.8	11 57 p	1.1	10 59 a	17.7	0
7	13.6	10.4	9.7	9.5	9.4	13.6	8.3	7.4	6.0	5.7	6.3	5.6	4.5	3.9	2.3	1.5	2.6	2.4	5.8	8.3	8.8	11.0	10.7	9.1	7.4	17.0	5 36 a	−2.4	5 5 p	19.4	1
8	7.9	8.8	8.8	9.2	16.4	13.2	11.1	14.8	7.5	6.7	5.8	5.4	4.5	4.5	6.5	4.3	3.6	4.8	5.9	9.6	9.2	9.7	9.6	10.0	8.2	33.1	7 11 a	1.1	3 55 p	32.0	2
9	9.6	8.7	9.5	17.6	11.6	10.5	11.6	12.1	8.4	6.6	7.2	6.8	5.5	5.2	6.3	6.9	6.8	7.4	8.8	9.0	8.4	8.8	8.5	8.7	8.8	41.1	3 47 a	2.7	1 13 p	38.4	2
10	9.7	9.2	9.3	8.9	9.0	8.9	8.6	8.3	8.5	8.8	8.0	8.0	7.6	7.9	7.4	7.5	7.8	6.8	7.6	7.0	8.4	9.4	8.8	8.9	8.3	10.8	11 56 p	5.0	6 9 p	5.8	1
11	9.3	10.4	10.8	9.7	9.3	8.9	8.7	8.3	8.2	7.9	8.0	7.6	6.5	7.0	7.2	7.3	8.2	8.4	8.7	8.2	8.1	9.0	7.9	8.0	8.4	12.9	2 17 a	5.9	0 53 p	7.0	0
12	8.1	8.2	8.5	8.7	8.5	8.7	8.7	8.5	8.0	8.0	7.9	7.9	7.7	7.6	7.6	6.9	7.1	7.6	8.1	8.8	9.3	9.3	9.1	9.3	8.3	9.4	5 40 a	6.3	4 54 p	3.1	2
13	9.4	9.5	9.7	9.9	9.8	8.1	8.1	8.0	7.6	6.7	5.8	5.7	2.6	−0.5	−2.4	−0.8	0.2	3.5	5.6	8.0	16.6	16.2	14.7	11.4	7.2	16.7	10 14 p	−2.9	2 26 p	19.6	1
14	9.8	9.2	8.9	10.8	11.7	11.5	8.5	8.2	8.4	8.5	8.3	8.6	8.8	8.8	8.1	8.0	9.2	8.5	9.5	9.4	9.3	9.6	9.2	9.3	9.2	17.5	5 20 a	6.2	3 42 p	11.3	0
15	9.2	9.2	9.6	9.5	9.7	10.2	9.2	8.9	8.7	8.3	8.7	8.2	8.3	6.4	4.8	5.4	6.7	5.0	6.4	7.9	9.2	10.1	8.8	9.5	8.2	10.7	5 12 a	2.8	4 55 p	7.9	0
16	9.3	10.0	9.5	8.5	8.2	8.7	9.4	8.9	8.7	9.0	8.2	8.2	7.9	7.9	8.2	8.3	7.9	6.5	9.6	10.3	9.7	10.3	9.3	9.4	8.8	11.3	7 18 p	3.8	5 12 p	7.5	0
17	9.4	9.1	9.2	9.2	8.9	9.2	9.1	9.2	8.7	7.7	8.0	8.0	8.0	8.2	8.5	8.8	9.1	7.9	6.9	8.8	8.5	8.8	8.8	8.7	8.6	9.6	7 37 a	6.3	6 45 p	3.3	2
18	8.5	8.5	8.7	8.5	8.9	8.9	8.8	8.8	8.8	8.7	8.5	8.7	8.7	8.4	7.7	7.6	8.3	8.8	9.7	9.2	9.0	8.8	8.4	8.5	8.6	11.0	6 2 p	6.9	4 9 p	4.1	2
19	8.4	8.5	8.4	8.4	8.7	8.5	8.9	8.7	8.7	8.3	8.2	8.2	8.1	8.0	7.6	8.0	8.4	8.4	8.0	8.4	8.6	8.5	9.3	11.8	8.5	13.4	11 29 p	6.8	2 40 p	6.6	0
20	10.2	9.8	10.1	9.1	9.8	9.6	7.6	8.7	7.5	5.0	4.6	5.3	3.6	−0.5	−1.5	2.6	4.4	7.8	6.2	9.0	9.8	10.7	9.4	11.7	7.1	13.2	11 33 p	−3.9	2 1 p	17.1	0
21	11.5	10.1	11.1	12.2	12.2	12.1	10.2	8.2	5.9	6.6	5.9	4.5	3.6	2.7	3.9	6.8	7.6	7.0	7.1	7.5	8.8	8.8	8.4	7.6	7.9	13.8	5 3 a	1.7	2 14 p	12.1	0
22	7.6	7.7	7.9	7.9	7.7	7.6	8.0	7.6	7.3	6.1	5.3	5.7	5.3	4.6	4.8	5.5	5.9	3.4	4.6	7.2	8.5	8.7	8.1	8.0	6.7	9.6	9 0 p	2.1	2 7 p	7.5	0
23	7.9	8.4	8.4	9.7	10.7	10.3	9.8	8.1	7.0	6.9	6.4	6.6	6.7	6.9	7.8	8.2	7.3	7.6	7.7	6.1	8.1	8.3	8.0	8.1	8.0	12.4	4 36 a	4.4	6 51 p	8.0	0
24	8.1	8.1	8.2	8.1	8.1	8.3	8.2	8.1	7.6	7.6	7.7	7.7	7.7	7.6	7.4	7.4	7.4	7.9	7.6	7.6	8.1	8.1	8.4	8.7	7.9	9.7	11 21 p	6.9	5 26 p	2.8	2
25	8.0	8.0	7.7	8.0	8.2	8.8	10.2	9.5	7.9	7.7	7.7	7.6	7.2	6.8	6.5	6.5	6.7	7.4	7.6	8.6	8.8	8.1	8.3	8.7	7.9	11.4	6 24 a	4.1	6 24 p	7.3	0
26	8.3	8.4	8.1	8.1	8.1	8.4	8.7	8.4	8.4	8.3	7.9	7.7	7.7	7.7	7.7	7.7	7.5	9.0	8.9	8.8	8.8	8.1	8.1	8.6	8.2	9.9	6 18 p	7.2	4 45 p	2.7	2
27	8.8	9.1	8.8	8.2	7.9	8.0	8.2	8.0	7.9	7.2	6.2	6.5	6.7	7.2	6.1	4.8	6.8	7.2	7.5	8.6	8.8	8.5	8.1	8.1	7.6	10.0	7 32 p	1.7	3 41 p	8.3	0
28	8.1	8.1	8.3	8.2	8.4	9.2	8.8	8.1	8.0	7.9	7.9	7.6	7.4	7.4	7.5	7.9	7.9	7.6	7.7	9.6	9.8	9.5	9.0	8.7	8.3	10.6	6 7 p	4.9	5 18 p	5.7	1
29	9.2	8.8	8.3	8.0	7.6	7.7	8.3	8.3	8.2	8.2	8.1	8.1	8.1	7.9	7.7	7.4	7.5	6.6	6.7	8.0	8.9	9.0	8.0	8.4	8.0	11.0	9 8 p	4.5	6 8 p	6.5	0
30	9.4	8.2	7.9	10.9	13.7	12.6	9.0	8.5	5.9	1.0	−0.5	−1.3	4.8	6.7	5.5	5.4	6.7	8.8	9.5	10.2	8.8	10.4	9.6	10.2	7.6	23.3	3 49 a	−3.9	11 27 a	27.2	2
31	13.2	20.3	24.1	23.8	19.6	19.5	11.8	5.6	8.0	7.3	6.7	6.7	7.4	7.0	6.0	5.3	5.3	5.9	4.6	8.6	8.2	9.4	8.8	9.3	10.5	28.0	5 30 a	0.5	6 28 p	27.5	2
Mean 1	9.4	9.5	9.7	10.4	10.3	10.0	9.3	8.7	7.8	7.2	6.6	6.4	6.4	6.0	5.8	5.9	6.2	6.6	7.1	8.4	9.3	9.4	9.0	9.3	8.1	15.1		2.4		12.7	
» 2	9.6	9.9	10.1	11.0	10.8	10.4	9.6	8.8	7.7	7.0	6.2	5.9	6.1	5.9	5.9	5.9	6.2	6.6	7.2	8.4	9.0	9.3	8.9	9.4	8.2						
» 3	9.6	9.9	10.2	10.7	10.7	10.3	9.6	8.7	7.8	7.0	6.3	6.0	6.0	6.0	5.9	6.0	6.2	6.7	7.3	8.2	8.9	9.1	9.1	9.3							

January 1904. **Table CVIII. — Hourly Values of Declination, West.** **Gjøahavn.**

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	9.9	12.0	10.8	14.1	14.1	54.0	23.2	12.1	9.3	6.2	4.6	3.0	4.6	3.9	4.1	2.0	1.6	3.9	7.6	11.0	8.8	9.7	10.4	9.3	10.4	117.7	5 53 a	0.3	4 17 p	117.4	2
2	9.8	9.3	9.7	13.9	19.6	11.3	10.1	9.7	7.6	5.9	7.6	7.6	7.8	6.4	3.8	2.9	3.8	2.6	4.1	9.9	11.1	10.0	9.7	9.4	8.5	36.0	4 3 a	0.2	5 17 p	35.8	0
3	9.7	10.7	9.7	8.6	9.2	9.5	10.0	8.1	7.9	6.0	3.8	5.4	5.6	6.4	4.7	3.3	2.5	3.6	5.8	7.6	8.8	10.6	10.2	11.4	7.5	11.5	6 8 a	−1.2	4 36 p	12.7	1
4	13.8	16.5	14.3	13.2	8.8	9.1	11.3	15.2	9.6	7.3	4.8	5.1	5.1	6.1	5.4	6.2	3.7	6.0	3.7	9.4	8.3	8.8	9.2	9.9	8.8	20.7	7 37 a	0.7	6 14 p	20.0	0
5	11.4	11.1	10.4	9.9	21.1	31.5	10.4	9.2	8.4	7.7	3.2	7.0	6.1	1.3	1.0	1.0	7.2	7.2	7.9	9.6	8.2	7.9	9.4	10.7	9.1	111.7	5 6 a	−3.6	3 35 p	115.3	2
6	12.4	11.1	10.4	11.1	23.2	10.4	8.5	8.1	6.2	5.3	6.9	7.3	7.0	6.2	5.8	6.1	7.5	7.5	8.8	10.1	10.0	9.4	9.4	9.0	9.1	54.1	4 15 a	2.3	4 30 p	51.8	2
7	8.8	8.5	8.7	8.5	8.4	8.3	8.3	8.3	8.3	8.4	7.4	4.7	6.1	7.4	7.3	7.7	7.7	7.9	8.2	9.0	8.0	8.4	8.1	8.5	8.0	9.1	4 16 p	3.6	11 21 a	5.5	2
8	8.7	10.2	8.6	7.8	8.2	8.4	8.4	8.3	8.3	8.3	8.3	8.0	7.9	7.7	7.5	5.9	7.9	7.3	6.9	8.3	8.4	8.2	7.9	8.2	8.1	11.6	1 42 a	3.3	3 56 p	8.3	2
9	8.2	8.2	8.0	8.1	8.1	8.2	8.4	8.3	8.1	8.1	8.2	8.3	8.2	8.5	8.6	8.5	7.2	6.0	5.6	8.6	6.5	7.7	13.5	19.9	8.6	27.0	11 17 p	1.5	6 51 p	25.5	0
10	14.9	13.3	14.1	14.5	14.7	14.4	14.2	13.9	12.8	11.7	11.2	11.0	11.0	10.9	10.7	10.4	10.3	10.4	11.3	12.4	16.0	10.4	6.5	8.5	12.1	21.4	7 24 p	−3.2	7 47 p	24.6	0
11	9.3	9.4	8.5	11.9	18.3	14.3	9.8	8.1	8.6	8.0	7.3	7.1	7.5	5.8	7.2	6.7	4.7	7.6	7.1	8.3	9.4	10.6	8.9	10.0	8.9	24.5	4 6 a	2.1	4 48 p	22.4	0
12	9.6	10.7	9.0	9.4	9.7	9.4	9.2	8.9	7.8	6.8	6.3	6.1	6.1	6.1	5.9	5.6	5.5	5.7	6.6	7.7	9.4	10.4	11.1	10.5	8.1	13.4	0 0 a	0.5	4 30 p	12.9	1
13	9.7	8.7	9.6	10.7	10.1	8.9	8.9	8.4	8.8	8.1	6.9	7.0	7.6	7.6	7.2	7.6	7.4	7.4	5.3	6.3	8.9	9.5	8.8	7.9	8.2	12.3	3 42 a	2.7	6 9 p	9.6	1
14	8.0	7.5	8.0	9.0	9.2	8.9	8.9	8.6	7.9	8.0	7.4	7.4	7.6	7.7	7.7	7.5	7.6	7.9	8.0	8.4	8.3	8.5	8.2	8.2	8.1	9.7	4 23 a	6.4	4 51 p	3.3	2
15	8.4	8.5	8.2	8.4	9.0	8.4	8.8	8.7	8.1	7.0	6.4	6.2	7.0	6.6	5.4	4.9	8.5	3.7	11.0	10.5	8.6	8.1	8.4	9.0	7.8	11.1	6 56 p	−2.2	5 26 p	13.3	1
16	10.7	16.5	20.7	17.3	17.2	14.6	13.4	10.4	7.1	5.9	3.2	2.0	−2.5	−2.6	−0.3	−1.2	0.2	3.9	9.9	7.3	10.5	9.7	8.5	8.7	8.0	27.9	1 54 a	−4.2	0 48 p	32.1	0
17	8.4	8.8	9.0	9.3	9.8	8.9	8.4	8.2	7.3	6.9	6.9	7.0	7.5	7.7	6.6	5.9	5.0	4.5	6.5	6.1	7.2	8.7	8.9	8.5	7.6	10.4	4 25 a	0.7	5 24 p	9.7	1
18	8.2	8.3	8.4	8.2	8.7	8.7	9.0	9.0	7.8	8.1	6.9	5.4	7.0	7.2	7.0	8.0	6.9	6.6	6.5	6.8	7.6	8.1	7.7	8.0	7.7	9.1	6 55 a	3.5	7 51 p	5.6	2
19	8.1	8.2	8.4	8.5	8.5	8.7	8.4	8.3	8.3	8.2	8.3	8.2	7.9	7.9	7.7	7.9	7.7	8.0	8.2	8.7	9.2	8.4	8.2	8.2	8.3	9.4	8 19 p	7.0	3 6 p	2.4	2
20	8.2	8.3	8.3	8.3	8.5	8.4	8.7	8.4	8.4	7.4	7.4	7.3	6.7	6.7	6.2	5.2	5.8	6.0	6.4	7.7	8.2	9.6	11.0	11.2	7.8	11.9	10 54 p	5.0	6 51 p	6.9	2
21	10.6	9.6	9.4	10.0	10.4	11.7	11.4	8.9	8.0	6.8	7.1	7.6	8.0	8.2	8.2	8.6	9.4	7.7	6.5	10.0	10.3	11.1	10.8	12.4	9.3	12.7	5 59 a	4.2	5 51 p	8.5	2
22	12.4	12.8	10.5	9.6	10.3	13.6	12.8	12.1	8.9	6.9	8.5	7.5	8.4	7.5	7.5	9.0	6.3	5.8	6.1	8.7	10.0	11.6	11.3	11.7	9.6	16.2	6 27 a	3.8	6 0 p	12.4	1
23	9.6	9.2	9.8	8.9	9.0	9.2	9.4	9.2	9.2	9.4	8.9	8.8	7.5	8.2	8.3	8.6	8.7	8.3	9.3	9.4	10.1	10.1	10.2	10.3	9.1	11.3	8 27 p	6.1	6 44 p	5.2	2
24	9.7	9.8	9.8	10.3	11.7	10.0	10.0	9.2	8.3	8.3	8.2	8.2	7.4	6.2	4.8	5.2	5.6	9.0	9.0	11.0	11.8	10.9	10.1	9.7	8.9	13.7	4 11 a	1.8	3 52 p	11.9	1
25	9.3	8.9	8.6	8.8	9.1	9.4	9.4	9.4	9.3	9.3	8.1	6.7	6.7	7.6	8.9	8.3	8.9	8.7	9.1	8.2	10.3	9.8	9.5	10.9	8.9	11.3	11 26 p	2.1	7 48 p	9.2	2
26	10.5	10.2	9.4	9.4	10.0	10.6	11.4	9.4	9.0	9.1	8.8	8.7	8.2	8.5	8.2	8.5	8.8	9.4	9.0	9.8	10.2	9.7	9.5	9.5	9.4	12.7	6 17 a	7.1	0 6 p	5.6	2
27	9.2	9.0	9.1	9.9	10.0	10.2	9.2	8.4	8.7	8.0	8.5	8.2	8.1	7.9	8.2	8.2	7.4	8.4	8.9	8.6	9.1	9.7	10.0	9.7	8.9	12.0	5 0 a	4.4	5 23 p	7.6	2
28	9.5	8.9	9.4	9.4	10.3	9.4	10.2	9.7	9.0	7.3	6.1	5.9	3.8	5.2	3.5	3.6	1.4	4.0	6.6	10.1	13.5	11.5	11.9	12.4	8.0	16.1	8 14 p	−2.6	4 15 p	18.7	0
29	12.7	13.3	15.3	16.4	13.5	11.2	8.9	21.2	6.9	5.6	0.6	5.9	8.1	7.5	8.1	6.6	7.1	7.3	6.8	6.9	7.3	10.3	10.7	18.3	9.9	118.3	7 3 a	−2.6	10 35 a	120.9	2
30	11.1	9.4	9.4	10.2	9.7	11.3	12.0	16.6	8.7	6.3	4.6	4.4	3.1	4.2	5.2	2.4	0.7	2.4	8.2	9.6	6.4	12.4	15.5	10.5	8.1	105.6	7 25 a	−5.6	4 51 p	111.2	2
31	9.6	10.3	11.0	9.7	10.3	10.3	12.4	13.8	9.2	8.1	7.9	7.4	5.4	8.5	8.0	4.9	3.3	7.6	5.4	10.7	11.6	10.2	9.6	10.2	9.0	21.6	7 1 a	−0.6	6 6 p	22.2	0
Mean 1	10.0	10.2	10.1	10.4	11.6	12.3	10.4	10.2	8.4	7.6	6.8	6.8	6.7	6.6	6.4	6.0	6.0	6.5	7.4	8.9	9.4	9.7	9.8	10.3	8.7	29.4		1.4		28.0	
» 2	9.9	9.9	9.7	10.0	11.0	10.0	9.8	10.2	8.3	7.5	6.9	6.9	6.9	7.1	6.7	6.4	6.1	6.5	7.1	8.8	9.3	9.8	10.0	10.7	8.6						
» 3	10.1	9.9	9.8	10.2	10.5	10.2	10.0	9.7	8.6	7.6	7.1	6.9	6.9	6.9	6.7	6.4	6.3	6.5	7.4	8.5	9.3	9.7	10.1	10.3							

February 1904.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	10.4	10.0	11.4	14.9	**13.4**	10.3	10.0	10.5	9.5	8.4	6.3	6.6	**2.9**	6.9	6.3	5.7	6.3	5.8	4.5	9.0	7.7	9.8	11.4	10.3	8.7	15.0	8 33 a	-0.5	6 12 p	15.5	0
2	9.7	9.7	**11.3**	10.0	10.3	9.9	10.0	11.2	9.5	6.4	5.5	6.7	4.5	4.9	4.8	**2.7**	5.2	9.2	2.3	6.6	9.6	10.8	10.0	9.3	**7.9**	12.9	7 40 a	-0.9	6 5 p	13.8	0
3	**11.8**	10.8	10.6	10.7	9.9	9.7	9.8	10.2	9.4	9.5	9.2	9.2	9.0	9.0	7.6	6.9	6.3	**4.5**	6.5	7.5	8.7	8.7	9.3	9.4	8.9	13.1	0 20 a	3.9	5 8 p	9.2	1
4	9.5	9.5	9.7	10.3	10.0	10.0	10.3	9.5	9.4	9.2	7.3	8.0	8.8	8.9	8.8	7.6	6.6	**4.0**	4.7	9.8	**18.0**	16.0	12.7	10.2	9.5	23.0	8 52 p	0.9	5 42 p	22.1	0
5	13.4	**18.5**	16.3	16.2	15.5	10.6	10.3	9.4	8.5	6.8	6.7	7.3	5.9	6.6	7.3	5.3	**3.1**	5.5	9.0	11.5	9.0	11.4	11.7	13.2	10.0	20.5	1 26 a	0.2	4 1 p	20.3	0
6	14.9	**23.8**	9.1	8.9	8.4	9.5	9.2	9.4	13.8	9.6	8.3	8.2	7.1	3.7	**3.6**	5.3	4.5	4.6	8.6	8.3	12.6	12.3	11.3	10.6	9.4	30.4	1 16 a	-1.6	5 25 p	32.0	0
7	11.2	11.0	12.2	12.5	9.6	9.7	10.0	9.4	8.0	9.3	8.0	7.1	5.5	6.5	4.7	3.6	**2.5**	3.1	5.7	11.2	13.6	13.6	**16.5**	11.8	9.0	17.2	10 38 a	0.4	4 40 p	16.8	0
8	10.3	9.8	10.3	10.4	11.7	10.4	7.9	9.7	9.9	7.8	8.0	6.8	5.3	3.7	6.1	**3.6**	5.2	4.7	7.4	8.0	9.8	11.6	**13.2**	12.4	8.5	13.3	6 39 a	-1.3	3 57 p	14.6	0
9	10.2	9.6	9.9	9.4	9.9	10.0	10.3	**21.2**	14.0	8.8	7.4	5.7	4.7	**2.3**	3.3	5.4	5.5	5.7	5.4	8.9	11.4	11.9	12.7	13.0	9.0	**115.9**	7 38 a	-0.7	2 3 p	**116.6**	2
10	11.2	11.6	12.7	11.7	13.3	10.6	10.2	12.6	15.3	**16.7**	10.8	7.9	8.4	8.2	7.3	7.2	4.9	**4.2**	6.2	8.0	12.6	12.0	11.5	11.6	10.3	38.0	8 45 a	3.1	4 55 p	34.9	1
11	10.2	9.5	9.4	11.1	11.6	11.3	10.0	9.2	9.1	8.8	8.7	9.0	8.7	8.3	8.7	7.3	**4.4**	4.5	5.1	6.6	10.0	12.0	**13.3**	11.8	9.1	14.6	10 21 p	2.9	4 27 p	11.7	0
12	12.0	11.9	9.7	9.5	9.8	9.4	9.7	10.0	9.8	8.7	8.5	8.3	8.8	8.7	8.9	8.9	8.7	8.3	7.3	**7.3**	9.6	12.5	**13.2**	12.1	9.7	13.8	11 57 p	4.9	6 51 p	8.9	1
13	11.5	10.8	11.9	12.3	12.5	10.8	9.5	**16.0**	10.1	8.4	8.0	8.0	8.3	7.7	5.6	4.7	**2.4**	3.8	7.1	9.7	9.7	11.3	11.3	9.8	9.2	45.2	7 29 a	-1.3	4 49 p	46.5	2
14	12.1	12.1	10.6	10.1	10.4	11.2	11.1	10.2	8.3	8.6	9.1	9.1	8.7	7.4	6.6	**3.7**	3.9	6.9	9.1	8.7	8.4	10.2	10.8	**13.1**	9.2	16.9	11 38 p	2.0	4 1 p	14.9	0
15	13.5	13.9	14.2	14.6	14.9	14.9	**15.1**	10.6	10.2	6.2	8.4	9.5	9.1	7.0	6.8	8.1	6.5	**5.6**	8.7	11.6	10.9	11.6	11.2	9.5	**10.5**	26.4	6 0 a	-2.9	4 56 p	29.3	0
16	9.8	9.0	10.4	11.2	**41.7**	21.6	18.3	13.1	9.8	7.4	5.6	5.4	6.3	6.3	5.6	**-3.1**	0.1	2.8	4.1	2.1	5.9	9.3	11.0	15.3	9.5	94.9	4 48 a	-5.6	3 28 p	100.5	2
17	12.3	9.9	**14.5**	10.6	11.1	10.6	9.4	8.8	8.7	8.9	7.7	6.6	5.4	4.2	5.8	5.7	**3.0**	3.8	5.6	9.1	11.3	12.0	9.8	9.2	8.5	17.0	2 34 a	1.8	4 23 p	15.2	0
18	9.1	**9.4**	8.9	8.9	8.8	8.7	8.6	8.3	8.4	8.8	7.1	7.3	6.9	6.2	4.9	3.6	4.1	**2.1**	2.5	6.1	4.9	6.5	8.7	**9.4**	7.0	**9.5**	9 29 a	-0.6	6 39 p	10.1	1
19	10.2	9.9	10.6	**12.1**	11.3	10.2	9.6	9.0	8.9	8.9	8.4	7.5	7.3	**5.3**	7.6	8.8	9.4	9.1	7.5	8.4	6.3	7.5	9.2	9.6	8.9	13.4	3 48 a	3.4	1 8 p	10.0	1
20	9.8	9.2	9.8	9.4	**12.9**	12.1	10.7	9.5	8.7	8.3	8.1	8.0	7.8	**7.6**	8.0	8.0	8.2	7.7	8.0	7.8	8.9	9.0	8.9	9.2	9.0	15.6	5 0 a	6.3	6 0 p	9.3	1
21	9.0	9.2	9.4	9.5	9.4	9.4	9.3	9.4	9.2	8.4	8.3	8.5	8.0	8.2	8.1	8.4	8.6	9.2	8.6	7.7	**7.5**	9.4	**11.0**	10.0	8.9	11.3	10 34 p	**6.4**	8 34 p	**4.9**	2
22	9.6	10.2	9.6	8.9	9.6	9.0	8.6	8.6	8.6	8.5	8.2	8.0	7.6	6.7	5.3	5.2	5.1	7.3	7.7	8.6	9.2	10.6	**11.9**	11.0	8.5	13.2	10 2 p	4.0	7 0 p	9.2	1
23	9.1	9.0	8.6	8.6	9.3	10.4	11.3	10.2	6.8	6.7	7.1	6.9	7.0	7.2	5.9	6.6	4.5	**3.0**	5.5	9.2	**12.3**	11.8	9.5	11.1	8.2	17.5	7 50 a	1.2	5 13 p	16.3	0
24	8.9	10.0	10.2	10.5	10.0	**10.8**	9.6	8.1	6.8	7.1	7.3	7.7	8.0	8.0	7.7	7.5	6.5	**3.8**	5.6	9.0	7.6	10.7	9.8	10.3	8.4	11.8	0 0 a	2.8	5 5 p	9.0	1
25	9.7	9.0	9.3	9.6	9.2	9.2	9.2	8.5	8.2	8.2	8.0	8.0	8.3	7.5	7.4	6.5	5.1	6.9	6.6	**3.2**	7.1	10.0	**10.4**	10.2	8.1	12.0	10 29 p	-2.0	7 18 p	14.0	0
26	9.5	9.5	10.0	**10.9**	10.2	9.8	10.1	8.7	8.7	8.0	8.4	7.8	7.2	8.6	8.7	8.2	**5.8**	6.4	8.5	9.8	9.1	8.2	8.8	9.5	8.8	11.2	3 40 a	0.7	5 0 p	10.5	1
27	9.9	9.4	8.8	8.6	9.5	10.4	10.0	9.9	9.1	**7.0**	7.8	8.1	8.3	8.0	8.0	7.5	7.6	7.9	8.8	10.2	**10.7**	9.7	8.9	9.0	8.9	11.6	5 45 a	6.0	9 40 a	5.6	2
28	9.0	9.2	9.3	8.9	9.0	**9.5**	8.9	9.0	8.9	7.8	8.4	8.2	8.1	8.5	8.4	8.2	8.1	8.6	8.6	7.4	8.6	**6.9**	7.4	7.8	8.4	9.7	5 35 a	4.5	7 35 p	5.2	2
29	8.9	8.6	9.0	10.2	10.7	**12.3**	10.3	9.7	9.4	8.3	7.6	6.9	7.5	7.2	6.0	4.9	**4.8**	5.1	5.3	**4.8**	5.9	7.5	7.8	8.0	7.8	15.1	5 33 a	3.8	4 9 p	11.3	0
Mean 1	10.6	10.8	10.6	10.7	**11.9**	10.8	10.2	10.3	9.5	8.5	7.9	7.7	7.2	6.9	6.7	5.9	**5.4**	5.7	6.6	8.1	9.5	10.5	10.8	10.6	8.9	23.4		1.4		22.0	
» 2	10.5	**10.8**	10.5	10.5	10.6	10.2	9.8	10.2	9.5	8.6	7.9	7.7	7.2	6.9	6.7	6.2	**5.6**	5.8	6.6	8.2	9.6	10.5	**10.8**	10.5	8.8						
» 3	**10.6**	**10.6**	**10.6**	**10.6**	10.5	10.2	10.0	9.9	9.4	8.6	8.0	7.6	7.2	6.9	6.6	6.2	**5.8**	5.9	6.8	8.2	9.5	10.4	**10.6**	**10.6**							

March 1904.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	7.5	7.7	7.8	7.9	8.0	8.0	7.8	7.3	6.8	6.7	6.5	6.5	6.3	5.9	5.5	5.4	5.8	6.6	7.3	8.3	12.2	9.9	8.3	9.7	7.5	13.4	7 52 p	4.4	7 29 p	9.0	0
2	9.7	9.2	9.1	9.2	9.6	10.4	11.8	11.1	9.1	7.8	7.5	7.5	7.7	8.1	6.8	4.1	5.1	8.2	7.4	5.1	8.1	9.8	10.4	11.8	8.5	12.3	6 48 a	3.0	3 17 p	9.3	0
3	10.3	9.3	9.5	9.7	11.0	11.9	13.2	9.6	8.8	8.6	8.0	7.4	6.9	6.9	6.2	5.7	4.4	5.0	8.8	9.4	8.4	10.6	9.5	9.9	8.7	16.2	6 6 a	1.8	4 50 p	14.4	0
4	14.0	13.8	17.5	15.6	10.3	10.7	10.4	9.4	7.9	7.7	7.2	7.0	6.2	4.6	5.1	0.9	2.8	6.2	5.9	9.0	13.4	10.9	11.1	12.9	9.2	19.4	0 44 a	-3.8	6 58 p	23.2	2
5	17.5	18.3	15.5	16.1	12.5	14.1	14.3	10.4	11.4	7.3	5.7	7.2	5.9	6.2	7.0	6.2	6.1	6.1	7.5	9.7	9.4	10.9	10.0	9.7	10.2	21.7	7 50 a	1.4	5 20 p	20.3	2
6	9.2	9.2	9.0	9.1	9.0	9.5	9.9	9.4	9.1	8.4	8.1	8.7	8.7	8.6	8.7	8.0	8.4	9.6	8.5	7.2	7.0	8.9	8.7	12.0	8.9	12.9	11 20 p	2.4	7 59 p	10.5	0
7	11.5	12.0	9.0	9.2	10.2	11.4	9.8	9.3	7.8	7.8	8.0	8.1	7.6	6.0	6.4	8.1	9.0	5.8	4.6	6.2	8.9	8.1	9.5	9.3	8.5	13.6	1 38 a	2.7	5 50 p	10.9	0
8	9.1	9.2	8.8	9.5	10.3	9.1	8.8	7.1	7.9	8.3	8.9	8.1	8.2	8.7	8.8	7.2	8.7	5.8	10.8	9.9	9.5	9.5	9.6	9.2	8.8	13.4	7 0 p	2.1	5 37 p	11.3	0
9	9.5	9.0	8.9	8.9	9.1	9.3	9.5	9.2	8.2	8.4	7.0	8.2	8.5	8.5	8.3	8.9	7.6	6.4	6.7	5.8	12.0	9.2	10.1	11.2	8.7	15.0	8 23 p	2.0	5 32 p	13.0	0
10	10.7	11.7	10.8	9.9	10.7	12.8	9.9	8.7	8.1	8.0	8.4	8.5	8.4	8.0	7.3	7.4	8.6	9.0	7.5	8.0	8.3	9.5	9.7	9.8	9.2	14.7	5 1 a	6.1	6 48 p	8.6	0
11	10.2	10.7	10.6	10.7	10.6	10.6	9.8	8.7	8.4	8.0	7.4	7.2	6.8	6.2	5.0	3.1	1.6	7.6	5.6	6.3	5.5	12.5	8.9	9.3	8.0	13.6	9 8 p	0.1	4 42 p	13.5	0
12	9.1	9.9	10.4	9.8	16.7	13.4	8.3	8.0	5.7	6.0	5.8	6.8	4.3	5.2	3.3	4.3	5.1	4.7	4.4	8.0	7.8	8.5	9.7	9.3	7.7	36.0	5 2 a	1.5	9 26 a	34.5	2
13	9.2	8.6	9.5	11.3	10.0	8.8	8.2	8.4	8.4	8.2	7.8	7.8	7.3	6.9	5.5	5.8	6.4	7.3	5.1	5.3	5.4	7.5	10.5	10.6	7.9	13.3	3 42 a	2.2	6 37 p	11.1	0
14	9.4	8.4	8.5	8.9	9.1	9.0	9.7	8.6	7.6	7.3	7.5	7.9	7.2	7.0	7.5	7.6	8.0	7.6	7.5	9.0	8.2	8.5	9.0	9.0	8.3	11.0	0 3 a	5.9	5 56 p	5.1	1
15	9.3	9.2	8.9	9.0	8.6	8.6	8.9	8.9	7.6	8.0	7.4	7.7	7.7	7.3	7.3	7.4	7.9	8.3	8.3	9.0	8.4	8.0	8.8	9.1	8.3	9.6	8 8 p	5.5	8 39 a	4.1	1
16	8.8	8.6	8.5	8.5	8.5	8.5	8.6	8.5	8.0	7.3	7.5	7.4	6.8	6.9	5.8	4.6	5.2	6.3	7.6	7.8	8.5	8.4	8.6	9.0	7.7	9.3	8 53 p	4.0	3 24 p	5.3	1
17	9.0	8.8	8.6	8.5	8.4	8.3	8.5	8.3	8.3	8.2	8.1	7.6	7.6	7.1	6.6	6.6	7.1	7.8	8.5	9.3	8.5	8.3	8.6	8.9	8.1	11.7	7 50 p	5.2	3 11 p	6.5	0
18	9.4	9.4	8.9	8.8	8.6	8.5	8.4	8.5	8.2	8.1	8.2	7.7	7.3	6.2	6.7	8.1	7.6	7.1	8.6	9.0	10.6	11.2	10.9	10.8	8.6	12.4	9 18 p	5.2	6 0 p	7.2	0
19	10.0	9.1	8.8	8.4	8.5	8.5	8.5	8.3	8.3	8.1	8.1	7.7	7.5	7.1	7.0	6.6	5.5	7.5	8.3	9.7	7.8	8.4	9.4	9.4	8.2	10.8	7 11 p	3.2	4 47 p	7.6	0
20	10.0	10.2	9.7	9.5	9.1	8.9	8.4	8.3	8.2	7.8	7.7	6.9	5.6	3.2	1.8	1.5	4.5	3.2	4.2	6.3	9.2	9.7	8.8	9.0	7.2	10.9	1 5 a	-0.5	3 33 p	11.4	0
21	9.1	9.0	8.9	8.8	8.9	8.4	8.3	8.4	8.3	7.8	7.3	7.3	7.5	7.3	6.7	6.8	5.7	6.4	9.0	9.5	8.8	8.6	8.7	8.6	8.1	9.8	8 26 p	4.0	5 25 p	5.8	0
22	8.7	8.8	9.0	8.7	8.5	8.5	8.3	8.3	8.3	8.0	8.1	8.2	7.7	7.8	7.5	7.2	8.2	8.4	8.9	9.7	9.1	8.5	8.5	8.4	8.4	9.8	8 46 p	7.1	3 10 p	2.7	2
23	8.9	9.0	9.2	9.3	9.0	8.4	8.3	8.3	8.2	8.2	7.8	7.3	7.6	7.1	6.7	5.5	5.6	5.2	5.4	5.5	5.5	7.4	8.4	8.8	7.5	9.5	2 30 a	3.3	5 30 p	6.2	0
24	9.1	9.1	9.0	8.9	8.8	8.4	8.4	8.3	8.0	7.6	7.1	7.4	7.2	5.7	5.2	5.1	4.9	6.0	6.4	6.0	7.1	9.5	10.4	10.4	7.7	11.7	11 48 p	4.8	4 35 p	6.9	0
25	11.2	10.8	11.1	10.4	9.4	10.0	9.0	8.3	8.3	8.3	7.9	8.0	7.3	6.4	5.6	4.2	4.2	4.5	6.9	10.6	10.2	7.1	10.2	9.5	8.3	11.6	2 58 a	3.4	9 49 p	8.2	0
26	9.7	9.5	9.3	8.1	9.9	13.2	9.0	7.6	7.1	7.5	4.9	3.9	4.4	2.6	-1.2	-0.2	5.4	2.9	6.9	0.6	9.0	10.2	8.7	10.1	6.6	15.4	5 11 a	-4.0	7 7 p	19.4	2
27	10.1	10.2	11.1	12.8	13.4	10.6	10.1	6.4	6.0	6.0	5.0	4.5	3.5	2.4	2.5	3.3	3.5	4.6	7.8	8.0	9.9	7.3	9.0	9.5	7.4	14.6	4 0 a	1.2	5 0 p	13.4	0
28	10.2	9.8	9.2	8.7	8.8	8.5	8.6	8.8	8.0	7.1	7.9	7.7	7.5	6.3	5.0	3.3	2.1	3.6	6.6	7.5	10.0	9.4	9.4	10.2	7.7	12.0	10 30 p	0.2	4 45 p	11.8	0
29	9.7	8.9	8.8	8.3	8.4	8.5	8.2	8.5	8.4	7.7	7.2	7.3	6.9	5.3	3.0	2.6	3.0	4.0	3.7	7.6	13.6	12.6	13.3	10.4	7.7	16.5	9 8 p	1.2	6 46 p	15.3	0
30	9.5	10.5	10.0	9.3	8.9	8.6	8.8	8.0	8.1	7.9	7.6	7.6	6.7	6.0	5.2	4.0	5.1	7.8	8.5	5.2	4.3	9.6	8.5	9.5	7.7	12.5	9 42 p	1.5	7 57 p	11.0	0
31	9.3	9.3	10.2	11.7	10.7	8.8	8.8	8.1	8.0	7.7	7.9	7.9	6.9	6.1	6.2	5.6	6.5	6.7	7.6	8.2	8.4	9.7	10.0	9.2	8.3	12.8	3 8 a	4.2	3 18 p	8.6	0
Mean 1	10.0	9.9	9.8	9.8	9.8	9.7	9.3	8.5	8.1	7.7	7.4	7.4	7.0	6.4	5.8	5.3	5.8	6.3	7.1	7.6	8.8	9.3	9.5	9.8	8.2	13.8		2.6		11.2	
» 2	10.1	10.0	9.9	9.9	9.9	9.8	9.4	8.6	8.1	7.8	7.4	7.4	7.0	6.4	5.8	5.3	5.9	6.2	7.1	7.6	8.8	9.2	9.6	9.9	8.2						
» 3	10.0	10.0	9.9	9.9	9.8	9.7	9.3	8.7	8.1	7.8	7.5	7.3	6.9	6.4	5.8	5.6	5.8	6.4	7.0	7.8	8.6	9.2	9.6	9.9							

April 1904. **Gjøahavn.** Gr. M. T.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	12.6	23.4	**34.2**	15.4	18.2	18.7	10.6	9.0	6.2	5.6	3.5	3.6	3.2	-1.0	0.8	1.1	**-3.3**	-1.2	6.8	1.2	3.9	10.9	19.9	17.4	9.2	**50.9**	2 2 a	**-7.9**	4 42 p	**58.8**	2
2	18.2	17.5	**23.1**	20.0	17.7	13.5	9.0	10.9	10.0	8.8	6.4	7.2	3.5	2.5	3.2	3.5	3.5	4.5	7.6	**1.5**	7.1	12.6	15.1	19.8	**10.3**	27.2	2 40 a	-1.7	5 23 p	28.9	1
3	15.0	14.7	12.0	12.5	12.4	11.4	11.8	10.9	10.2	6.7	7.6	7.8	8.0	5.7	4.9	4.8	1.5	**-1.2**	-0.5	13.4	6.5	10.2	**17.2**	15.8	9.1	26.1	7 11 p	-4.0	6 0 p	30.1	1
4	**19.3**	18.1	17.4	15.4	11.2	11.6	10.9	8.2	6.9	6.9	7.7	5.5	5.6	5.2	4.2	**3.2**	6.1	5.0	5.9	9.0	8.6	9.0	10.8	10.8	9.3	19.7	2 58 a	0.6	5 59 p	19.1	0
5	13.6	**16.9**	13.3	11.2	9.1	8.2	7.8	7.7	6.6	6.9	7.4	7.2	6.5	5.6	3.8	5.4	5.7	7.3	7.5	**3.2**	11.9	10.7	10.0	8.7	8.5	19.2	1 29 a	0.4	7 42 p	18.8	0
6	11.0	12.0	10.9	9.1	8.5	8.5	8.4	8.3	7.3	7.9	7.3	5.0	**4.5**	4.9	6.4	7.2	8.5	5.2	5.9	**12.1**	11.7	10.0	9.7	9.1	8.3	12.8	2 5 a	0.7	5 33 p	12.1	0
7	9.1	9.0	9.0	9.0	8.6	8.1	7.6	6.8	6.2	5.7	5.2	4.7	4.1	3.4	2.8	2.6	2.4	**2.2**	2.9	4.5	4.1	8.1	13.3	**14.6**	6.4	15.1	11 56 p	1.7	7 53 p	13.4	0
8	15.6	**16.3**	14.2	14.8	11.6	9.2	8.8	7.9	8.0	7.5	6.7	5.8	4.8	3.7	2.7	2.1	1.5	**0.9**	1.2	2.3	4.2	7.2	8.9	9.0	7.3	17.0	1 4 a	0.5	5 30 p	16.5	0
9	8.3	10.6	**14.3**	11.4	8.5	8.8	8.4	7.8	7.4	7.5	7.6	6.3	6.3	6.3	6.2	6.6	7.1	7.4	8.7	10.8	12.2	12.8	9.5	14.1	9.0	16.9	2 53 a	**5.9**	11 20 a	11.0	0
10	**21.3**	12.2	7.8	8.0	5.4	7.6	7.3	7.0	6.8	6.9	6.8	6.9	6.4	6.1	6.0	5.2	**4.6**	4.7	6.0	11.8	15.7	16.4	10.9	12.3	8.8	26.0	0 41 a	3.0	5 25 p	23.0	0
11	14.3	11.3	9.7	9.4	11.3	8.1	7.1	7.1	6.7	5.4	6.0	4.7	3.4	4.1	2.2	1.7	**0.5**	8.3	20.0	**23.1**	20.2	21.6	13.2	10.4	9.6	42.3	7 27 p	-1.2	4 42 p	43.5	2
12	**9.9**	9.4	8.6	8.0	8.1	7.7	7.6	7.3	6.8	6.5	6.5	5.1	5.1	5.5	5.6	5.0	4.5	**1.6**	2.2	5.1	4.0	4.0	4.9	7.1	6.1	10.3	0 39 a	-1.8	5 11 p	12.1	0
13	8.3	10.2	12.7	**12.8**	9.2	9.2	7.8	6.7	5.8	5.2	4.5	3.1	1.2	**0.4**	1.7	3.1	4.8	6.9	8.0	8.6	9.3	8.8	9.7	9.4	6.9	14.1	3 31 a	-1.4	1 9 p	15.5	0
14	9.0	8.7	8.8	8.8	8.9	8.9	8.7	8.4	8.3	8.0	7.6	7.8	7.6	5.4	4.9	5.2	7.1	**3.2**	6.0	**9.5**	6.2	6.6	7.4	9.2	7.5	10.1	7 34 p	0.6	5 42 p	9.5	0
15	9.3	9.0	9.2	9.5	**10.0**	9.7	8.0	8.3	7.9	5.7	6.7	3.6	**3.3**	6.1	3.6	4.7	5.4	6.4	7.2	9.3	9.3	9.2	9.1	9.3	7.5	10.4	4 3 a	1.3	11 49 a	9.1	0
16	9.4	9.4	9.0	8.9	8.7	8.7	8.6	8.0	7.8	7.7	7.3	7.2	6.7	6.5	**6.2**	**6.2**	6.8	7.2	8.6	9.2	8.7	8.9	8.8	**10.3**	8.1	14.9	0 0 p	5.8	3 56 p	9.1	0
17	**11.3**	10.7	10.0	9.7	9.1	8.5	8.5	8.4	8.3	8.1	7.5	7.4	6.8	6.7	7.1	7.0	5.1	5.1	2.6	**-0.5**	2.9	5.8	9.2	10.0	7.3	13.9	0 31 a	-5.6	6 54 p	19.5	0
18	9.7	10.0	10.2	9.8	14.5	13.9	11.5	8.1	7.4	6.9	7.4	6.6	7.3	7.8	9.5	3.4	-0.1	-2.6	-2.7	-1.4	3.8	12.2	19.4	**22.6**	8.1	25.3	11 52 p	-6.1	5 0 p	31.4	2
19	**19.6**	16.8	16.6	11.7	10.4	9.3	8.1	8.6	7.7	6.0	4.9	3.2	0.5	-3.4	**-3.5**	**-3.5**	-1.8	-1.8	-2.9	-3.2	-0.3	4.7	8.2	7.8	**5.2**	22.4	0 0 a	-6.2	7 43 p	28.6	0
20	8.9	8.6	9.5	**10.0**	9.5	8.4	8.4	8.5	8.0	7.4	6.1	6.1	6.3	6.9	5.6	5.4	**4.2**	5.4	7.8	8.6	9.1	8.6	9.3	8.6	7.7	12.5	4 0 a	1.9	4 48 p	10.6	0
21	**9.7**	9.6	9.6	9.0	8.3	8.5	9.0	8.5	8.7	8.0	7.4	6.9	6.5	7.2	8.2	6.6	6.3	6.8	7.7	**5.7**	6.5	6.6	8.1	8.9	7.8	10.4	0 35 a	3.9	7 42 p	6.5	1
22	9.1	9.0	9.6	9.9	9.6	9.7	10.6	8.7	7.9	7.7	8.4	8.1	6.4	7.0	7.7	5.4	2.7	**1.9**	3.9	**15.4**	10.1	10.1	10.1	11.3	8.3	30.6	7 29 p	-0.5	6 1 p	31.1	1
23	12.1	**13.1**	11.4	9.9	9.1	8.9	8.8	8.3	8.2	8.2	7.8	6.9	6.4	5.9	5.4	4.8	5.7	5.5	4.6	8.9	7.1	**4.4**	6.1	8.1	7.7	13.9	1 5 a	1.9	6 21 p	12.0	0
24	9.2	9.6	9.2	9.9	9.4	9.7	11.5	10.3	8.5	8.2	8.0	7.7	7.3	6.9	6.5	6.5	6.6	6.6	7.5	9.4	11.4	**11.6**	8.7	8.3	8.7	12.3	6 19 a	4.2	5 0 p	8.1	2
25	10.2	10.1	9.4	**10.7**	9.1	10.2	7.6	7.4	6.7	6.4	6.8	6.3	4.7	3.7	1.8	3.9	4.0	5.4	6.7	9.1	2.6	**1.1**	6.1	9.0	6.6	12.0	1 3 a	-0.7	8 59 p	12.7	0
26	10.6	11.8	**14.6**	14.3	14.4	12.3	9.9	8.8	8.5	6.8	3.5	7.1	5.5	4.8	2.6	**2.1**	3.1	3.9	4.0	3.9	4.9	6.6	7.8	8.6	7.5	15.2	4 35 a	0.4	3 56 p	14.8	0
27	9.3	**9.6**	8.4	8.5	8.3	7.7	7.6	7.5	6.9	7.0	7.0	7.1	**6.0**	6.1	6.3	7.1	8.1	8.4	7.5	6.5	7.2	6.9	7.1	8.2	7.5	**9.8**	0 51 a	5.4	0 51 p	**4.4**	2
28	8.2	9.0	9.4	**9.9**	9.4	8.9	8.3	7.7	7.2	7.2	7.0	6.5	6.3	5.9	5.1	4.4	3.1	**3.0**	3.7	5.7	8.6	9.3	9.3	8.9	7.2	10.2	3 17 a	1.5	4 38 p	8.7	1
29	8.8	8.5	8.1	8.7	8.4	9.4	9.9	7.8	7.4	7.5	6.9	7.3	6.7	5.4	**1.0**	1.9	1.9	1.6	1.0	7.5	8.9	11.0	**15.3**	7.6	7.0	22.9	10 42 p	-2.2	6 24 p	25.1	0
30	16.7	**17.0**	14.1	8.2	8.9	9.1	8.5	7.7	8.0	8.3	7.5	9.4	8.2	7.3	3.4	4.3	6.1	3.5	-1.7	4.8	11.4	9.7	9.8	12.5	8.4	20.1	2 5 a	-4.3	5 58 p	24.4	0
Mean 1	11.9	**12.1**	**12.1**	10.8	10.2	9.8	8.9	8.2	7.6	7.1	6.7	6.3	5.5	4.9	4.4	4.2	4.1	**4.0**	5.1	7.2	7.9	9.2	10.4	10.9	7.9	18.8		-0.1		18.9	
» 2	**11.5**	11.3	10.7	10.1	9.3	9.2	8.8	8.1	7.6	7.2	6.9	6.6	5.9	5.6	4.8	4.9	5.0	**4.6**	5.0	7.9	8.2	8.3	9.4	9.7	7.8						
» 3	11.0	**11.2**	10.7	10.1	9.5	9.1	8.7	8.1	7.6	7.2	6.9	6.5	6.0	5.5	5.0	4.9	4.9	**4.8**	5.6	7.3	8.1	8.5	9.2	10.1							

May 1904

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	11.6	12.8	14.9	**17.2**	15.6	10.9	9.1	9.7	10.2	9.9	8.1	7.1	9.0	9.5	5.1	**-0.4**	0.5	2.4	*4.0*	8.5	7.0	7.0	11.6	15.3	9.0	18.0	4 2 a	-4.9	3 55 p	22.9	0
2	**14.6**	14.2	13.8	12.1	11.0	12.7	11.8	11.1	11.1	10.0	9.7	9.6	9.1	8.3	5.9	**4.1**	6.3	10.6	*8.0*	5.5	4.7	5.7	8.7	10.1	9.5	15.3	0 29 a	0.7	7 50 p	14.6	0
3	11.4	12.4	**17.2**	15.7	13.2	12.5	12.8	10.4	9.7	9.4	8.1	8.0	7.0	6.4	5.8	5.0	1.6	2.9	*1.0*	**0.4**	0.8	5.8	8.9	10.1	8.2	21.4	2 43 a	-1.5	4 33 p	22.9	0
4	11.8	10.4	10.8	10.1	8.5	9.3	9.6	9.9	9.3	7.5	8.3	9.3	6.8	6.4	7.1	5.7	**3.7**	7.3	**3.7**	7.4	10.4	11.2	**13.7**	13.5	8.8	16.0	10 30 p	-1.7	7 10 p	17.7	0
5	**13.8**	13.7	12.8	10.5	10.8	10.6	9.9	8.7	8.2	7.6	6.8	6.7	6.5	6.6	6.7	6.8	7.2	7.8	*7.3*	**6.0**	7.1	10.8	11.0	10.7	8.9	14.5	2 2 a	**5.0**	7 59 p	9.5	1
6	10.8	10.7	9.8	9.0	8.7	8.4	8.6	9.8	9.0	8.4	6.9	7.4	6.1	**5.0**	6.7	7.8	6.5	6.7	**5.0**	11.0	10.4	10.3	10.9	**11.5**	8.6	12.8	11 33 p	1.9	5 12 p	10.9	0
7	**11.3**	**11.3**	10.2	8.9	9.7	9.9	10.2	9.8	9.5	8.3	8.0	7.8	7.3	6.4	6.8	6.7	8.5	9.8	*8.6*	**4.2**	5.5	9.2	9.0	11.1	8.7	12.0	11 18 p	1.9	7 57 p	10.1	1
8	10.4	10.4	10.5	11.0	10.0	11.2	10.2	9.0	8.3	7.8	5.9	2.4	4.4	2.4	1.9	4.0	4.1	0.2	*-2.6*	**-3.8**	0.2	7.1	**12.7**	10.1	6.2	15.1	10 27 p	-6.7	6 59 p	21.8	0
9	9.8	10.2	9.1	9.0	8.6	8.0	8.0	7.6	7.4	7.4	6.6	5.9	5.6	4.3	4.2	**3.5**	4.3	7.2	*9.0*	10.2	**10.3**	9.4	8.3	9.3	7.6	11.8	0 0 a	3.0	4 2 p	8.8	1
10	9.5	8.8	8.9	8.4	8.5	8.5	8.2	7.8	6.8	6.4	5.4	5.6	**5.3**	5.8	6.6	6.7	7.1	6.6	*6.8*	6.6	8.0	9.3	**9.9**	8.2	7.5	11.6	10 37 p	4.5	0 53 p	**7.1**	2
11	**10.5**	8.2	8.6	10.1	9.2	9.0	9.7	9.3	8.1	8.8	8.5	6.6	4.5	4.7	3.6	5.1	7.1	7.7	*4.4*	**2.6**	4.9	3.8	5.6	6.6	7.0	11.6	0 39 a	1.6	7 45 p	10.0	1
12	7.0	8.2	8.9	8.8	8.4	8.7	7.3	7.7	8.9	11.0	4.5	1.4	-2.0	**-4.3**	-2.5	-2.9	0.1	2.1	*5.4*	6.5	22.6	**30.1**	11.1	9.5	6.9	34.8	9 38 p	- 6.4	4 2 p	41.2	2
13	10.1	10.8	16.5	23.8	18.5	14.9	12.5	9.5	8.3	4.8	8.7	5.5	0.9	-3.7	-10.2	**-10.7**	-10.0	-6.9	*-5.6*	-8.6	-1.6	5.2	20.3	**27.2**	5.8	34.4	3 35 a	-13.1	3 8 p	47.5	2
14	11.2	10.5	12.1	14.9	15.2	15.8	13.7	12.3	11.0	7.2	7.8	7.7	8.1	7.1	5.9	4.5	3.9	**2.5**	*10.7*	13.7	14.1	18.3	**18.8**	17.0	11.0	24.1	10 14 p	- 3.0	5 34 p	27.1	0
15	14.8	15.0	**15.9**	12.5	10.8	9.4	10.2	9.2	7.2	7.1	7.3	6.5	**6.0**	6.2	7.2	6.1	8.6	9.3	*9.7*	11.6	11.6	10.8	11.0	9.8	9.7	17.9	2 15 a	4.7	3 33 p	13.2	0
16	9.4	8.9	**9.7**	9.1	9.0	8.4	8.6	7.7	6.7	6.1	6.5	5.2	5.2	4.7	4.8	4.5	6.8	7.0	*7.2*	8.5	**9.7**	6.2	**3.1**	4.0	7.0	12.6	7 51 p	- 0.8	10 49 p	13.4	0
17	5.8	9.9	**17.1**	11.8	10.5	8.5	9.5	8.9	8.0	8.0	7.8	7.3	3.1	1.0	-2.2	**-5.6**	-1.5	3.9	*2.2*	4.6	7.3	10.0	5.1	14.2	6.5	23.6	2 17 a	-10.5	3 54 p	34.1	1
18	**14.2**	10.9	8.3	8.9	9.0	8.3	10.0	9.0	7.1	7.4	8.0	7.6	5.0	0.9	**-0.4**	1.6	5.1	7.1	*8.4*	10.4	6.0	6.1	8.5	8.2	7.3	20.1	0 23 a	- 3.1	2 2 p	23.2	0
19	7.9	9.2	10.0	9.3	8.3	12.3	11.5	8.9	6.8	5.2	2.7	5.0	2.9	2.1	3.0	9.3	9.6	3.6	*10.5*	6.9	11.5	**13.0**	10.7	9.3	7.0	14.6	5 41 a	- **16.9**	6 50 p	31.5	0
20	**10.5**	9.4	9.4	9.0	8.5	9.0	8.3	7.1	6.6	4.4	5.0	4.6	4.4	2.0	4.1	3.4	4.0	**-0.3**	*6.2*	8.4	7.2	4.8	7.8	8.6	6.4	11.6	0 32 a	- 2.2	5 28 p	13.8	0
21	9.5	10.9	**11.1**	9.5	8.9	8.4	7.6	6.0	6.5	5.0	5.8	5.6	3.8	3.8	4.5	5.6	4.1	**2.4**	*3.4*	3.8	**2.4**	5.6	8.8	6.6	6.2	11.8	2 10 a	- 0.3	7 1 p	12.1	0
22	6.7	7.9	**8.2**	8.1	8.0	**8.2**	7.8	7.1	7.5	7.5	6.6	5.8	5.5	5.9	1.7	**-3.3**	0.8	5.6	*7.8*	7.7	-1.1	0.2	3.3	6.5	**5.4**	**8.5**	2 3 a	- 4.9	3 14 p	13.4	0
23	7.1	7.8	9.1	9.4	8.5	**9.6**	8.3	7.0	6.9	6.1	6.3	3.7	3.1	**0.3**	1.9	4.9	7.3	5.6	*2.6*	0.6	8.0	8.9	6.8	7.0	6.1	16.5	8 57 p	- 3.5	7 41 p	20.0	0
24	10.4	9.0	12.0	14.6	**16.7**	11.7	12.3	11.1	8.0	9.2	6.2	4.4	2.4	0.3	**-0.3**	0.7	2.6	2.5	*6.6*	9.6	3.2	4.1	4.4	5.6	7.0	19.1	4 0 a	- 1.8	8 27 p	20.9	0
25	6.1	7.1	8.6	8.5	**9.6**	9.0	8.1	7.5	7.7	7.8	7.0	5.8	5.7	3.9	**3.1**	4.1	4.8	6.1	**7.3**	7.5	6.5	6.8	7.7	9.5	6.9	10.2	4 26 a	2.3	2 23 p	7.9	1
26	9.3	9.2	9.5	9.2	9.6	9.4	8.9	7.8	6.9	5.9	4.6	5.3	6.0	6.1	4.6	4.5	**2.1**	6.3	*7.5*	6.6	**10.6**	9.8	10.5	9.2	7.5	12.2	8 13 p	0.9	4 49 p	11.3	0
27	7.8	8.2	8.3	8.6	8.3	9.3	9.8	10.2	8.3	7.4	6.8	5.6	5.4	4.8	6.5	5.6	6.8	4.3	*2.1*	**-6.9**	-6.7	0.9	13.6	**24.6**	6.7	34.9	11 18 p	-11.2	7 29 p	46.1	2
28	20.5	18.4	18.9	18.1	14.1	9.5	9.8	12.1	13.7	9.5	7.7	5.7	4.7	3.5	1.8	-4.8	-7.7	**-8.5**	*2.2*	**41.0**	23.8	26.3	23.9	17.1	**11.7**	**52.3**	7 54 p	-11.4	5 28 p	**63.7**	2
29	**21.6**	12.9	8.9	9.9	11.9	14.2	12.0	12.3	10.2	9.7	6.6	5.1	1.7	-1.5	0.6	0.5	1.4	-2.3	*0.3*	-2.6	**-4.7**	-2.1	4.8	9.9	5.9	27.1	0 38 a	- 7.9	6 5 p	35.0	1
30	**14.2**	10.0	9.7	10.0	9.8	9.3	9.6	7.5	7.5	7.5	5.6	7.8	5.6	4.0	3.6	**1.7**	5.5	6.1	*8.5*	5.9	4.4	4.5	7.6	10.4	7.3	16.1	0 36 a	- 0.2	3 44 p	16.3	0
31	13.8	17.8	16.1	17.5	13.7	11.4	9.7	9.6	10.3	8.5	7.7	7.3	4.9	4.2	3.8	4.6	5.3	4.2	*1.2*	**0.0**	0.8	11.5	16.2	**18.0**	9.1	20.3	1 22 a	- 3.0	8 35 p	23.3	0
Mean 1	11.1	10.8	**11.4**	**11.4**	10.7	10.2	9.8	9.1	8.4	7.6	6.8	6.4	5.0	3.8	3.3	**2.9**	3.8	4.2	4.5	6.3	6.6	8.9	10.1	11.2	7.7	18.8		- 2.9		21.7	
» 2	10.9	10.7	**11.1**	11.0	10.5	10.0	9.6	8.8	8.2	7.6	6.9	6.4	5.7	4.8	4.4	**4.1**	4.9	5.6	6.0	6.4	6.4	7.8	9.4	9.9	7.8						
» 3	10.6	10.9	**11.0**	10.9	10.5	10.0	9.5	8.9	8.2	7.6	7.0	6.4	5.7	4.9	**4.4**	**4.4**	4.9	5.5	6.0	6.3	6.7	7.8	9.1	10.0							

June 1904. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	**15.6**	15.1	12.4	10.6	9.0	9.1	8.8	8.0	8.1	7.4	6.7	6.6	5.4	5.4	5.7	3.4	3.5	7.4	4.9	**1.8**	5.7	9.4	8.3	9.9	7.8	17.0	1 40 a	− 0.9	4 0 p	17.9	0
2	12.2	**15.5**	11.5	13.3	14.5	11.4	9.4	8.1	7.9	8.4	6.8	6.2	5.0	**3.6**	4.2	6.1	5.7	6.5	8.8	8.4	8.8	8.3	8.5	10.4	8.7	18.3	1 26 a	2.6	1 19 p	15.7	0
3	9.5	9.2	9.7	10.2	**11.0**	10.5	9.7	9.3	8.9	7.9	7.2	6.2	6.2	5.1	3.4	**1.5**	3.5	5.3	7.6	3.3	4.0	6.4	7.4	8.6	7.2	13.3	4 49 a	0.4	3 15 p	12.9	0
4	8.5	8.9	9.1	**10.0**	9.6	9.8	9.5	9.5	8.4	8.1	6.3	5.6	5.7	6.1	6.1	6.0	7.7	6.5	3.7	3.8	5.1	8.9	9.6	8.7	7.5	14.1	10 45 p	1.8	8 14 p	12.3	0
5	8.1	10.7	**13.1**	11.0	9.5	8.4	8.5	7.6	6.8	6.6	6.0	4.8	4.5	4.0	2.1	2.0	2.8	**0.6**	3.6	1.2	0.9	2.6	4.6	4.1	5.6	16.2	2 6 a	− 3.2	5 15 p	19.4	0
6	4.3	6.6	7.8	8.5	8.6	9.4	8.3	6.9	5.5	4.0	4.4	−1.0	**−4.6**	1.6	1.9	−3.7	−1.5	3.8	5.6	11.6	**15.2**	5.4	3.8	4.3	4.9	22.6	8 16 p	− 8.7	0 41 p	31.3	1
7	5.5	6.9	6.9	**9.3**	8.1	7.6	8.4	7.2	7.1	8.4	7.9	6.9	3.3	2.1	**0.0**	3.4	5.2	5.9	7.6	6.0	5.0	5.8	7.3	7.0	6.2	12.5	9 51 a	− 0.9	2 44 p	13.4	0
8	8.8	9.3	10.8	**11.0**	**11.0**	10.2	10.2	9.1	8.6	7.0	6.1	6.1	**4.4**	5.4	5.3	5.8	6.5	7.6	7.5	8.6	7.5	7.0	8.9	9.5	8.0	11.6	4 13 a	2.7	0 48 p	8.9	1
9	**9.9**	9.3	8.4	8.4	**9.9**	9.2	8.6	8.2	7.8	6.0	5.1	5.5	5.0	4.5	**3.9**	4.7	5.8	7.1	8.4	8.9	8.3	7.6	7.4	7.1	7.3	10.7	4 38 a	3.3	2 9 p	7.4	1
10	7.0	7.9	8.1	9.4	9.5	**9.7**	9.5	8.6	5.7	7.6	4.2	5.4	4.5	5.0	4.6	5.4	6.3	7.1	3.0	4.4	7.0	9.0	5.9	5.1	6.7	11.1	7 0 a	− 0.6	6 42 p	11.7	0
11	11.0	**24.1**	14.6	11.5	11.5	10.3	9.3	7.7	6.9	7.3	7.0	6.9	5.7	4.9	4.4	3.7	3.1	4.0	5.0	**2.2**	7.4	9.1	8.2	9.2	8.1	26.1	1 52 a	− 0.8	7 24 p	26.9	0
12	10.4	10.3	10.8	10.2	9.5	9.7	8.9	6.6	7.2	7.0	5.4	5.3	5.6	5.3	5.7	4.7	2.3	2.3	2.0	2.5	4.4	8.9	9.9	**12.7**	7.0	13.8	11 2 p	0.0	4 56 p	13.8	0
13	**12.4**	11.3	11.7	10.3	10.0	10.3	9.6	8.3	7.9	7.1	6.0	5.7	4.9	4.6	**4.3**	5.1	6.5	7.4	6.6	5.4	7.2	6.5	6.2	7.8	7.6	13.6	0 36 a	**3.4**	7 32 p	10.2	0
14	7.7	8.1	9.3	9.7	9.8	9.5	8.6	8.0	6.9	6.0	5.0	5.4	5.0	4.7	4.2	**2.3**	4.2	4.6	4.5	5.9	8.2	**11.5**	9.0	8.0	6.9	13.7	9 9 p	1.1	3 58 p	12.6	0
15	10.8	13.2	13.4	13.5	12.6	10.1	10.7	10.4	10.0	9.9	8.0	8.4	5.8	3.9	−3.3	−7.7	**−15.0**	−10.4	−4.7	−5.9	20.6	**44.0**	25.6	30.1	**8.9**	**90.6**	9 20 p	**−20.1**	4 54 p	**110.7**	2
16	**24.7**	18.2	12.2	11.8	11.1	7.0	5.3	9.4	5.7	4.9	4.5	0.7	−2.6	0.5	−3.4	−7.1	−1.6	4.9	8.4	6.0	**−16.6**	−4.4	10.2	5.2	**4.8**	24.9	1 9 a	−19.9	8 39 p	44.8	2
17	8.3	12.1	12.6	**14.6**	13.6	12.8	10.1	8.4	8.2	6.9	3.3	3.7	3.3	3.5	4.6	**−2.7**	−1.5	5.0	4.5	6.3	6.8	9.8	6.8	10.9	7.2	15.9	5 12 a	− 7.1	3 45 p	23.0	0
18	9.4	10.1	10.4	11.2	12.8	**14.1**	12.4	8.4	7.9	7.7	5.8	5.6	4.6	1.1	**−0.9**	1.8	5.2	8.4	5.5	6.5	6.0	2.3	7.9	8.3	7.2	16.9	5 54 a	− 1.9	9 11 p	18.8	0
19	9.4	9.4	9.6	**11.4**	10.8	9.5	8.3	8.2	8.4	6.8	6.8	4.7	5.8	4.4	**3.2**	4.9	5.3	6.6	7.2	5.7	6.3	6.3	5.9	7.0	7.2	13.5	3 44 a	2.6	2 11 p	10.9	0
20	8.3	10.7	**11.5**	10.4	9.1	8.6	8.0	7.0	6.8	5.6	4.1	3.9	2.9	**2.1**	2.4	4.3	4.4	6.2	3.4	8.3	9.1	6.8	5.9	6.9	6.5	12.4	2 20 a	− 2.1	6 42 p	14.5	0
21	8.2	10.9	14.1	14.1	**17.8**	13.8	10.2	9.0	7.7	7.6	6.4	7.0	4.2	2.2	1.8	0.3	−1.7	−0.9	−2.1	1.1	5.7	4.0	7.9	9.0	6.6	21.1	4 27 a	− 3.2	4 24 p	24.3	0
22	8.3	**9.9**	**9.9**	9.4	9.1	9.5	8.6	8.5	7.8	6.4	6.4	7.0	5.1	**2.9**	4.2	6.3	7.7	6.5	6.3	6.4	8.4	8.9	8.2	7.6	7.5	11.3	1 51 a	1.9	1 46 p	9.4	1
23	7.8	8.2	7.7	8.4	**9.2**	8.4	7.6	7.6	6.4	5.7	4.7	4.5	**3.4**	3.7	4.6	4.1	3.9	**3.4**	7.9	7.8	7.7	4.2	4.5	6.4	6.2	9.7	4 36 a	0.4	5 25 p	9.3	1
24	9.7	9.2	**9.9**	9.4	9.5	8.4	8.2	8.2	7.6	7.9	6.8	5.9	4.7	4.8	5.1	5.7	6.3	7.8	8.0	7.8	5.3	5.0	**4.6**	6.6	7.2	15.4	9 1 p	1.3	8 43 p	14.1	0
25	7.5	8.3	8.0	8.4	9.1	**9.7**	8.2	7.1	6.6	6.6	6.6	5.2	6.2	4.5	3.7	3.3	2.9	**2.0**	4.0	5.0	2.3	2.5	3.3	8.1	5.8	10.2	5 21 a	0.3	5 14 p	9.9	0
26	9.9	9.8	8.9	8.4	8.2	7.9	8.1	7.1	6.8	5.9	5.5	3.7	2.0	2.5	**0.9**	2.3	3.9	3.7	3.7	6.1	12.3	14.9	**17.4**	17.1	7.4	21.9	11 24 p	− 0.3	2 54 p	22.2	0
27	13.0	14.6	**18.7**	16.0	11.4	9.3	10.7	10.3	9.3	5.1	6.8	2.1	4.3	2.3	1.3	4.0	4.7	−2.0	−6.2	−3.3	**−6.8**	8.0	12.3	11.2	6.5	21.8	2 6 a	−11.2	8 45 p	33.0	1
28	10.1	**14.1**	**14.1**	10.0	9.5	7.7	7.7	6.3	6.1	5.5	5.4	4.8	4.9	3.5	2.9	2.9	2.3	**2.1**	3.4	3.2	4.9	7.2	9.5	9.9	6.6	17.4	2 6 a	0.4	5 42 p	17.0	0
29	10.3	**11.2**	9.6	9.9	9.5	9.0	9.0	8.1	7.5	7.3	6.9	5.7	5.2	3.6	**1.7**	3.7	6.4	6.2	5.7	5.4	5.3	4.9	4.5	4.3	6.7	12.3	1 15 a	0.6	2 29 p	11.7	0
30	6.4	7.0	7.8	8.0	8.1	9.0	**9.1**	8.8	7.1	7.3	6.6	5.7	5.3	**4.2**	5.3	4.8	4.8	7.6	6.6	4.6	7.1	7.3	6.9	6.5	6.7	**9.4**	5 53 a	2.6	7 12 p	**6.8**	1
Mean 1	9.8	**11.0**	10.8	10.6	10.4	9.7	9.0	8.2	7.5	6.9	6.0	5.1	4.2	3.7	3.0	**2.7**	3.3	4.4	4.7	4.8	6.0	7.9	8.2	8.9	7.0	18.0		− 1.8		19.8	
» 2	8.9	10.0	10.2	10.2	**10.3**	9.8	9.0	8.0	7.4	6.9	5.8	5.2	4.3	3.9	3.6	**3.4**	4.1	5.2	5.3	5.6	6.8	7.1	7.4	8.3	6.9						
» 3	9.0	9.7	10.1	**10.2**	10.1	9.7	8.9	8.1	7.4	6.7	5.9	5.1	4.4	3.9	**3.6**	**3.6**	4.2	4.9	5.3	5.8	6.6	7.1	7.6	8.2							

July 1904.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	6.3	6.9	6.5	6.7	6.4	6.9	7.4	6.5	6.0	5.8	5.3	5.5	1.6	0.3	0.6	0.9	0.4	-5.9	*-2.6*	-4.1	2.6	5.1	**10.9**	5.4	3.8	14.2	10 48 p	-15.4	5 42 p	29.6	0
2	5.9	6.1	6.6	**7.5**	7.1	6.6	6.9	7.0	6.9	6.8	6.5	5.0	3.8	4.9	3.3	2.3	4.0	4.1	*3.2*	**1.8**	5.7	5.0	6.9	7.3	5.5	8.6	3 28 a	- 2.8	7 12 p	11.4	0
3	**8.4**	8.2	7.0	7.3	7.7	7.6	6.7	5.9	6.4	4.3	5.1	3.0	2.8	**2.1**	2.3	2.3	2.8	6.1	*6.0*	4.8	3.7	2.5	3.7	4.3	5.0	9.9	0 31 a	- 0.6	4 40 p	10.5	0
4	5.3	6.2	6.5	6.4	6.4	6.5	6.7	6.3	7.2	7.1	5.2	3.5	3.6	3.3	3.6	4.9	3.6	5.4	*6.9*	3.9	**2.7**	**11.5**	11.0	6.0	5.8	14.6	9 44 p	- 1.8	8 28 p	16.4	0
5	5.9	6.1	6.5	9.2	**9.9**	7.7	6.9	7.3	6.2	4.7	5.1	4.3	4.1	2.2	**0.9**	2.8	5.5	6.0	*2.8*	5.8	6.0	3.5	3.5	5.1	5.3	11.6	4 11 a	- 0.4	6 46 p	12.0	0
6	6.8	8.1	8.0	8.4	7.6	7.5	7.9	7.5	5.2	4.0	-1.1	-0.2	-1.8	-1.7	1.2	-0.6	-5.4	10.0	*-0.2*	**-10.1**	-4.6	16.5	**26.1**	23.1	5.1	**33.2**	11 40 p	**-23.0**	7 45 p	**56.2**	2
7	**21.1**	15.2	12.6	10.7	9.0	11.3	10.5	10.2	9.0	7.6	5.1	5.5	4.4	2.8	2.3	0.0	1.5	-0.1	*-5.1*	5.4	15.0	17.8	14.5	13.8	8.3	22.7	0 50 a	-10.7	6 38 p	33.4	2
8	13.8	16.6	**18.9**	12.7	14.3	11.4	9.2	7.8	7.3	7.8	6.0	4.2	3.1	3.8	2.6	3.3	**1.6**	2.0	*2.5*	4.0	6.6	9.5	10.8	11.2	8.0	24.3	2 15 a	- 1.7	5 11 p	26.0	0
9	10.7	10.1	12.0	10.4	11.7	12.6	11.2	9.7	7.9	6.8	5.4	4.6	5.1	4.2	3.0	4.3	4.8	4.8	*1.7*	11.2	17.8	20.4	10.0	**20.9**	**9.2**	25.6	11 52 p	- 0.8	6 2 p	26.4	0
10	**19.4**	17.0	13.3	11.9	13.5	11.3	10.1	8.6	8.2	7.0	7.4	5.9	6.1	4.9	5.6	6.0	5.3	7.2	*5.0*	**4.5**	6.6	9.4	9.3	9.5	8.9	23.0	0 9 a	0.5	7 39 p	22.5	0
11	11.3	12.5	12.7	12.6	**13.1**	11.6	11.0	10.5	9.3	7.9	6.2	5.9	7.0	**5.2**	5.7	6.7	5.4	8.3	*10.2*	10.4	8.9	8.7	8.4	8.2	9.1	13.9	4 33 a	**3.5**	4 20 p	10.4	0
12	8.8	8.1	8.7	9.4	**10.8**	10.4	9.3	9.1	7.8	7.8	8.0	7.3	5.4	4.8	**3.8**	4.2	7.8	6.5	*8.5*	3.9	7.3	9.6	9.0	9.1	7.7	14.9	4 49 a	- 0.4	7 54 p	15.3	0
13	8.9	12.0	**12.3**	11.0	9.3	8.2	8.2	8.6	9.7	9.4	6.0	6.9	5.5	5.0	4.2	4.7	2.1	3.4	*-0.4*	-1.5	4.2	**-2.9**	-1.6	1.7	5.6	13.3	2 5 a	- 6.4	9 51 p	19.7	0
14	5.9	8.8	9.7	10.3	**10.6**	9.9	7.9	7.3	5.7	4.1	4.0	0.5	3.9	0.6	-2.2	-5.0	-4.2	-3.2	*2.2*	0.6	-8.6	**-10.7**	-3.5	10.5	**2.7**	18.9	11 26 p	-14.9	8 52 p	33.8	2
15	7.5	9.2	10.7	**11.1**	9.3	10.9	9.9	8.5	7.4	7.5	6.5	5.4	2.5	1.7	1.4	2.4	3.0	5.1	*7.1*	5.3	**-0.1**	2.5	7.3	9.5	6.3	11.7	5 57 a	- 1.7	8 29 p	13.4	0
16	12.6	**16.0**	13.2	9.6	8.4	9.0	8.0	8.9	7.8	7.2	6.4	5.2	4.8	6.2	3.8	2.3	5.4	5.3	*7.2*	**-2.6**	3.9	11.9	11.5	5.1	7.4	17.1	1 48 a	- 5.5	7 9 p	22.6	0
17	6.2	8.2	**10.5**	9.6	9.5	8.2	8.2	9.2	10.1	7.5	6.9	4.1	3.0	2.9	3.5	1.3	1.0	2.6	*7.0*	6.1	0.8	**-1.7**	1.8	5.9	5.5	11.8	8 12 a	- 5.0	8 59 p	16.8	0
18	7.5	9.7	12.0	**12.8**	11.4	12.6	10.0	9.4	8.9	8.6	7.7	5.1	3.0	4.1	2.6	2.8	3.7	5.5	*3.7*	1.0	4.2	**0.7**	2.6	6.2	6.5	15.2	5 35 a	- 2.6	7 13 p	17.8	0
19	7.2	7.7	8.9	10.7	10.6	**11.3**	8.9	7.4	7.0	6.3	6.4	4.8	4.5	3.7	**0.7**	3.6	3.0	3.9	*4.6*	4.7	6.1	6.7	6.5	7.0	6.3	12.8	5 17 a	- 0.5	2 27 p	13.3	0
20	8.0	8.1	8.3	8.4	**8.8**	**8.8**	8.4	7.4	8.0	7.2	7.1	6.4	4.3	3.9	0.5	1.1	3.4	4.0	*0.5*	5.3	**-2.4**	1.1	3.1	5.2	5.2	9.9	4 20 a	- 5.2	9 1 p	15.1	0
21	5.9	8.6	**9.0**	8.6	8.5	8.4	7.8	8.1	6.8	7.4	7.0	5.3	4.3	2.8	3.6	7.0	4.8	2.9	*4.2*	1.6	**-3.2**	4.3	7.7	8.8	5.8	10.0	11 31 p	- 4.9	8 40 p	14.9	0
22	7.9	8.9	9.5	**9.9**	9.3	8.8	8.5	8.6	7.9	8.5	8.2	6.5	6.6	6.1	3.6	**3.5**	7.7	8.7	*7.3*	7.3	7.3	7.6	8.3	7.8	7.7	12.9	8 8 p	- 0.8	2 58 p	13.7	0
23	8.5	9.7	11.7	14.2	12.3	11.2	9.4	8.7	7.8	7.1	6.0	7.0	4.8	5.4	4.7	**2.5**	7.2	9.6	*6.2*	8.5	8.7	**16.0**	12.4	12.4	8.8	20.1	9 0 p	- 3.2	6 52 p	23.3	0
24	10.4	10.7	10.8	**13.3**	12.4	9.8	9.2	9.5	8.4	7.7	6.9	6.4	6.3	6.3	6.4	5.2	**3.3**	6.4	*5.6*	4.7	5.6	6.6	7.0	8.3	7.8	15.0	4 7 a	- 0.1	4 58 p	15.1	0
25	9.3	8.6	9.3	9.9	9.8	9.6	**10.1**	8.7	7.9	7.8	7.7	6.2	4.5	4.7	5.9	7.6	5.4	4.5	*4.8*	**3.5**	4.0	6.0	4.9	16.0	6.9	11.4	6 4 a	1.4	8 17 p	10.0	0
26	7.3	9.0	10.3	10.6	10.1	10.1	9.5	7.3	8.8	8.8	8.6	6.3	4.9	4.1	5.4	3.6	**3.4**	5.5	*12.8*	11.3	13.4	11.2	**16.2**	16.0	8.9	26.0	11 50 p	- 0.1	5 0 p	26.1	0
27	**16.3**	14.6	11.3	9.7	10.7	14.5	14.6	12.7	11.2	10.2	10.9	10.8	10.2	9.0	7.5	3.9	**-0.6**	1.1	*4.2*	0.9	2.7	5.3	9.3	8.1	8.7	16.6	6 12 a	- 4.5	4 47 p	21.1	0
28	9.8	11.0	9.9	13.1	**11.4**	9.7	10.0	10.4	10.0	7.2	7.8	6.9	5.3	2.3	3.5	2.2	3.4	4.6	*2.4*	6.4	**-0.6**	2.9	2.7	5.3	6.6	16.3	3 54 a	- 6.3	8 18 p	22.6	0
29	5.1	5.7	5.2	5.7	5.3	6.2	**8.0**	6.0	4.1	4.8	3.1	3.3	1.8	1.9	**0.8**	1.8	5.1	5.0	*6.5*	6.3	4.5	5.0	4.8	6.5	4.7	**8.5**	6 46 a	- 0.9	2 57 p	**9.4**	1
30	6.8	7.7	9.3	9.1	10.1	9.1	9.3	8.0	6.2	5.7	5.6	4.8	2.3	0.7	-1.2	0.2	0.5	-1.4	*-1.6*	3.2	9.5	12.5	**13.8**	13.6	6.0	17.9	10 36 p	- 3.1	6 33 p	21.0	0
31	13.3	**16.2**	13.9	10.2	9.3	7.9	8.0	7.8	7.2	6.8	7.0	6.7	5.7	3.4	3.4	3.6	2.5	3.2	*4.0*	**2.2**	3.4	3.7	4.7	7.1	6.7	18.5	1 33 a	0.3	7 39 p	18.2	0
Mean 1	9.3	10.0	**10.2**	10.0	9.8	9.5	9.0	8.4	7.7	7.0	6.3	5.3	4.3	3.6	3.0	**2.9**	3.1	4.2	4.1	3.8	4.6	6.7	7.8	8.9	6.6	16.1		- 3.8		19.9	
» 2	9.1	10.0	**10.2**	10.0	9.9	9.5	9.0	8.4	7.8	7.2	6.6	5.6	4.5	3.9	**3.3**	3.5	3.8	4.4	4.6	4.3	5.0	6.6	7.4	8.1	6.8						
» 3	9.1	9.8	**10.1**	10.0	9.8	9.5	9.0	8.4	7.8	7.2	6.5	5.6	4.7	3.9	**3.5**	**3.5**	3.9	4.3	4.5	4.6	5.2	6.4	7.4	8.2							

August 1904. Gjøahavn.

Table CVIII. — Hourly Values of Declination, West.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	8.7	7.1	8.4	10.5	10.2	8.4	8.0	8.2	7.0	8.0	7.8	6.2	5.1	5.4	4.9	6.1	6.7	6.3	9.3	9.4	10.0	11.5	13.6	11.0	8.2	15.6	10 24 p	4.2	2 51 p	11.4	0
2	11.6	8.9	10.4	21.2	19.5	13.5	10.1	8.1	6.8	6.4	5.1	5.6	4.5	1.8	1.4	0.5	4.9	2.1	-0.7	-4.2	-3.5	-3.2	-0.4	1.2	5.5	30.4	3 43 a	- 7.3	7 9 p	37.7	2
3	1.4	3.5	4.9	5.9	5.9	5.3	3.9	3.7	4.0	2.6	2.9	1.5	-1.3	-3.3	-11.1	-8.1	-15.2	-7.8	-2.4	17.4	29.0	27.2	6.8	22.6	4.1	48.9	7 2 p	-23.1	4 31 p	72.0	2
4	24.6	28.3	13.8	11.6	12.8	12.8	11.0	11.3	10.6	10.4	9.0	7.7	5.2	-0.7	- 5.2	-6.6	- 7.6	-8.5	-5.8	-5.0	-3.4	1.9	7.6	8.9	6.0	38.4	1 27 a	-11.6	5 8 p	50.0	2
5	8.5	9.9	13.9	9.0	7.9	8.3	8.2	7.4	7.2	6.1	6.3	5.6	5.0	4.1	3.9	4.4	4.9	6.3	5.7	5.7	8.0	8.0	6.9	4.7	6.9	16.3	2 22 a	3.4	0 14 p	12.9	0
6	4.1	4.4	3.9	5.5	4.6	4.3	4.8	4.7	6.4	5.8	4.9	3.7	1.7	2.2	2.4	1.1	4.4	4.5	6.5	3.5	6.9	9.9	7.3	8.1	4.8	12.1	9 24 p	- 1.5	3 40 p	13.6	0
7	8.3	8.3	8.5	8.4	8.1	7.9	7.6	7.2	6.8	6.3	5.9	5.3	4.6	4.2	4.0	4.1	4.6	5.6	6.6	6.9	5.6	8.9	10.6	11.9	6.9	14.0	11 20 p	1.8	6 40 p	12.2	0
8	6.3	5.4	6.9	7.1	6.4	6.3	6.6	6.4	6.6	6.5	5.9	5.2	4.8	4.9	5.2	4.5	5.6	9.9	11.1	9.0	9.2	4.9	5.7	6.4	6.5	13.9	8 35 p	2.9	9 19 p	11.0	0
9	6.5	6.7	7.4	7.7	7.8	7.8	7.7	7.2	7.4	7.1	7.3	6.6	6.2	4.3	6.3	7.8	8.9	8.9	8.5	7.7	6.0	5.3	3.6	6.7	7.0	9.7	4 44 p	2.2	9 59 p	7.5	1
10	8.0	10.2	13.1	9.1	8.4	9.1	8.0	7.1	6.3	5.4	4.8	3.5	1.9	3.6	5.7	5.7	2.6	1.5	7.0	6.9	-6.2	-3.2	4.2	4.9	5.3	14.8	2 17 a	- 9.8	8 27 p	24.6	0
11	4.6	5.5	6.2	6.2	6.0	5.9	5.6	5.2	5.6	5.5	5.5	4.5	3.9	2.9	1.8	1.9	1.5	3.6	2.5	6.5	6.1	4.1	5.4	5.7	4.7	8.3	7 35 p	0.5	6 48 p	7.8	1
12	6.6	7.0	7.2	7.4	7.1	7.0	7.1	6.6	6.4	6.1	5.5	4.1	3.2	3.1	2.3	4.2	5.7	7.5	7.9	8.2	6.7	6.1	7.0	7.2	6.1	9.1	8 57 p	1.6	0 18 p	7.5	1
13	7.3	7.3	7.8	7.0	8.1	7.8	8.5	8.1	7.8	6.7	4.7	4.7	4.6	2.9	2.1	-1.1	- 0.6	2.2	4.5	5.7	7.9	8.4	8.9	9.4	5.9	9.5	8 7 p	- 1.9	4 21 p	11.4	0
14	9.5	9.1	9.3	9.1	8.3	8.1	7.1	7.4	7.7	7.5	7.0	6.0	7.0	7.4	7.4	5.6	6.4	10.3	12.4	10.0	8.8	9.2	11.0	11.2	8.5	15.0	6 44 p	4.6	4 23 p	10.4	0
15	7.4	7.4	7.6	7.8	7.8	8.4	7.4	6.5	5.6	6.1	5.7	4.4	4.1	5.0	4.6	1.5	0.4	0.5	3.5	1.1	0.7	-1.0	1.2	7.7	4.6	10.2	11 50 p	- 3.1	9 8 p	13.3	0
16	11.9	12.7	8.0	7.3	7.6	7.6	7.4	6.6	6.1	6.0	5.7	4.8	3.6	2.2	- 1.3	-2.0	- 0.5	1.8	-0.8	1.0	1.4	0.1	5.7	13.1	4.8	17.0	1 9 a	- 3.5	6 49 p	20.5	0
17	12.8	12.3	16.2	11.8	8.9	8.0	8.0	7.4	7.2	7.9	4.8	3.2	2.6	1.5	0.9	-7.6	- 4.2	9.8	6.8	8.5	5.8	2.0	4.9	18.3	6.6	32.3	11 31 p	-10.7	3 40 p	43.0	2
18	10.1	9.2	7.9	15.3	13.7	10.3	9.9	8.0	5.5	2.2	5.5	5.0	5.1	4.7	0.9	3.4	1.7	5.5	9.4	9.6	8.8	13.3	12.5	12.1	7.9	18.7	3 50 a	- 1.6	4 15 p	20.3	0
19	15.1	11.3	9.7	9.4	8.9	8.4	9.7	9.4	8.6	8.0	8.0	8.0	6.0	5.1	4.6	5.5	6.8	11.1	10.9	9.9	8.8	5.9	5.6	7.0	8.4	16.9	0 30 a	3.3	10 8 p	13.6	0
20	7.4	8.2	8.4	8.6	8.8	7.9	7.8	7.3	6.5	6.1	6.0	4.8	4.8	4.8	4.8	3.6	7.5	7.6	7.9	8.1	9.4	9.0	11.5	12.8	7.5	16.1	10 57 p	2.4	3 39 p	13.7	0
21	11.7	8.0	9.9	8.7	6.6	8.1	8.6	7.7	7.3	6.4	5.4	6.4	6.0	2.4	3.4	5.0	- 1.5	-1.8	2.4	10.2	3.2	5.0	4.9	13.4	6.2	14.6	11 18 p	- 7.1	6 59 p	21.7	0
22	13.6	15.9	15.4	18.8	11.9	9.3	9.1	8.2	6.7	5.0	4.8	3.6	4.4	3.8	3.1	2.9	5.0	4.1	3.1	-2.5	14.8	15.2	10.3	8.8	8.1	25.2	3 20 a	- 4.8	7 41 p	30.0	1
23	13.2	14.4	14.4	11.4	10.1	10.0	7.9	6.5	6.6	5.5	5.8	3.9	3.8	4.0	4.4	4.6	4.1	6.1	5.8	7.1	8.4	12.6	11.8	10.3	8.0	17.5	2 0 a	- 0.2	4 51 p	17.7	0
24	7.7	8.1	7.0	8.0	8.1	7.5	7.8	7.4	5.8	6.1	6.3	5.5	4.9	4.5	5.0	5.2	6.5	8.0	9.8	6.2	7.8	7.9	6.3	6.6	6.8	10.6	6 5 p	3.4	4 18 p	7.2	1
25	7.2	8.8	9.3	9.3	8.6	7.1	6.6	7.3	6.7	6.2	5.2	4.8	4.5	5.1	5.1	5.8	6.6	7.3	7.9	6.8	6.4	6.7	5.8	5.4	6.7	10.4	3 55 a	4.3	0 45 p	6.1	1
26	6.3	6.3	7.2	7.1	7.6	6.9	6.6	6.1	6.0	5.5	4.8	4.6	4.1	4.2	4.1	5.0	5.3	6.0	6.5	6.3	5.8	7.9	6.8	6.3	6.0	9.3	9 10 p	3.4	5 3 p	5.9	2
27	6.4	6.2	6.8	6.8	7.2	7.2	7.4	7.0	6.4	5.4	4.9	4.4	4.0	4.8	3.2	4.8	5.6	4.4	6.0	4.1	3.7	4.5	5.3	4.8	5.5	10.1	7 57 p	0.7	5 21 p	9.4	0
28	4.7	5.6	5.9	5.3	5.3	5.3	4.9	4.5	4.4	4.1	3.8	2.7	1.8	2.2	1.8	2.3	3.0	4.2	5.1	4.3	4.1	4.1	4.1	4.4	4.1	6.4	1 29 a	0.9	2 17 p	5.5	2
29	5.4	6.4	6.0	6.8	6.4	6.4	6.7	6.2	5.3	4.9	4.1	4.5	1.6	0.7	0.4	-0.5	- 1.1	-4.1	-1.3	6.1	9.9	2.4	3.4	10.1	4.0	17.6	8 18 p	- 6.0	5 27 p	23.6	0
30	8.1	6.9	8.2	8.6	9.4	8.2	7.7	6.5	6.0	5.6	4.9	4.1	3.2	2.8	4.8	-1.2	- 3.0	-4.6	-2.1	-0.3	1.1	2.7	4.9	7.3	4.2	10.5	4 8 a	- 6.9	5 2 p	17.4	0
31	8.0	9.1	12.2	11.2	8.4	6.9	6.1	6.0	5.3	4.1	3.9	2.8	1.3	0.5	1.4	0.3	1.6	2.5	3.9	4.6	4.8	5.3	6.4	7.6	5.2	14.1	2 56 a	- 1.3	3 31 p	15.4	0
Mean 1	8.8	9.0	9.1	9.3	8.6	7.9	7.5	7.0	6.5	6.0	5.6	4.8	3.9	3.3	2.7	2.2	2.5	3.9	5.1	5.8	6.3	6.5	6.8	8.9	6.2	16.5		-2.0		18.5	
» 2	8.0	8.1	8.4	8.3	7.9	7.6	7.4	6.9	6.5	6.0	5.7	5.0	4.2	3.9	3.6	3.7	3.9	5.2	6.5	6.7	6.2	6.2	6.9	8.2	6.3						
» 3	8.1	8.1	8.3	8.2	7.9	7.6	7.3	6.9	6.5	6.0	5.6	5.0	4.3	3.9	3.7	3.7	4.2	5.2	6.2	6.5	6.3	6.4	7.1	7.9							

September 1904. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	*8.7*	9.2	9.9	10.1	**10.9**	9.7	7.5	5.2	5.8	5.7	6.4	6.0	4.0	3.0	3.7	3.8	*3.4*	*3.1*	*2.7*	2.8	**1.5**	1.8	6.1	6.8	5.7	11.8	4 33 a	0.1	8 10 p	11.7	0
2	9.4	11.0	11.4	11.6	**13.3**	12.5	10.3	8.5	8.0	8.4	7.9	8.0	5.5	4.6	3.5	1.8	3.4	2.5	*0.7*	**−1.1**	−0.2	1.9	5.1	8.5	6.5	14.7	4 48 a	−2.5	7 53 p	17.2	0
3	9.7	**10.9**	**10.9**	10.4	9.7	8.7	9.2	8.3	7.6	7.1	6.7	5.9	5.1	4.0	1.6	0.4	1.0	0.4	*−0.5*	**−0.6**	0.4	3.6	6.2	10.1	5.7	11.9	2 0 a	−1.1	6 8 p	13.0	0
4	**12.1**	12.0	10.2	10.8	9.9	9.8	10.0	8.5	8.0	8.0	6.5	6.7	6.2	5.3	**4.2**	4.9	6.6	7.2	*7.0*	8.5	8.8	8.8	8.3	8.2	**8.2**	14.3	1 22 a	2.5	3 9 p	11.8	0
5	8.7	**8.8**	**8.8**	7.8	7.9	7.7	7.3	7.3	6.9	6.6	6.3	6.1	5.3	5.9	5.2	1.8	0.7	−1.7	*−3.2*	−2.1	−0.5	3.1	7.5	**8.8**	5.0	9.7	10 37 p	−4.8	6 53 p	14.5	0
6	8.3	8.5	8.5	9.5	10.8	11.4	8.5	6.9	6.3	6.4	6.4	6.5	2.5	2.8	1.5	1.9	3.6	6.2	*−0.5*	3.7	**14.3**	8.9	8.6	8.3	6.7	22.8	8 51 p	*−5.4*	6 27 p	28.2	2
7	8.7	9.9	11.2	11.2	**12.1**	10.5	8.2	8.2	7.3	6.9	6.6	6.7	7.2	5.7	4.8	**3.5**	7.1	6.4	*7.1*	9.6	10.7	8.6	9.2	9.2	**8.2**	13.2	4 51 a	1.8	3 8 p	11.4	0
8	9.2	10.9	**17.3**	16.5	12.2	9.3	8.1	5.3	3.5	5.6	5.7	5.0	3.8	1.7	2.5	**0.4**	0.8	1.2	*4.2*	9.1	9.2	13.7	12.5	10.5	7.4	18.9	2 48 a	−2.2	3 30 p	21.1	1
9	9.7	8.3	9.2	9.3	8.7	**9.9**	8.6	7.0	6.0	4.1	4.4	5.3	4.6	3.2	1.5	2.0	1.9	0.8	*0.4*	**−0.5**	3.1	4.3	4.9	8.7	5.2	10.0	6 1 a	−2.3	7 9 p	12.3	0
10	9.5	10.0	10.2	**11.9**	9.9	8.4	7.2	7.3	6.2	4.1	5.1	5.5	4.1	3.8	3.2	3.1	3.5	*3.0*	*2.3*	*1.9*	**1.6**	6.5	6.4	7.7	5.9	13.2	3 35 a	−1.7	8 8 p	14.9	0
11	8.9	9.1	8.2	8.7	8.6	9.1	9.5	**12.5**	10.0	6.8	4.6	1.6	0.4	0.9	−0.8	−2.0	**−3.8**	0.4	*−2.1*	−0.2	3.1	8.3	7.3	9.5	**4.9**	14.0	7 29 a	−4.7	4 55 p	18.7	0
12	11.1	**13.9**	13.2	10.0	8.9	8.7	7.4	7.3	5.8	6.1	5.1	4.5	3.4	−0.8	**−2.3**	1.0	0.4	2.1	*7.2*	10.1	8.1	7.7	7.4	8.2	6.4	17.3	2 5 a	−3.7	2 26 p	21.0	1
13	8.3	9.3	8.9	8.9	**10.1**	9.7	7.5	7.0	6.0	5.2	5.7	**3.2**	4.9	4.5	6.2	5.4	6.4	7.1	*8.3*	7.3	4.4	5.6	*7.2*	*7.7*	6.9	11.2	4 21 a	1.8	11 29 a	9.4	0
14	*6.6*	7.2	7.4	9.9	**10.0**	8.1	8.3	8.2	6.7	5.9	5.0	5.8	3.9	4.5	4.1	3.9	3.2	**2.4**	*2.6*	2.5	**2.4**	4.4	6.5	7.1	5.7	12.7	4 3 a	−0.7	6 0 p	13.4	0
15	6.5	7.6	7.2	7.2	7.4	7.4	7.0	7.0	6.4	5.5	5.1	4.8	3.6	3.4	3.0	**1.7**	2.2	4.7	*5.3*	5.0	5.4	4.9	6.4	**7.7**	5.5	**8.4**	3 0 a	−1.4	3 57 p	9.8	0
16	7.8	7.8	7.7	8.2	8.8	8.6	8.3	13.8	4.8	4.6	4.7	3.9	4.9	4.9	5.2	**3.8**	4.9	6.0	*19.1*	4.2	11.4	8.9	9.2	9.3	7.5	**32.8**	7 8 a	−1.0	7 36 p	**33.8**	2
17	7.8	8.1	7.7	8.4	9.1	8.7	8.9	6.8	6.4	5.9	5.9	5.4	5.1	5.4	5.5	5.5	6.3	5.9	*4.3*	**3.6**	5.4	5.9	8.2	**9.4**	6.7	10.7	6 0 a	2.4	7 15 p	8.3	0
18	8.1	8.3	8.2	7.7	8.5	**9.6**	7.8	7.4	7.2	6.4	4.7	5.6	5.3	5.5	5.3	6.2	5.8	6.7	*4.6*	**2.6**	3.3	3.8	4.5	4.9	6.2	11.1	5 11 a	0.7	7 47 p	10.4	0
19	5.3	6.0	6.0	5.9	4.8	5.0	4.8	4.7	4.2	4.2	3.8	3.6	3.6	3.6	**3.5**	3.9	4.2	4.9	*5.6*	6.7	7.7	**8.5**	8.3	8.4	5.3	9.7	9 33 p	3.0	1 3 p	6.7	1
20	8.1	8.3	7.9	7.8	7.7	7.6	7.6	7.4	7.2	7.1	6.8	7.0	6.5	6.2	6.2	**5.5**	6.8	7.6	*8.2*	**8.6**	7.7	8.5	8.3	7.6	7.4	9.7	8 42 p	**5.3**	4 11 p	**4.4**	2
21	7.8	7.7	7.4	7.3	7.2	7.2	7.2	7.0	6.7	6.8	6.5	6.2	6.2	6.5	6.5	4.7	4.8	4.4	*3.6*	9.0	7.6	9.0	8.6	**9.3**	6.9	11.1	9 7 p	2.4	6 42 p	8.7	0
22	7.0	7.6	7.4	7.2	7.2	7.2	7.0	7.0	6.8	7.0	5.9	4.8	5.6	5.9	4.9	**4.2**	6.0	7.2	*7.3*	7.4	6.6	6.3	9.1	**11.0**	6.8	11.5	11 30 p	2.0	3 15 p	9.5	0
23	9.7	9.9	**11.4**	11.3	10.9	10.0	8.5	7.8	6.4	**4.9**	5.1	5.5	6.0	6.2	6.2	7.0	7.3	5.7	*5.8*	6.4	7.4	7.7	7.4	7.7	7.6	11.9	2 57 a	4.0	5 6 p	7.9	0
24	7.6	8.3	8.6	8.3	8.4	7.9	7.2	7.2	6.8	6.5	6.5	6.6	6.2	6.4	6.0	6.4	6.3	6.5	*7.7*	2.7	**1.4**	8.2	13.9	**15.8**	7.4	19.4	11 26 p	−0.3	8 0 p	19.7	0
25	**19.0**	16.0	14.6	12.8	8.3	8.8	7.8	7.3	4.6	0.4	−1.2	−1.6	−3.2	−0.9	2.0	**−3.7**	−2.5	1.2	*2.0*	7.6	7.9	7.8	9.4	10.3	5.6	21.1	0 21 a	**−6.2**	4 10 p	27.3	2
26	8.5	7.7	9.0	11.6	**16.0**	12.4	9.1	6.9	2.4	6.2	4.6	4.5	3.8	3.5	1.9	**0.8**	3.5	2.4	*3.5*	5.4	4.5	6.0	6.8	7.0	6.2	18.1	4 33 a	−0.7	8 33 a	18.8	0
27	7.1	7.2	7.4	7.8	**8.7**	8.4	7.8	6.8	6.7	6.2	5.3	5.6	5.8	6.1	5.8	6.0	6.2	**4.3**	*5.4*	8.3	8.1	6.6	6.3	7.9	6.7	9.5	4 42 a	1.4	5 41 p	8.1	0
28	8.8	8.9	9.4	11.0	**11.3**	10.2	7.8	7.4	6.8	6.4	6.2	6.8	6.2	5.9	5.8	6.2	6.6	5.6	*5.2*	5.0	**4.9**	6.2	7.3	7.8	7.2	12.0	4 18 a	3.6	7 51 p	8.4	0
29	8.5	7.9	8.3	8.9	9.2	9.0	7.9	7.9	7.4	6.7	6.4	4.2	4.8	3.7	**3.6**	5.0	5.2	4.6	*6.4*	7.9	**9.7**	**9.7**	8.8	9.4	7.1	11.5	8 56 p	2.5	2 12 p	9.0	0
30	9.1	8.2	8.2	8.2	8.4	8.7	8.1	7.8	7.7	7.6	7.3	**6.2**	6.6	6.7	6.5	**6.2**	6.9	8.2	*8.7*	**9.7**	8.1	7.2	*8.4*	*8.7*	7.8	10.0	7 15 p	4.5	8 51 p	5.5	1
Mean 1	8.9	9.2	9.4	**9.5**	**9.5**	9.0	8.0	7.6	6.4	6.0	5.5	5.2	4.6	4.3	3.9	**3.4**	3.9	4.2	4.6	5.0	5.8	6.7	7.8	8.7	6.5	13.8		0.0		13.8	
» 2	8.5	8.9	9.1	9.3	**9.5**	9.0	8.1	7.7	6.5	6.3	5.8	5.4	4.9	4.5	4.0	**3.6**	4.2	4.4	4.9	5.1	6.0	6.9	7.9	8.8	6.6						
» 3	8.6	8.8	9.1	**9.3**	**9.3**	8.9	8.2	7.6	6.8	6.2	5.8	5.4	5.0	4.5	4.0	**3.9**	4.1	4.5	4.8	5.3	6.0	6.9	7.8	8.5							

October 1904. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	7.1	7.2	7.0	6.7	6.7	6.9	6.9	6.6	5.9	5.4	4.4	4.6	5.0	4.3	3.1	0.9	1.5	1.3	2.0	1.6	3.3	5.4	8.2	10.1	5.1	12.0	11 8 p	-0.4	5 47 p	12.4	0
2	9.4	9.1	7.7	7.0	7.0	7.2	8.0	7.9	6.3	5.6	5.6	5.0	4.2	2.9	2.4	4.2	4.4	7.4	1.8	5.0	7.5	7.8	7.6	8.6	6.2	10.9	11 45 p	-4.0	6 9 p	14.9	0
3	8.8	9.0	9.0	9.0	8.9	8.7	7.5	7.2	6.9	6.7	6.4	5.4	4.3	4.6	4.8	5.3	4.6	3.1	3.3	5.3	5.9	5.6	6.3	7.1	6.4	9.4	4 11 a	1.8	5 30 p	7.6	1
4	7.5	7.7	7.8	7.8	7.8	8.8	8.5	8.0	6.6	6.6	5.4	6.1	5.6	5.5	5.6	6.0	6.1	5.3	4.3	3.2	4.0	6.5	7.5	8.1	6.5	9.8	5 20 a	1.7	7 36 p	8.1	1
5	8.9	8.3	8.1	8.9	9.0	11.5	7.8	7.7	6.2	5.3	5.4	5.1	4.9	4.2	4.2	4.6	4.6	3.0	3.2	3.8	6.1	5.1	7.3	9.0	6.3	14.0	5 3 a	1.4	7 0 p	12.6	0
6	11.1	9.9	8.8	9.8	10.7	8.3	7.3	6.9	5.6	6.0	5.4	4.3	3.4	2.7	2.6	4.8	7.3	6.4	6.3	7.3	7.9	9.0	7.5	7.1	6.9	12.1	4 6 a	1.8	2 33 p	10.3	0
7	7.5	7.3	7.5	13.4	16.5	10.3	7.9	4.8	-2.3	3.2	3.0	3.0	0.9	-5.9	-2.9	-2.8	-2.2	-0.9	0.4	4.8	4.8	7.9	9.0	15.2	4.6	28.1	0 0 p	-9.4	8 27 a	37.5	2
8	24.8	14.2	10.2	19.0	14.2	10.1	5.8	4.9	4.6	1.0	2.4	2.6	0.0	-1.7	-1.2	-2.6	-0.1	-1.8	2.2	4.6	5.3	8.2	7.3	8.3	5.9	44.8	0 13 a	-6.4	3 33 p	51.2	2
9	9.6	9.2	8.8	9.3	9.6	7.9	8.2	6.9	5.5	4.2	2.3	3.3	3.7	2.7	-0.2	0.4	0.6	0.4	2.5	3.2	5.9	7.6	8.2	7.1	5.3	11.6	4 51 a	-1.2	5 14 p	12.8	0
10	7.6	7.8	8.8	8.9	9.0	9.3	7.4	6.2	5.1	3.2	5.0	5.3	5.8	5.2	5.0	5.4	5.6	5.6	3.8	5.2	6.4	6.7	7.9	7.2	6.4	15.6	5 26 a	0.6	9 11 a	15.0	0
11	7.1	6.9	7.0	7.8	8.2	8.4	6.6	6.7	6.3	5.4	5.5	5.6	5.4	5.5	5.8	5.2	5.5	4.8	5.9	4.6	8.2	7.4	6.9	7.2	6.4	12.2	5 7 a	1.8	6 10 p	10.4	0
12	7.3	6.9	6.7	7.0	6.7	6.9	7.2	6.2	5.0	5.3	4.8	5.3	5.4	5.4	3.2	1.8	2.4	2.9	3.7	3.1	4.1	5.4	6.6	6.6	5.2	7.4	6 54 a	1.7	3 36 p	5.7	1
13	6.6	6.7	6.9	7.3	7.8	7.7	6.3	6.5	5.0	3.9	3.2	2.5	-1.6	0.6	-0.4	-0.7	-1.5	-1.5	0.2	0.6	6.0	16.0	17.0	19.0	5.2	21.1	11 36 a	-7.7	5 59 p	28.8	2
14	16.9	14.1	13.3	10.4	7.1	6.4	6.6	5.8	5.6	5.4	5.3	5.2	5.0	4.7	3.0	0.8	2.0	2.9	2.4	0.6	10.8	8.7	10.1	9.9	6.8	18.0	0 0 a	-1.2	7 27 p	19.2	0
15	12.2	9.2	12.9	9.6	7.9	8.7	7.7	7.3	7.2	7.0	6.5	6.7	7.0	6.6	6.0	5.4	5.5	6.9	7.9	6.9	9.2	9.8	9.3	9.4	8.0	15.6	2 38 a	3.5	7 27 p	12.1	0
16	9.4	13.6	16.3	10.6	8.9	8.3	8.6	8.6	6.9	6.5	7.5	4.7	5.3	5.1	4.5	5.3	5.9	6.9	9.1	11.7	9.9	9.3	9.3	9.2	8.3	20.3	2 9 a	2.4	6 17 p	17.9	0
17	9.3	8.8	8.3	7.5	7.6	7.7	7.8	7.7	7.1	7.2	7.1	7.2	7.2	7.0	6.5	7.2	5.9	7.6	7.7	9.6	8.3	8.3	8.6	8.2	7.7	10.2	7 36 p	4.0	4 39 p	6.2	1
18	7.9	7.7	7.6	7.7	7.7	7.8	7.7	7.0	7.1	7.1	6.6	6.0	6.3	6.6	5.4	7.0	7.0	8.3	8.6	8.3	7.9	7.7	7.8	7.7	7.4	9.3	0 48 a	5.0	2 33 p	4.3	2
19	7.7	7.8	7.8	7.9	8.2	8.2	8.0	8.4	7.4	6.6	6.9	6.7	6.9	7.0	6.5	6.4	6.3	6.7	8.6	7.3	8.2	8.6	8.2	7.8	7.5	9.2	7 8 a	3.4	5 41 p	5.8	1
20	8.5	8.6	8.4	8.3	8.2	7.8	7.2	7.1	6.9	7.0	6.7	6.6	5.3	5.4	5.4	4.4	4.4	6.0	8.0	6.7	7.3	9.0	9.2	9.4	7.2	10.5	11 21 p	3.5	4 53 p	7.0	1
21	10.0	10.4	7.7	8.2	8.3	8.6	9.1	7.9	5.9	4.0	4.4	5.3	5.6	4.2	0.9	-2.0	-3.8	-2.4	3.1	9.7	13.6	13.8	10.9	11.7	6.5	22.1	7 53 p	-5.0	4 15 p	27.1	1
22	13.6	29.2	17.0	12.5	14.3	10.4	10.0	7.3	6.7	7.8	7.5	7.0	7.1	6.2	5.6	3.5	2.5	1.5	6.5	8.8	9.3	9.7	8.4	9.2	9.2	47.3	1 27 a	-1.6	3 53 p	48.9	2
23	9.4	9.9	10.6	14.3	12.5	8.5	8.0	7.4	6.4	6.4	6.6	6.3	6.4	5.5	5.4	6.3	5.0	3.2	8.3	5.8	8.8	7.9	7.9	9.3	7.8	17.4	3 22 a	1.9	5 47 p	15.5	0
24	9.3	9.7	9.4	9.4	8.4	8.4	8.4	8.3	8.2	7.1	6.6	7.5	6.6	6.4	5.0	6.0	5.4	3.9	6.9	4.6	6.0	7.3	8.1	8.9	7.3	9.9	3 12 a	3.6	7 23 p	6.3	1
25	8.4	8.9	10.2	11.3	11.3	9.1	8.6	8.0	7.4	7.3	6.2	6.6	6.7	6.9	7.0	7.4	4.8	4.7	10.8	8.7	9.3	13.5	13.6	14.0	8.8	16.4	11 0 p	2.3	4 53 p	14.1	0
26	10.3	8.5	8.7	8.6	8.1	8.8	8.8	7.8	7.8	7.8	7.8	7.8	7.7	7.2	6.6	5.5	5.6	7.1	9.6	10.9	10.9	9.8	9.0	9.1	8.3	12.6	6 51 p	4.8	4 54 p	7.8	1
27	9.2	8.8	9.4	10.5	9.3	8.9	7.3	6.7	6.2	6.5	4.2	3.0	1.7	0.0	-1.2	-2.8	1.5	5.8	5.6	5.5	8.3	8.1	8.6	8.9	5.8	10.6	3 34 a	-6.9	3 5 p	17.5	0
28	11.3	7.3	8.7	9.3	8.4	8.6	6.8	6.7	5.0	2.8	2.6	2.4	3.0	0.6	-0.4	0.3	3.0	6.1	7.8	3.7	6.6	8.2	7.8	7.8	5.6	13.7	0 33 a	-2.7	2 59 p	16.4	0
29	7.7	7.6	7.6	7.9	8.8	8.9	7.8	7.2	7.0	6.6	5.6	6.4	3.1	1.8	0.4	1.8	3.7	6.7	4.8	5.6	6.1	9.8	8.2	7.9	6.2	10.2	10 58 p	-0.8	2 14 p	11.0	0
30	9.4	8.2	8.2	8.3	8.7	9.0	10.4	8.8	6.5	6.9	5.6	4.2	2.9	2.9	2.4	0.7	0.9	0.6	2.3	4.3	7.8	7.8	10.0	14.1	6.3	15.7	11 32 p	-1.4	5 30 p	17.1	0
31	11.8	12.9	12.9	13.0	15.7	14.9	10.1	8.9	7.3	5.5	3.6	1.9	0.4	-1.0	3.7	5.3	5.6	1.9	1.3	3.0	3.6	5.5	7.2	7.8	6.8	21.0	4 57 a	-3.6	1 39 p	24.6	1
Mean 1	9.9	9.7	9.3	9.6	9.4	8.7	7.9	7.2	6.1	5.7	5.4	5.1	4.6	3.8	3.4	3.3	3.5	3.9	5.1	5.6	7.3	8.4	8.7	9.4	6.7	16.1		-0.2		16.3	
» 2	9.4	9.1	9.2	9.1	8.9	8.6	7.9	7.4	6.5	6.0	5.5	5.3	4.9	4.3	3.7	3.7	4.0	4.5	5.4	5.7	7.5	8.1	8.4	8.9	6.8						
» 3	9.2	9.2	9.2	9.1	8.9	8.5	8.0	7.3	6.6	6.0	5.6	5.3	4.9	4.3	3.9	3.8	4.1	4.6	5.2	6.1	7.2	8.0	8.5	8.9							

November 1904. **Table CVIII. — Hourly Values of Declination, West.** **Gjøahavn.**

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Mean	Midt.	Max.	Hour	Min.	Hour	Range	Char.
1	8.6	10.2	11.7	**12.1**	11.6	9.8	9.1	7.4	8.5	7.4	6.7	4.2	3.1	3.3	0.6	**-0.4**	1.0	1.2	1.3	4.7	5.4	5.2	6.1	6.9	6.1	13.6	3 59 a	-1.6	2 57 p	15.2	0
2	6.5	7.3	9.0	8.2	8.8	8.7	8.2	8.6	8.9	7.2	6.0	4.9	0.6	**0.1**	2.3	2.8	5.4	13.7	9.7	**16.0**	14.3	10.3	9.6	8.8	7.7	19.2	6 15 p	-3.5	1 14 p	22.7	1
3	9.8	9.6	8.6	9.7	9.2	9.0	8.9	8.9	7.4	3.6	**2.5**	3.0	5.4	5.0	3.8	7.4	6.4	7.5	9.9	12.0	**12.8**	12.3	8.5	8.3	7.9	15.9	8 43 p	0.7	10 0 a	15.2	0
4	8.3	7.8	7.7	7.8	8.4	8.2	7.4	6.6	3.7	4.6	2.7	0.6	-2.1	-5.8	**-6.2**	-5.5	-4.2	-0.9	5.7	4.3	7.5	8.7	14.8	**17.5**	**4.5**	24.4	11 53 p	-7.7	2 50 p	32.1	2
5	12.5	7.7	11.3	**17.1**	13.1	9.0	8.0	5.8	6.5	6.9	5.2	4.4	0.0	**-2.8**	-0.6	0.6	-0.8	3.4	9.2	8.2	7.1	7.1	7.8	8.1	6.5	24.2	0 0 a	-5.0	1 42 p	29.2	2
6	8.9	10.6	11.6	**11.8**	11.5	9.5	8.9	6.8	5.1	5.1	6.0	5.2	**3.1**	5.4	6.5	7.3	5.4	5.4	4.0	3.6	8.6	8.9	8.1	7.9	7.3	13.3	2 19 a	2.4	6 50 p	10.9	0
7	7.7	7.6	7.9	8.5	8.5	8.8	8.8	**10.0**	7.9	6.0	5.0	5.7	5.2	5.9	5.8	**3.6**	4.8	8.2	4.8	7.3	8.1	7.6	8.0	7.9	7.1	11.8	7 14 a	2.7	4 6 p	9.1	0
8	8.0	7.7	7.6	7.6	8.0	8.0	8.2	**8.7**	7.2	7.1	5.8	5.3	6.6	6.5	5.2	**3.7**	5.2	6.3	5.3	7.3	6.4	7.9	7.9	8.0	6.9	8.8	7 38 a	1.8	4 10 p	7.0	1
9	8.2	9.2	**9.5**	8.9	9.2	8.8	8.4	7.3	7.1	7.1	7.9	7.7	6.4	6.5	6.4	5.0	**4.0**	4.8	4.7	5.3	6.5	8.4	7.9	7.6	7.2	9.9	5 10 a	3.4	4 49 p	6.5	1
10	7.6	7.6	7.6	8.0	8.6	**10.2**	8.3	7.3	6.4	6.7	7.0	7.0	6.6	6.6	6.9	6.6	**6.0**	6.4	6.5	6.6	7.0	7.4	7.6	7.7	7.3	12.5	5 35 a	5.2	5 5 p	7.3	1
11	7.6	7.7	7.5	7.5	7.6	7.6	7.6	7.6	7.5	7.4	6.4	6.5	6.5	6.4	6.4	6.3	6.5	7.7	6.0	**5.8**	8.1	9.7	**10.0**	9.1	7.4	10.8	10 33 a	4.0	6 36 p	6.8	1
12	**8.7**	8.2	7.6	7.6	7.6	7.7	7.9	7.6	7.6	7.6	7.4	7.4	7.4	7.4	7.8	7.8	7.9	**7.0**	8.7	7.4	**8.7**	8.6	7.9	8.2	7.8	9.6	8 17 p	6.4	5 31 p	3.2	2
13	8.0	7.6	7.6	7.7	7.7	7.9	7.9	7.6	7.6	7.6	7.5	7.6	7.6	7.6	**7.4**	7.5	8.1	8.3	8.0	7.9	8.4	**8.6**	7.9	8.5	7.8	8.8	11 24 p	**6.5**	3 22 p	2.3	2
14	7.9	8.1	7.6	7.7	7.6	7.6	7.6	7.6	7.4	6.5	**6.4**	6.5	6.5	6.5	**6.4**	6.6	**6.4**	**8.5**	7.4	7.8	7.4	7.9	8.0	8.0	7.3	10.1	5 26 p	6.1	4 38 p	4.0	2
15	7.5	6.8	6.8	6.6	6.6	6.8	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.6	6.4	6.3	7.4	6.4	7.4	9.1	**11.6**	7.0	12.8	11 30 p	4.3	5 47 p	8.5	0
16	8.9	7.6	11.4	**19.6**	14.4	12.6	8.7	7.8	6.6	4.7	4.0	4.6	6.4	3.7	1.7	1.6	**-0.9**	3.0	5.2	5.8	6.8	6.6	8.5	12.6	7.2	46.9	3 29 a	-2.2	4 6 p	49.1	2
17	8.0	7.0	10.0	11.2	**17.3**	13.9	8.7	11.3	14.4	9.7	6.0	4.3	3.3	2.7	3.7	**-0.9**	**-0.9**	4.3	7.0	7.8	8.7	8.3	8.4	7.9	7.6	**66.7**	8 0 a	-3.0	3 14 p	**69.7**	2
18	8.4	9.2	10.4	12.4	9.4	9.9	**14.1**	6.5	6.0	2.2	2.8	2.8	-1.2	**-2.6**	0.7	3.3	1.2	3.5	3.5	5.3	7.0	7.1	7.3	7.1	5.7	29.2	6 11 a	-6.0	0 59 p	35.2	2
19	7.5	7.7	7.7	7.7	8.1	7.6	7.6	7.6	6.5	6.5	6.4	6.5	6.6	6.6	6.8	7.0	6.4	**6.2**	7.6	**8.7**	8.6	8.0	7.6	7.5	7.3	9.1	7 11 p	5.1	5 55 p	4.0	2
20	7.3	7.4	7.4	7.4	7.4	7.4	7.3	7.1	6.9	6.9	6.9	6.9	6.9	6.8	6.6	7.0	7.0	7.0	7.4	**7.6**	7.4	7.5	7.0	**6.5**	7.1	**7.8**	7 45 p	6.4	9 28 p	**1.4**	2
21	6.6	6.6	6.5	7.0	7.3	**8.0**	7.3	7.6	7.0	6.3	6.4	6.4	6.4	6.3	6.3	**5.8**	6.7	6.2	7.0	7.4	7.8	**8.0**	7.5	7.4	6.9	9.3	5 23 a	5.6	4 24 p	3.7	2
22	7.5	7.6	7.9	8.7	**14.0**	11.7	9.7	7.5	7.1	6.9	6.4	6.4	6.6	6.6	7.2	**5.4**	9.1	9.8	8.2	9.2	9.7	8.3	7.6	8.0	**8.2**	15.9	4 26 a	2.9	4 3 p	13.0	0
23	8.4	**9.1**	8.7	7.6	7.6	7.6	7.6	7.6	7.6	7.5	7.5	7.1	**6.4**	6.5	7.4	7.7	7.9	8.0	7.8	8.6	8.3	8.1	7.6	7.9	7.8	10.0	1 6 a	5.6	1 42 p	4.4	2
24	7.7	7.7	7.7	7.6	7.6	7.6	7.6	7.4	6.6	6.3	6.4	6.3	5.7	5.4	**5.2**	5.7	5.8	6.4	6.3	6.4	6.5	6.5	**7.9**	7.4	6.7	8.8	5 38 a	5.1	2 30 p	3.7	2
25	6.5	6.5	7.9	7.9	9.3	**11.4**	9.6	7.0	6.1	3.3	1.2	-1.4	-3.5	-1.6	**-3.6**	1.2	8.2	10.1	9.3	9.5	8.0	7.9	7.8	7.8	5.7	13.0	5 15 a	- 6.1	0 34 p	19.1	0
26	7.4	8.0	8.0	**9.7**	8.0	6.4	7.0	6.5	**7.1**	5.8	5.7	5.8	5.6	5.8	4.0	-3.9	**-6.9**	-2.2	1.2	6.4	**7.4**	9.1	8.6	7.6	5.3	11.2	3 48 a	**-10.3**	4 9 p	21.5	0
27	5.7	5.7	6.4	7.6	7.6	**7.7**	7.1	6.2	5.2	5.9	6.0	3.7	3.3	2.7	0.2	**-1.1**	0.2	1.8	2.8	6.0	6.3	7.2	7.6	7.3	5.0	8.5	5 34 a	- 3.0	3 36 p	11.5	0
28	6.9	8.2	6.8	**9.2**	8.8	8.0	8.2	6.9	6.5	6.7	7.3	6.5	5.8	**5.4**	5.9	7.2	6.9	6.9	7.9	8.0	8.1	7.2	7.7	6.9	7.2	10.3	3 33 a	4.7	1 39 p	5.6	1
29	6.9	7.1	6.7	7.9	8.0	9.4	8.4	8.5	6.4	6.7	5.5	4.3	4.2	5.2	5.0	4.6	5.2	**3.9**	4.3	5.6	5.5	7.7	**9.8**	7.9	6.4	13.0	10 30 p	1.0	6 2 p	12.0	0
30	7.9	7.9	7.7	8.1	8.2	7.9	7.9	7.5	6.8	7.2	6.9	6.5	6.5	5.5	**5.1**	5.4	5.2	5.2	7.5	6.5	9.6	**10.0**	9.7	9.4	7.3	11.1	8 50 p	4.1	2 50 p	7.0	1
Mean 1	7.9	7.9	8.4	**9.2**	**9.2**	8.8	8.3	7.6	7.1	6.3	5.8	5.3	4.6	4.3	4.2	**4.1**	4.3	5.8	6.4	7.3	7.9	8.1	8.3	8.5	6.9	15.9		1.2		14.7	
» 2	7.9	8.0	8.5	9.3	**9.5**	9.0	8.5	7.7	7.2	6.3	5.8	5.1	4.2	4.1	4.1	**3.8**	4.2	5.8	6.1	7.4	8.0	8.2	8.2	8.0	6.9						
» 3	8.0	8.1	8.6	9.1	**9.3**	9.0	8.4	7.8	7.1	6.4	5.7	5.1	4.4	4.2	4.1	**4.0**	4.5	5.5	6.4	7.2	7.9	8.1	8.2	8.1							

December 1904. Table CVIII. — Hourly Values of Declination. West. Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	10.0	13.1	15.2	13.5	15.7	12.3	10.3	8.4	6.7	6.0	5.6	3.8	0.3	0.3	-0.8	1.4	0.5	2.3	2.9	4.8	6.4	6.7	6.9	7.5	6.6	18.4	4 54 a	-2.8	3 10 p	21.2	2
2	7.7	9.6	7.7	7.9	8.1	7.9	7.9	7.5	6.8	6.1	6.4	6.4	6.5	6.5	5.1	7.2	5.8	5.4	4.8	7.5	10.0	8.3	7.2	7.2	7.1	11.8	8 7 p	0.7	6 21 p	11.1	0
3	8.1	7.2	6.8	7.9	7.9	8.5	10.9	8.7	8.4	4.6	2.7	2.2	3.3	4.1	-1.2	1.9	2.5	5.4	11.1	5.2	10.2	7.9	8.3	7.9	6.3	14.7	6 24 p	-8.8	4 20 p	23.5	2
4	7.7	7.7	7.9	8.0	7.9	9.3	8.1	7.3	7.1	7.6	7.3	6.5	6.0	5.2	5.2	2.6	5.4	3.5	5.0	6.2	8.1	10.2	10.6	9.6	7.1	12.2	5 11 a	0.0	3 18 p	12.2	0
5	9.6	12.2	11.1	9.4	11.8	10.3	8.6	7.5	6.0	5.0	3.7	2.5	3.7	5.0	4.6	1.8	2.8	3.3	4.2	7.2	6.8	8.4	10.4	9.8	6.9	15.0	1 30 a	0.7	11 42 a	14.3	1
6	9.4	9.2	8.9	8.5	8.0	8.7	7.5	7.5	6.8	6.9	6.3	4.8	3.9	5.4	5.8	6.5	3.5	6.7	7.6	8.4	7.2	6.9	7.9	7.2	7.1	11.0	0 8 a	2.4	4 19 p	8.6	0
7	7.3	7.2	7.5	7.6	7.2	8.0	8.0	7.1	6.5	6.3	5.4	5.2	4.8	5.0	5.6	5.9	6.4	7.1	7.3	7.9	7.6	7.9	7.9	7.3	6.8	8.8	6 3 a	3.8	2 56 p	5.0	0
8	7.3	7.5	7.5	8.6	9.2	8.8	8.1	7.5	6.8	6.9	7.1	6.7	6.5	6.2	5.8	5.1	5.1	5.2	5.6	6.3	7.3	7.2	7.0	7.2	7.0	9.6	4 37 a	3.3	6 26 p	6.3	0
9	7.2	7.0	6.5	6.9	6.9	7.7	7.5	7.5	7.5	7.2	6.4	4.3	0.3	1.3	5.5	5.9	5.5	8.4	8.0	7.5	8.0	8.8	6.7	8.0	6.5	11.6	9 36 p	-1.2	0 46 p	12.8	0
10	7.1	7.2	8.1	7.9	7.9	8.0	8.5	7.5	6.1	6.7	6.8	6.5	5.6	4.2	6.0	6.9	6.0	6.9	7.4	8.1	7.9	7.6	8.1	7.2	7.1	9.3	2 49 a	3.1	4 54 p	6.2	0
11	6.8	6.9	7.1	7.2	7.7	7.3	7.6	7.6	7.7	6.7	5.8	6.5	6.6	6.6	6.5	6.8	5.4	5.2	6.0	6.9	7.7	8.3	8.0	7.2	6.9	8.4	9 48 p	4.2	4 42 p	4.2	1
12	6.8	6.8	6.8	6.8	6.8	7.1	7.5	7.5	7.2	7.2	7.2	6.8	6.7	6.8	6.8	6.5	5.2	7.3	7.2	8.0	8.3	7.9	7.5	7.2	7.1	8.4	8 50 p	4.3	4 20 p	4.1	1
13	7.5	7.7	7.9	7.3	7.2	7.7	7.3	7.3	7.2	7.2	7.1	7.2	6.7	6.8	6.7	6.5	6.7	6.7	7.1	7.3	7.9	7.3	7.3	6.9	7.2	8.4	5 0 a	6.2	8 25 p	2.2	2
14	6.9	7.3	7.3	6.9	8.4	8.4	8.0	8.5	6.7	6.7	6.8	7.0	7.2	7.1	6.8	5.2	6.9	3.9	5.2	6.3	7.3	10.2	8.4	10.9	7.3	13.3	0 0 p	1.9	6 29 p	11.4	0
15	14.5	10.0	10.2	8.8	8.0	9.5	13.3	7.5	6.1	6.1	3.9	5.8	4.6	5.9	5.2	5.2	4.6	4.1	6.3	6.0	7.3	10.1	9.7	7.2	7.5	18.4	6 38 a	1.3	5 28 p	17.1	2
16	8.5	7.9	7.9	7.7	7.5	7.9	8.2	7.9	7.3	3.7	6.6	6.5	3.9	3.7	4.8	6.0	4.3	6.2	5.1	6.6	7.6	8.5	7.7	7.2	6.6	15.0	10 58 a	1.1	4 40 p	13.9	1
17	7.1	7.1	6.8	6.8	6.9	7.3	7.9	6.9	7.3	6.8	6.7	6.7	6.2	6.3	5.4	5.5	4.4	6.7	7.5	7.9	7.9	7.9	7.2	7.2	6.8	8.5	7 35 p	2.7	3 58 p	5.8	0
18	7.2	7.1	7.2	7.3	7.3	7.9	7.3	7.3	6.5	6.5	6.5	6.5	6.5	6.5	6.4	5.8	5.6	5.2	5.5	6.9	8.1	8.3	8.3	7.9	6.9	9.4	9 48 p	4.3	4 54 p	5.1	0
19	6.5	6.5	6.5	6.5	6.8	7.3	7.5	7.3	7.5	6.7	6.5	6.0	6.2	5.8	5.9	6.5	6.5	5.8	7.6	7.3	7.2	7.5	6.9	6.5	6.7	8.4	6 3 p	3.3	3 22 p	5.1	0
20	6.5	6.7	7.1	8.0	7.7	7.9	7.9	7.6	7.9	7.2	6.6	6.5	6.5	6.5	6.5	6.9	6.5	7.7	7.5	6.8	7.6	6.7	6.7	7.2	7.1	8.5	3 14 a	4.7	4 25 p	3.8	1
21	7.9	7.7	8.1	8.4	8.9	11.3	8.8	8.0	9.6	7.5	5.5	3.8	2.0	3.0	2.5	3.7	5.9	5.2	6.8	7.2	7.6	8.3	8.3	8.0	6.8	12.2	5 19 a	1.3	0 30 p	10.9	0
22	9.2	8.6	7.2	7.2	7.3	7.7	7.9	7.7	7.7	7.1	7.1	7.1	6.7	6.5	6.7	6.7	6.9	6.5	6.3	7.1	6.7	7.7	7.7	7.2	7.3	9.4	0 33 a	5.4	5 51 p	4.0	1
23	7.3	8.0	7.9	7.6	7.7	7.7	7.9	7.7	7.7	7.6	6.8	7.3	6.9	6.9	6.7	7.1	6.9	7.1	6.9	6.5	7.6	8.3	8.1	7.1	7.4	8.5	6 11 a	5.2	7 59 p	3.3	1
24	6.7	6.3	7.1	6.8	7.7	7.7	7.7	7.7	7.5	7.7	7.2	7.1	6.8	6.5	5.6	6.2	6.4	7.1	6.8	6.7	7.1	7.2	6.7	6.1	6.9	7.9	4 47 a	5.4	2 50 p	2.5	2
25	6.5	6.7	6.7	6.7	6.9	7.5	8.8	7.1	6.1	6.5	6.5	6.5	6.5	5.9	5.2	5.4	5.9	6.0	6.4	6.5	6.5	6.5	6.5	6.5	6.5	10.1	6 14 a	4.6	2 15 p	5.5	0
26	6.5	6.8	6.8	6.7	6.5	7.2	8.8	7.3	6.7	5.5	5.0	4.6	2.7	0.9	1.7	3.0	5.5	5.9	6.9	6.8	6.9	7.2	7.5	10.1	6.0	13.4	0 0 p	-1.2	1 12 p	14.6	1
27	13.1	10.7	7.9	7.3	6.9	7.5	6.3	4.6	6.1	7.1	6.6	6.3	6.5	6.7	6.5	6.4	6.5	6.0	6.3	7.1	7.2	8.3	8.5	8.5	7.3	17.5	0 7 a	2.9	7 6 a	14.6	1
28	8.1	9.6	7.5	7.2	6.9	6.9	7.1	7.2	7.9	6.5	5.1	5.2	6.5	5.6	5.0	5.4	5.4	4.8	5.6	7.3	8.7	8.3	7.7	7.5	6.8	11.5	1 48 a	3.1	10 53 a	8.4	0
29	6.9	7.9	7.9	7.2	7.2	7.2	7.2	6.5	5.0	4.6	5.5	5.2	5.2	4.2	3.9	2.6	3.3	6.4	5.5	7.5	7.6	7.9	7.9	8.6	6.2	9.3	10 47 p	1.7	3 59 p	7.6	0
30	8.5	8.1	8.4	9.3	7.1	7.1	7.3	6.1	6.1	5.2	6.4	6.5	6.7	6.2	5.6	5.2	5.9	6.7	7.2	6.5	6.5	6.5	6.8	8.3	6.8	13.1	3 14 a	2.7	3 15 p	10.4	0
31	7.7	7.1	6.9	6.8	6.9	7.1	7.2	7.2	6.9	6.9	6.8	6.8	6.7	6.7	6.5	6.5	6.5	6.5	6.3	6.9	7.2	7.2	6.7	6.7	6.9	8.0	0 8 a	5.4	4 48 p	2.6	2
Mean 1	8.0	8.0	7.9	7.8	7.9	8.2	8.2	7.4	7.0	6.5	6.1	5.8	5.3	5.3	5.1	5.3	5.3	5.8	6.4	6.9	7.6	7.9	7.8	7.7	6.9						
« 2	8.3	8.3	8.1	7.9	8.0	8.3	8.3	7.4	6.9	6.3	6.0	5.6	5.0	5.0	4.8	5.0	5.0	5.6	6.3	6.9	7.7	8.1	7.9	7.9	6.9	11.3		2.3		9.0	
» 3	8.2	8.2	8.1	8.0	8.1	8.2	8.1	7.5	6.9	6.4	5.9	5.5	5.2	5.0	4.9	5.0	5.1	5.6	6.3	7.0	7.6	7.9	8.0	8.0							

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	7.1	6.9	7.1	7.1	6.9	7.2	**7.7**	7.3	7.1	6.1	**3.7**	4.4	4.8	6.2	5.2	4.7	6.0	6.4	6.8	6.7	6.7	6.7	6.5	6.7	6.3	**7.5**	9 3 a	2.1	10 51 a	5.4	1
2	6.9	7.1	7.2	7.7	9.0	**9.2**	7.6	7.2	7.1	5.5	6.5	6.5	6.7	6.5	5.2	**3.9**	4.6	4.8	6.4	7.1	7.4	7.3	8.5	9.0	6.9	11.1	5 0 a	3.1	3 42 p	8.0	0
3	8.5	8.6	8.7	8.7	**9.6**	8.7	8.6	7.4	7.1	6.6	5.6	**5.4**	5.7	6.1	6.1	7.0	7.1	7.8	7.4	7.1	7.3	7.5	7.4	7.7	7.4	10.0	4 45 a	4.5	11 38 a	5.5	1
4	7.5	7.7	8.5	**12.1**	8.7	10.2	9.4	8.1	6.9	6.4	4.5	6.1	4.4	**1.4**	2.2	3.0	3.4	5.8	5.3	6.1	9.0	11.3	11.6	12.0	7.1	15.5	3 35 a	-5.4	2 7 p	20.9	1
5	11.5	12.4	11.1	8.2	7.8	6.7	6.5	7.0	6.6	6.0	5.2	5.3	6.4	6.4	6.1	1.9	**-0.2**	1.6	2.4	9.5	**15.0**	9.6	10.3	14.6	7.4	27.4	11 58 p	**-6.1**	3 51 p	33.5	2
6	**14.1**	7.5	9.9	8.1	8.6	9.2	9.9	10.0	6.7	6.3	6.5	6.5	3.5	**1.8**	4.5	2.2	3.2	5.8	6.2	6.5	7.7	7.9	7.8	8.7	7.0	26.6	0 0 a	-0.6	1 36 p	27.2	2
7	7.4	7.1	7.8	7.7	8.2	7.8	7.7	7.8	7.3	7.1	6.1	6.0	6.5	5.3	5.8	4.4	**3.2**	6.0	7.8	7.9	8.2	7.7	7.9	**8.3**	7.0	9.1	11 57 p	2.7	4 3 p	6.4	1
8	**9.0**	8.5	8.5	8.6	8.7	8.5	7.8	8.1	7.5	6.5	6.9	7.2	6.6	**6.2**	6.8	7.1	7.4	7.5	7.1	7.7	7.9	7.8	7.4	7.7	7.6	9.4	0 13 a	**5.7**	1 54 p	**3.7**	2
9	7.7	7.1	7.5	7.7	7.7	8.3	8.2	7.8	8.2	7.4	7.5	7.5	7.4	7.1	7.0	6.5	7.1	7.7	6.2	7.6	8.3	7.7	7.8	**8.6**	7.6	9.1	11 29 p	4.5	6 56 p	4.6	1
10	**10.7**	10.3	8.5	8.5	8.2	7.5	7.1	7.1	6.1	6.6	6.9	6.5	5.8	5.8	5.8	5.7	5.2	**4.9**	6.2	6.0	7.8	7.9	8.9	7.7	7.2	11.6	0 30 a	4.3	5 19 p	7.3	0
11	7.8	8.5	8.5	11.3	11.2	**11.9**	10.7	10.2	6.9	3.5	5.0	4.5	4.1	4.4	2.7	2.7	**2.3**	2.9	4.5	7.8	7.8	9.4	7.1	7.5	6.8	12.4	5 43 a	-0.1	3 56 p	12.5	0
12	8.3	8.5	8.5	8.1	7.5	7.1	7.1	7.2	7.1	7.2	7.1	7.1	7.1	7.3	6.1	6.0	**3.0**	3.7	5.0	7.7	9.5	**10.8**	8.9	8.3	7.3	11.7	9 18 p	-0.1	4 24 p	11.8	0
13	7.3	7.4	8.6	8.5	9.6	**10.7**	9.1	7.5	7.3	7.3	7.0	6.2	6.4	**5.8**	6.1	6.4	6.8	6.5	5.8	7.0	7.1	7.4	7.4	7.1	7.3	11.5	5 6 a	5.2	6 53 p	6.3	1
14	7.1	7.1	7.0	7.0	7.1	7.1	7.1	7.1	7.8	7.4	7.1	1.6	5.2	5.7	4.9	4.9	3.7	**0.2**	3.3	4.0	6.0	9.5	11.0	**12.3**	6.3	13.2	11 44 p	-3.9	5 32 p	17.1	0
15	11.0	11.2	11.4	**12.2**	8.3	7.9	8.4	6.9	6.8	7.1	5.7	**4.4**	5.0	5.0	5.8	5.7	4.6	6.0	6.4	6.8	7.4	7.7	7.1	7.0	7.3	17.4	3 5 a	2.8	4 16 p	14.6	0
16	7.0	7.0	6.9	6.9	7.1	7.1	7.1	7.1	7.1	7.0	7.0	7.0	7.1	7.0	7.0	6.9	6.8	6.8	6.5	**6.1**	7.5	**8.3**	8.2	7.4	7.1	8.7	10 18 p	3.9	7 15 p	4.8	1
17	13.7	17.5	**18.6**	14.9	12.4	11.2	8.4	9.1	9.2	7.4	4.1	2.8	3.9	4.5	4.5	3.3	**2.3**	**2.3**	5.5	6.2	7.1	8.9	7.9	8.9	**8.1**	25.0	2 5 a	0.0	5 50 p	25.0	2
18	7.8	7.7	7.1	7.1	7.4	8.3	8.2	8.1	**8.6**	5.4	**4.0**	5.8	6.5	6.2	5.8	4.4	4.3	4.5	5.6	7.4	8.1	7.5	7.1	7.3	6.7	12.0	8 19 a	1.9	4 19 p	10.1	0
19	7.4	7.1	7.0	7.0	7.0	7.1	7.1	7.1	6.8	6.8	6.5	6.8	7.0	6.9	6.9	5.7	**3.3**	3.5	4.3	4.3	7.7	9.0	9.8	**9.9**	6.8	11.0	12 0 p	1.8	4 45 p	9.2	0
20	10.2	10.0	9.9	**13.6**	12.8	10.4	10.3	8.3	7.0	6.6	6.5	**4.3**	4.4	4.6	5.6	6.5	6.4	6.6	7.6	10.2	7.0	9.7	9.4	7.5	**8.1**	14.6	3 36 a	3.0	7 57 p	11.6	0
21	8.5	8.6	8.2	8.1	8.2	8.3	8.3	7.7	7.4	6.5	8.5	7.0	6.6	6.0	5.4	6.6	**3.5**	5.4	4.5	7.3	7.0	8.5	8.5	**11.0**	7.2	12.2	11 40 p	2.7	4 45 p	9.5	0
22	10.5	8.9	8.5	9.6	**12.8**	10.8	12.4	9.1	6.5	10.0	3.2	1.4	-1.4	**-1.6**	-1.0	2.7	2.0	4.4	4.7	6.5	7.9	8.9	8.5	8.6	6.4	**33.2**	9 5 a	-4.1	0 44 p	**37.3**	2
23	7.1	7.1	7.0	7.1	7.1	7.1	7.1	7.1	7.0	7.1	7.0	7.0	7.0	7.0	6.9	6.5	**6.0**	**6.0**	7.2	7.0	**7.3**	7.1	7.1	**7.3**	7.0	8.6	10 0 p	4.5	5 22 p	4.1	2
24	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.0	6.8	6.4	3.9	**2.9**	4.5	6.0	5.7	4.5	4.0	4.4	4.6	3.1	6.0	8.3	**9.4**	7.5	6.0	12.2	11 7 p	0.3	7 39 p	11.9	0
25	7.7	6.9	7.1	7.3	8.5	10.0	9.0	6.9	6.4	5.8	4.8	5.2	4.8	3.7	3.1	**1.4**	3.0	4.9	7.3	7.1	6.5	7.1	7.8	**10.8**	6.4	13.2	11 8 p	-0.5	3 22 p	13.7	0
26	9.1	7.3	7.3	9.8	10.0	**10.9**	7.4	6.9	7.0	7.3	7.1	5.8	**3.1**	3.3	4.5	5.8	5.4	4.9	6.6	7.8	7.5	7.5	7.3	7.4	7.0	14.2	5 33 a	1.8	1 44 p	12.4	0
27	7.3	7.4	7.1	7.1	7.1	7.1	7.1	7.0	7.0	7.0	6.9	6.9	6.2	5.7	4.1	4.4	3.9	2.2	4.0	7.8	6.3	8.3	**9.1**	8.2	6.5	11.2	10 5 p	-1.3	5 40 p	12.5	0
28	7.1	7.1	7.1	7.1	7.1	7.1	7.3	8.1	6.6	6.5	5.8	5.8	5.8	5.0	3.3	2.3	2.3	3.7	0.8	5.1	7.9	7.4	**8.5**	7.4	6.0	9.9	10 35 p	-3.2	6 22 p	13.1	0
29	7.3	7.4	9.9	**11.7**	9.9	7.9	7.9	8.3	8.8	9.4	6.4	5.0	4.5	2.8	4.5	2.0	2.4	-0.7	3.0	5.8	7.5	8.5	8.1	9.1	6.6	14.4	9 9 a	-5.6	6 33 p	20.0	1
30	**9.2**	7.3	7.3	8.5	7.5	7.8	7.4	7.0	6.9	6.2	5.2	5.8	5.2	4.0	4.7	3.9	3.3	2.6	5.4	6.4	7.0	7.1	7.1	7.1	6.2	10.0	0 11 a	0.6	5 10 p	9.4	0
31	7.1	7.1	7.1	7.3	7.1	7.1	7.1	7.1	7.0	5.7	4.8	2.3	0.6	**-0.1**	0.6	0.6	6.1	5.0	6.5	7.5	7.5	8.1	**8.9**	8.7	**5.5**	11.2	7 48 p	-4.0	0 27 p	15.2	0
Mean 1	8.6	8.3	8.5	**8.8**	8.6	8.5	8.1	7.7	7.2	6.7	5.8	5.4	5.2	4.9	4.9	4.5	**4.3**	4.6	5.4	6.8	7.7	8.3	8.3	8.6	6.9	13.7		0.7		13.0	
» 2	8.7	8.4	8.6	**8.9**	8.7	8.6	8.2	7.7	7.2	6.7	5.7	5.2	5.0	4.7	4.7	4.3	**4.0**	4.4	5.2	6.8	7.7	8.3	8.4	8.7	6.9						
» 3	8.6	8.6	8.6	**8.8**	8.7	8.5	8.2	7.7	7.2	6.5	5.8	5.3	5.0	4.8	4.6	4.3	**4.2**	4.5	5.4	6.6	5.4	8.2	8.5	8.6							

February 1905.

Table CVIII. — Hourly Values of Declination, West.

Degrees.

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	8.9	7.8	7.1	8.5	9.2	9.8	8.3	6.1	6.4	6.1	5.2	**4.4**	4.5	4.5	5.4	5.8	5.7	*5.7*	*5.7*	6.8	6.8	7.4	**9.9**	9.1	6.9	10.6	5 48 a	3.6	1 57 p	7.0	1
2	8.1	8.6	10.8	**17.3**	14.9	8.3	9.1	6.6	6.0	6.4	5.8	6.0	5.8	4.4	3.9	4.9	**1.5**	*3.6*	*4.5*	5.8	7.0	*8.3*	*14.4*	*10.0*	7.5	23.5	3 52 a	– 0.3	5 0 p	23.8	0
3	8.0	8.3	26.5	11.5	17.0	30.2	**38.1**	37.0	26.4	10.5	12.1	–5.7	–11.8	**–15.4**	–1.4	–5.5	–5.5	*–9.0*	*–7.7*	–0.7	6.8	12.5	8.3	13.5	8.5	41.9	5 58 a	**–21.8**	1 22 p	63.7	2
4	10.7	9.2	8.4	6.7	6.9	7.6	7.6	7.6	7.4	7.2	5.5	–0.4	– 2.1	4.2	3.3	–0.7	–0.5	*–2.2*	*–0.7*	4.3	**13.3**	10.9	10.3	9.2	**5.6**	14.8	8 15 p	*–12.5*	*5 57 p*	27.3	0
5	9.0	7.8	7.9	7.8	8.5	11.0	12.6	**33.6**	12.4	0.9	7.8	5.1	2.0	– 2.5	**–3.4**	–1.4	–0.7	*–1.4*	*7.4*	8.3	6.1	9.6	9.1	10.3	7.0	**89.0**	7 28 a	–16.5	1 59 p	**105.5**	2
6	13.5	11.4	11.3	10.7	10.9	9.9	19.1	**14.6**	7.9	6.6	7.6	7.2	5.0	5.8	6.3	**4.2**	7.7	*7.4*	*7.6*	5.5	5.9	7.4	9.7	9.3	8.9	40.9	6 57 p	0.3	3 46 p	40.6	2
7	9.3	9.3	8.8	9.2	9.2	8.8	8.4	8.7	7.5	7.1	7.1	7.4	6.7	7.4	5.7	**4.2**	6.4	*6.5*	*3.5*	5.3	4.4	7.4	9.6	**10.1**	7.4	13.7	11 15 p	1.3	5 51 p	12.4	0
8	**13.8**	10.9	10.4	12.1	13.4	13.4	12.1	10.5	10.3	6.6	7.5	7.6	7.2	6.3	5.3	6.7	5.9	*5.9*	*3.1*	5.1	8.4	10.7	10.8	10.4	8.9	17.3	0 55 a	1.8	6 46 p	15.5	0
9	9.1	8.4	10.3	9.2	9.1	10.0	8.9	8.4	5.3	6.1	7.1	5.9	4.6	4.5	5.3	·6.1	6.0	*6.5*	*8.0*	**4.1**	6.5	9.2	**11.3**	10.8	7.5	11.4	5 26 a	2.0	7 23 p	9.4	1
10	9.9	9.6	8.8	9.9	10.8	**16.0**	13.3	12.1	8.9	7.5	7.8	7.9	6.9	3.8	5.3	3.7	**3.5**	*5.0*	*8.3*	7.8	9.7	11.7	11.5	11.6	8.8	19.9	5 38 a	2.2	5 3 p	17.7	0
11	9.2	9.9	**10.1**	8.8	8.3	8.9	8.3	8.7	8.4	8.2	7.6	7.8	7.6	7.6	7.5	5.9	**5.3**	*6.2*	*7.6*	9.3	9.5	9.5	9.3	8.9	8.3	10.8	2 7 a	**4.6**	4 11 p	6.2	2
12	8.7	8.3	8.6	8.8	8.6	8.7	8.7	8.6	8.2	8.2	8.0	7.8	7.6	5.8	5.1	4.0	**3.1**	*3.5*	*4.0*	6.4	9.3	9.3	10.5	**10.7**	7.5	11.0	0 0 p	2.7	5 45 p	8.3	1
13	11.8	10.8	**13.3**	11.8	11.4	12.7	10.2	9.9	8.2	7.2	7.6	7.6	7.6	7.6	7.6	6.5	8.0	*8.3*	*6.3*	**5.3**	7.4	7.9	10.0	11.1	**9.0**	15.5	2 30 a	3.1	6 47 p	12.4	0
14	11.1	11.3	12.9	**13.5**	12.0	11.6	9.9	9.2	9.3	7.5	7.4	6.1	– **0.4**	6.1	4.2	3.7	5.1	*3.8*	*3.7*	8.0	6.1	9.9	13.2	9.9	8.1	14.6	3 14 a	– 3.2	0 20 p	17.8	0
15	9.5	9.5	13.1	**13.5**	10.1	9.9	9.9	9.3	5.8	3.4	4.6	6.3	6.3	5.8	5.1	5.4	**2.6**	*4.4*	*6.5*	5.5	9.1	9.1	9.3	8.3	7.6	15.0	3 6 a	– 3.5	4 38 p	18.5	0
16	8.2	8.3	7.9	8.9	9.6	11.6	10.8	7.4	4.7	6.2	5.7	5.7	3.1	4.2	4.8	2.4	2.5	*1.1*	*3.5*	6.3	7.2	8.4	**11.9**	10.9	6.7	13.5	5 59 a	– 1.3	5 39 p	14.8	0
17	11.1	9.1	10.3	16.4	**21.9**	15.9	10.1	8.4	6.6	5.9	6.1	5.7	4.9	6.1	6.3	**4.6**	5.0	*5.4*	*5.4*	6.9	8.0	10.4	9.6	8.4	8.7	28.7	4 14 a	0.7	6 54 p	28.0	0
18	8.9	8.4	9.1	9.6	9.5	8.8	**9.9**	9.2	5.9	5.8	6.7	7.0	7.0	7.0	5.9	**4.4**	5.5	*7.0*	*6.3*	6.7	6.7	7.9	8.7	8.0	7.5	11.2	6 24 a	2.2	3 37 p	9.0	1
19	8.0	**8.7**	7.9	8.0	8.0	8.2	7.9	7.6	7.8	6.5	6.3	5.8	**5.1**	6.6	6.5	5.5	5.3	*5.8*	*6.7*	7.1	6.5	6.5	7.6	7.6	7.0	**8.8**	1 50 a	4.4	0 22 p	**4.4**	2
20	7.8	7.8	7.8	7.8	7.8	7.9	8.0	8.0	8.3	7.6	7.6	7.6	7.1	6.8	6.7	6.3	5.4	*4.9*	*5.7*	5.9	7.5	8.2	**10.5**	9.6	7.0	11.2	11 33 p	3.1	4 42 p	8.1	1
21	7.8	7.6	7.8	7.8	7.8	7.8	**8.3**	8.2	7.6	5.3	5.1	5.8	6.3	5.5	3.8	**–0.7**	1.1	*4.1*	*6.3*	5.0	7.1	7.6	7.8	7.8	6.2	9.1	6 24 a	– 5.9	3 28 p	15.0	0
22	7.8	7.8	7.8	7.6	7.9	8.9	**11.0**	8.5	7.8	5.9	**4.7**	5.9	6.5	5.8	6.2	6.3	6.5	*6.6*	*4.8*	5.7	5.7	6.2	7.8	10.7	7.1	19.0	11 38 p	2.6	6 32 p	16.4	0
23	12.5	**12.9**	10.7	8.8	8.4	8.4	7.8	7.1	8.7	5.5	1.0	**0.6**	3.3	0.9	2.1	1.8	2.4	*2.4*	*2.4*	3.5	5.1	6.3	7.6	8.7	5.8	15.5	1 11 a	– 3.4	11 4 a	18.9	0
24	9.2	10.7	**17.7**	17.6	8.3	7.6	7.6	7.4	5.9	5.9	4.9	5.7	6.1	5.7	5.1	**2.2**	3.3	3.8	*4.6*	5.3	7.0	6.6	7.5	7.5	7.2	22.9	2 55 a	1.4	3 47 p	21.5	0
25	7.2	7.2	7.0	7.4	7.5	**8.8**	8.3	7.2	7.1	3.6	6.1	4.7	1.7	– **0.4**	0.7	3.7	2.7	*4.1*	*5.5*	5.6	6.1	6.3	8.2	8.0	**5.6**	10.3	5 38 a	– 1.7	1 56 p	12.0	0
26	7.6	7.5	7.6	7.4	7.2	7.1	7.0	7.6	6.3	5.8	5.7	5.3	3.7	6.5	3.0	0.8	**–0.5**	*0.7*	*8.2*	**12.0**	10.1	9.1	7.2	7.1	6.3	12.4	7 37 p	– 1.5	4 56 p	13.9	0
27	7.5	7.8	8.7	8.9	**11.4**	10.0	8.5	7.6	6.8	5.8	4.8	3.8	3.6	3.6	4.2	4.2	1.3	*1.0*	*2.6*	3.8	5.1	6.2	6.9	7.8	5.9	11.7	4 40 a	– 0.7	4 6 p	12.4	0
28	**9.1**	8.9	8.2	7.6	7.5	7.1	7.6	7.4	6.5	6.5	6.5	6.3	6.2	5.9	5.0	3.3	**2.1**	*2.9*	*5.4*	8.0	9.0	7.9	6.7	6.3	6.6	10.3	1 24 a	1.0	4 58 p	9.3	1
Mean 1	9.4	9.1	10.2	10.1	10.1	10.5	**10.6**	10.4	8.2	6.3	6.4	5.4	4.4	4.3	4.5	**3.5**	**3.5**	3.7	4.8	6.0	7.4	8.5	9.5	9.3	7.3	19.1		– 1.3		20.4	
» 2	9.5	9.1	9.7	**10.1**	9.9	9.8	9.4	8.5	7.3	6.3	6.2	5.8	5.1	5.3	5.0	**4.0**	**4.0**	4.4	5.2	6.1	7.5	8.3	9.5	9.1	7.3						
» 3	9.3	9.4	9.7	**10.0**	9.9	9.7	9.3	8.5	7.4	6.5	6.1	5.7	5.3	5.2	4.8	4.3	**4.1**	4.5	5.2	6.2	7.3	8.4	9.1	9.3							

March 1905. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.
Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	6.5	6.3	6.3	6.3	6.3	7.0	6.7	6.6	6.1	5.8	5.5	5.4	4.8	4.0	1.4	0.6	-0.7	**-2.0**	*-0.7*	0.1	0.8	3.3	6.3	**7.6**	4.2	8.8	11 21 p	-4.4	5 39 p	13.2	0
2	8.9	10.1	12.6	13.8	13.9	12.4	13.8	8.3	4.6	5.6	3.4	0.4	-5.2	-12.4	*-35.2*	-9.6	-18.1	-22.8	*-22.2*	-13.7	*16.0*	11.7	15.1	12.4	**1.0**	**75.3**	9 2 p	**-57.1**	2 45 p	**132.4**	2
3	**17.5**	11.2	9.5	8.3	10.3	13.9	13.1	9.3	8.0	5.7	5.3	6.9	6.9	5.7	4.1	3.1	1.3	3.4	*3.8*	**0.1**	1.5	6.3	9.8	11.7	**7.4**	24.1	0 6 a	-4.0	7 56 p	28.1	0
4	13.3	10.8	13.0	**16.0**	12.8	10.9	11.2	8.5	9.6	8.1	4.5	4.6	4.5	3.2	1.6	**-1.7**	2.0	*5.7*	*3.7*	4.1	7.9	6.3	6.5	6.7	7.2	17.6	3 47 a	-4.3	3 53 p	21.9	0
5	7.0	7.9	7.8	7.8	9.1	11.8	8.3	9.7	6.8	5.8	2.9	0.3	0.9	0.7	-1.0	**-7.8**	-5.7	*-0.3*	*0.1*	-2.8	4.5	5.7	7.1	**12.2**	4.1	14.3	11 27 p	-11.6	7 19 p	25.9	0
6	14.3	10.4	8.7	11.8	**18.9**	14.1	10.4	7.4	7.5	6.3	6.3	6.2	5.0	5.1	4.9	2.7	0.2	**-1.0**	*1.4*	-0.3	1.3	5.9	7.1	7.4	6.7	20.6	4 43 a	-5.7	5 27 p	26.3	0
7	9.0	10.1	9.6	16.4	**24.2**	12.8	10.6	8.7	3.1	3.4	0.7	1.0	-12.1	**-12.5**	-3.4	-2.2	-2.8	2.4	*1.1*	1.3	7.8	11.1	9.2	9.5	5.0	27.1	4 24 a	-22.4	0 57 p	49.5	2
8	9.2	8.8	9.0	10.8	**13.0**	12.1	12.5	9.3	4.8	3.1	2.8	3.3	4.6	0.5	1.4	-3.0	**-4.8**	*1.2*	*-1.5*	5.4	6.9	10.3	8.7	9.5	5.7	14.8	4 35 a	-6.6	4 31 p	21.4	0
9	**11.7**	10.8	8.7	8.9	7.5	7.2	7.2	6.7	6.3	6.5	5.0	3.8	4.5	2.0	0.2	2.8	2.7	*-0.9*	*-0.3*	3.2	3.2	6.9	8.3	11.5	5.6	12.8	1 22 a	-3.0	5 17 p	15.8	0
10	11.7	**14.2**	8.9	9.7	9.6	10.3	7.4	6.7	5.9	5.5	5.5	5.7	5.7	5.1	4.4	3.3	**-0.4**	*0.6*	*3.6*	5.3	5.7	5.5	7.8	7.4	6.0	15.2	1 20 a	-1.5	5 39 p	16.7	0
11	**7.9**	6.3	7.5	6.2	6.2	6.3	5.5	6.1	5.3	4.9	4.9	5.0	4.7	2.8	**0.8**	1.2	2.7	*3.1*	*4.4*	4.1	5.4	2.3	6.7	7.2	4.9	10.9	0 28 a	-1.4	3 8 p	12.3	0
12	6.9	8.2	9.2	7.0	6.3	7.5	**10.1**	9.5	5.9	5.3	4.0	3.3	2.2	1.3	0.8	2.4	**0.2**	3.7	*3.2*	3.6	2.4	3.7	6.6	8.0	5.1	12.5	7 3 a	-1.8	4 34 p	14.3	0
13	**10.0**	9.1	8.3	7.9	8.9	6.6	7.9	6.6	5.8	5.0	3.6	3.0	3.6	4.4	**2.4**	3.8	4.4	*4.5*	*3.6*	3.5	4.1	4.5	7.4	8.4	5.7	12.0	0 17 a	0.1	6 53 p	11.9	0
14	5.8	5.7	5.4	5.4	5.7	5.9	6.3	6.3	6.2	6.1	4.7	4.6	5.0	4.7	3.4	3.8	5.7	2.8	*4.4*	3.0	**-1.7**	2.8	6.4	**11.2**	5.0	15.1	11 59 p	-4.4	7 55 p	19.5	0
15	13.5	**15.5**	12.6	9.5	7.4	6.2	6.2	5.7	5.7	4.7	3.3	2.4	3.8	2.2	3.2	2.7	1.9	*5.2*	*2.6*	**1.6**	4.3	11.3	9.1	11.3	6.3	20.4	1 44 a	-2.1	4 15 p	22.5	0
16	11.6	10.5	10.8	10.0	8.8	8.4	7.9	11.3	**13.0**	5.9	4.6	3.6	2.7	1.3	**1.0**	1.6	1.5	*3.8*	*6.2*	7.6	6.9	6.9	7.5	7.9	6.7	24.0	8 9 a	-0.1	4 58 p	24.1	0
17	8.2	7.9	**8.6**	8.2	7.2	7.2	5.9	5.8	**3.4**	5.3	5.7	5.8	5.7	4.4	3.6	4.0	5.1	*5.1*	*3.5*	3.5	6.2	8.5	7.4	8.0	6.0	10.0	2 32 a	0.3	8 29 a	9.7	0
18	**9.6**	7.4	7.6	7.4	7.6	7.5	7.4	5.9	5.9	5.4	4.2	5.1	4.7	**4.0**	5.1	5.8	6.6	*5.2*	*6.1*	5.4	7.5	6.5	6.1	6.5	6.3	10.0	0 14 a	1.6	7 11 p	8.4	1
19	7.5	7.5	7.2	7.1	6.7	7.1	7.1	5.8	5.3	5.1	2.0	2.4	3.2	4.4	4.5	3.8	1.2	**-0.1**	*0.6*	2.2	6.7	6.3	**8.2**	6.6	4.9	9.6	8 27 p	-2.5	5 27 p	12.1	0
20	7.0	6.8	6.5	6.3	6.5	6.6	6.6	6.5	6.2	6.1	5.3	5.1	5.0	4.5	**3.4**	5.2	4.6	*3.8*	*5.2*	6.1	7.8	6.7	7.9	**8.7**	6.0	10.7	8 46 p	0.5	4 42 p	10.2	0
21	9.3	**10.0**	6.8	6.3	6.3	6.3	6.3	6.2	6.2	5.3	2.4	5.0	5.7	4.6	4.4	2.7	**2.3**	*4.4*	*6.3*	7.9	5.3	4.9	6.5	6.5	5.7	11.2	1 16 a	-0.4	5 4 p	11.6	0
22	6.6	6.6	6.5	6.3	6.2	6.2	6.2	6.2	5.9	5.8	5.1	5.1	4.6	3.3	**2.4**	2.7	2.9	*3.7*	*5.2*	**7.9**	6.8	7.0	5.0	6.6	5.5	10.8	7 29 p	2.1	5 4 p	8.7	1
23	6.5	7.1	7.4	6.3	6.6	**7.5**	6.3	5.7	5.1	5.0	3.7	2.8	2.2	2.2	2.9	2.1	**1.6**	3.0	*3.2*	3.2	5.1	5.9	5.3	7.0	4.7	9.7	5 44 a	-0.7	7 5 p	10.4	0
24	7.6	7.1	6.5	6.3	6.2	7.6	**8.0**	5.1	5.8	5.1	5.0	4.9	4.4	2.2	**2.1**	2.4	3.2	*4.5*	*5.8*	5.5	6.3	3.7	5.7	5.9	5.3	10.5	6 11 a	0.8	9 44 p	9.7	0
25	7.1	**8.2**	6.5	6.2	6.5	7.5	7.5	6.1	5.3	5.1	5.0	4.9	4.2	2.7	2.2	**2.0**	3.7	*4.9*	*5.7*	4.9	5.1	4.2	5.1	6.2	5.3	10.4	1 5 a	0.7	3 27 p	9.7	0
26	6.2	6.2	6.2	6.3	6.2	6.2	6.2	6.2	5.1	5.0	5.1	4.7	4.9	4.1	3.8	3.8	3.8	*4.9*	*2.0*	4.1	2.7	4.9	6.3	**8.0**	5.1	9.0	11 57 p	-1.4	6 43 p	10.4	0
27	**9.2**	6.5	6.3	6.2	5.8	5.9	6.2	5.8	4.4	4.6	4.0	2.9	2.2	1.3	-0.5	-2.0	-2.6	*-4.8*	*-4.5*	-3.0	0.1	4.5	4.7	6.4	2.9	11.1	0 29 a	-6.8	5 35 p	17.9	0
28	**7.8**	6.7	6.6	6.2	6.1	5.9	5.4	5.0	5.1	5.1	5.0	5.1	5.0	5.0	4.9	4.1	**3.6**	*4.2*	*5.7*	6.9	6.9	6.7	6.6	6.2	5.7	8.7	0 21 a	**2.5**	4 7 p	**6.2**	1
29	6.3	6.3	6.5	6.5	6.2	6.1	5.7	5.1	5.1	5.0	4.5	4.5	4.0	3.7	4.3	4.0	0.8	*0.5*	*2.3*	4.8	0.8	2.0	4.5	**6.6**	4.4	**8.4**	11 36 p	-3.4	8 53 p	11.8	0
30	**6.9**	**6.9**	6.2	6.2	6.2	6.1	6.1	5.3	5.0	4.1	4.1	4.9	4.2	2.4	0.8	0.4	-1.0	*2.4*	*1.7*	2.1	**-1.6**	2.2	3.6	7.4	3.9	8.7	7 26 p	-4.2	7 58 p	12.9	0
31	8.3	**10.8**	7.8	7.2	7.5	6.3	6.2	5.7	5.5	5.3	4.5	5.4	4.6	4.6	4.2	4.1	2.3	*1.7*	*5.5*	7.5	8.2	6.9	3.7	8.0	5.9	12.6	1 36 a	-0.7	5 11 p	13.3	0
Mean 1	**9.0**	8.6	8.1	8.2	8.6	8.2	7.8	6.9	5.9	5.3	4.3	4.2	3.4	2.3	1.2	1.6	**0.9**	1.7	2.2	3.1	4.9	6.0	7.0	8.2	5.3	15.4		-4.6		20.0	
» 2	**9.0**	8.5	8.2	7.7	7.9	7.9	7.5	6.8	6.1	5.4	4.4	4.4	4.3	3.3	2.6	2.1	**1.7**	2.5	3.1	3.7	4.4	5.6	6.6	8.0	5.5						
» 3	**8.6**	**8.6**	8.2	7.9	7.8	7.8	7.4	6.8	6.1	5.3	4.7	4.4	4.0	3.4	2.7	2.1	**2.0**	2.5	3.1	3.7	4.5	5.5	6.7	7.9							

April 1905. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	11.6	**54.2**	26.9	18.9	11.2	11.3	8.0	2.7	4.7	1.4	0.3	−0.4	2.1	−8.0	−18.8	**−28.3**	−10.4	*−6.5*	*−7.9*	−3.8	2.5	4.4	8.1	12.4	4.0	**102.3**	1 37 a	**−42.1**	4 26 p	**144.4**	2
2	16.1	20.1	**20.5**	20.1	19.4	18.3	9.7	10.7	3.5	2.7	−0.5	0.7	−2.0	**−6.9**	−6.5	−5.3	−3.4	−3.5	*−4.8*	−4.3	−1.4	4.3	14.8	20.3	5.9	29.4	4 48 a	−9.4	1 18 p	38.8	2
3	15.1	12.4	14.7	**24.4**	15.9	15.1	11.2	7.1	4.6	6.2	7.2	5.9	4.4	3.6	1.8	−1.0	2.8	−0.1	*−2.8*	4.0	6.4	7.8	11.9	10.9	**7.9**	29.0	3 20 a	*−8.7*	6 17 p	37.7	2
4	9.4	7.6	8.7	10.5	14.6	12.1	8.4	**15.7**	9.3	7.1	4.9	4.5	4.7	3.6	2.4	**0.4**	5.6	*1.8*	*4.3*	8.4	6.0	7.4	8.5	9.6	7.3	31.0	7 44 a	−2.6	5 27 p	33.6	1
5	9.5	10.3	12.0	**13.5**	10.5	10.3	11.3	11.2	7.5	5.8	3.0	5.9	5.9	3.3	−0.1	−3.5	**−4.1**	*−1.9*	*−0.3*	1.7	2.7	6.8	10.7	12.4	6.0	18.3	11 17 p	−6.3	5 2 p	24.6	0
6	16.0	**16.9**	14.6	9.9	9.6	11.0	8.2	7.6	7.0	6.3	6.4	4.6	2.5	2.5	4.1	0.4	2.6	**−0.7**	*2.4*	3.8	7.2	10.6	11.1	9.0	7.2	20.6	1 0 a	−2.4	5 17 p	23.0	0
7	9.9	9.2	10.3	10.4	9.7	8.8	8.6	7.9	7.1	6.3	5.7	6.6	4.9	4.6	**3.8**	5.0	5.1	5.9	*6.2*	5.2	6.9	9.2	10.7	**11.1**	7.5	13.3	10 57 p	−0.7	7 48 p	14.0	0
8	10.3	9.5	8.6	8.7	**11.4**	11.2	8.8	7.8	7.6	4.8	7.0	5.9	5.8	5.3	3.4	**2.2**	3.8	*5.1*	*7.5*	8.7	7.0	8.2	8.2	7.8	7.3	15.1	5 3 a	1.5	3 50 p	13.6	0
9	**8.7**	7.8	7.8	7.5	7.2	7.5	6.8	6.5	6.3	6.3	6.3	5.1	5.1	4.4	4.1	2.7	2.3	1.4	*−0.2*	0.7	3.1	6.2	7.3	6.7	5.3	9.9	0 27 a	−1.5	6 27 p	11.4	0
10	8.3	6.3	6.6	5.9	6.5	6.2	6.3	6.5	6.6	5.8	5.4	5.5	4.8	3.7	4.0	3.8	**3.4**	*3.4*	*6.0*	7.4	**11.4**	9.0	9.0	10.4	6.3	15.0	8 26 p	**2.1**	5 13 p	12.9	0
11	9.0	9.3	6.7	6.3	7.1	8.5	7.9	6.2	6.2	5.0	6.1	5.1	4.0	3.8	2.9	0.7	**−0.4**	*0.4*	*−0.2*	5.1	**9.9**	7.4	7.5	6.7	5.5	14.2	8 17 p	−1.3	6 20 p	15.5	0
12	8.2	8.9	9.1	7.8	7.6	7.4	7.1	5.7	4.7	5.1	5.1	5.0	4.4	4.9	4.6	2.6	0.2	*−0.3*	*1.0*	**12.1**	9.3	5.7	10.5	11.9	6.2	20.5	7 14 p	−1.4	5 25 p	21.9	0
13	9.6	6.5	6.5	8.3	9.9	**11.9**	9.3	6.1	5.7	5.7	5.7	5.1	5.1	5.0	4.2	**3.7**	5.0	5.3	*7.4*	6.8	6.3	6.9	8.0	9.2	6.8	13.3	5 46 a	1.7	5 12 p	11.6	0
14	9.5	10.8	**12.6**	10.8	8.7	8.3	7.5	7.4	7.0	7.2	7.6	6.6	6.2	4.0	2.5	1.9	3.7	4.3	*7.6*	2.6	10.0	**−0.4**	5.9	10.4	6.8	19.1	8 26 p	−11.9	7 24 p	31.0	0
15	8.9	8.9	12.2	**16.8**	12.2	8.7	7.1	5.7	2.8	4.7	5.5	5.5	3.3	2.5	2.2	0.7	0.1	*−1.2*	*2.0*	9.6	9.6	−0.8	6.2	8.6	5.9	18.2	3 29 a	−7.3	5 19 p	25.5	0
16	**7.9**	7.2	7.5	7.0	6.3	6.3	6.5	5.9	5.3	5.1	4.7	4.6	3.4	0.9	0.9	2.0	4.0	1.8	*−0.3*	6.1	4.5	5.0	7.4	6.3	4.8	8.9	7 39 p	−3.3	6 20 p	12.2	0
17	**7.1**	7.0	6.8	7.0	7.0	6.8	6.3	6.5	5.8	5.7	5.7	5.0	4.4	4.4	**3.4**	3.6	4.4	4.4	*6.1*	6.1	6.2	5.0	5.7	5.7	5.7	7.8	0 14 a	3.1	2 35 p	**4.7**	2
18	**6.8**	6.5	6.3	6.3	6.3	6.2	6.1	6.2	5.1	5.1	5.0	4.4	5.0	**3.2**	3.4	3.8	5.4	5.7	*6.6*	6.3	4.5	4.8	5.5	5.7	5.4	**7.0**	0 33 a	1.7	8 30 p	5.3	2
19	6.2	6.3	6.5	**7.0**	6.5	6.3	6.2	5.3	5.0	5.1	5.1	4.4	3.8	3.7	2.4	3.2	2.9	*0.9*	*−2.7*	−1.0	0.6	2.7	6.9	5.9	4.1	7.6	3 32 a	*−4.8*	6 3 p	12.4	0
20	6.2	7.6	6.2	6.3	5.9	5.7	5.9	5.5	3.3	4.0	4.9	3.7	3.3	2.8	3.2	1.3	2.4	2.7	*0.3*	**−1.8**	−1.6	3.3	3.4	**7.9**	**3.9**	9.2	1 44 a	−4.3	8 14 p	13.5	0
21	9.7	8.0	6.5	6.3	**9.9**	8.7	5.7	5.1	5.0	2.2	0.8	2.5	2.2	1.2	**−3.0**	−2.5	−1.4	−2.1	*0.9*	4.6	6.6	6.9	6.9	7.2	4.1	12.6	4 57 a	−4.9	2 33 p	17.5	0
22	5.8	6.5	7.1	7.1	7.6	7.1	7.2	5.7	5.1	5.0	4.9	4.9	3.4	3.3	1.8	**−0.2**	0.8	2.0	*4.0*	5.5	4.9	5.1	4.9	**8.0**	4.9	8.8	6 41 a	−1.5	3 41 p	10.3	1
23	**8.0**	7.2	7.0	7.5	7.0	6.5	6.2	5.9	6.1	6.1	6.2	5.8	4.2	4.1	3.7	3.6	3.7	5.4	*5.8*	4.6	**2.5**	2.8	6.6	6.3	5.5	9.3	0 24 a	0.9	8 41 p	8.4	1
24	**6.6**	6.2	6.3	6.3	6.3	6.1	5.7	5.4	5.1	5.0	4.6	4.4	3.7	3.6	**2.5**	3.7	3.7	3.4	*5.5*	6.5	**6.6**	6.2	6.3	6.2	5.2	7.8	9 26 p	2.0	5 15 p	5.8	2
25	6.3	6.6	6.3	6.3	6.3	**7.5**	7.4	6.8	5.7	5.4	5.1	4.4	3.7	3.6	2.7	3.8	3.6	**2.2**	*4.4*	5.5	6.2	6.5	5.8	6.3	5.3	8.7	5 52 a	0.8	5 12 p	7.9	1
26	7.1	6.7	7.1	9.2	**14.4**	10.2	6.6	2.9	2.0	0.7	0.5	0.7	**−0.4**	−0.1	**−0.4**	0.8	0.2	*2.2*	*7.2*	6.5	9.6	10.4	7.3	7.2	4.9	16.7	4 28 a	−3.8	5 37 p	20.5	0
27	7.1	7.5	7.0	7.5	7.6	7.0	5.7	4.7	4.9	4.9	3.1	3.4	2.5	4.1	5.6	6.0	5.7	3.8	*3.8*	**−0.7**	1.9	7.8	**8.6**	7.1	5.3	11.3	9 44 p	−3.2	7 3 p	14.5	0
28	7.2	6.5	6.5	6.3	6.2	6.5	6.7	6.6	6.3	5.0	4.8	5.1	4.0	4.0	4.2	4.0	3.1	**2.0**	*4.6*	5.1	6.7	8.2	8.3	**11.1**	5.8	14.7	11 15 p	1.1	3 17 p	13.6	0
29	**14.5**	11.5	9.3	11.6	8.9	7.6	8.8	9.1	9.9	8.3	6.6	6.1	3.7	3.8	5.6	4.5	5.8	*1.4*	*−2.5*	**−6.8**	−2.8	1.5	7.7	13.4	6.1	17.2	1 9 a	−9.8	7 16 p	27.0	0
30	**17.3**	12.5	7.6	8.9	9.7	8.5	7.5	7.5	7.2	7.6	5.8	5.9	3.1	3.7	3.6	2.8	3.1	3.2	*−4.4*	2.1	1.7	9.4	8.1	12.0	6.4	19.6	0 56 a	−11.8	6 33 p	31.4	0
Mean 1	9.5	**10.4**	9.4	9.7	9.3	8.8	7.5	6.8	5.7	5.2	4.8	4.6	3.7	2.8	1.8	**0.9**	2.1	1.7	2.3	3.9	5.2	5.9	7.9	9.1	5.8	17.9		−4.3		22.2	
» 2	**8.6**	8.2	8.2	8.4	8.5	8.1	7.2	6.8	5.9	5.3	5.0	4.8	4.0	3.5	2.9	**2.2**	2.8	2.3	3.4	4.6	5.6	5.9	7.5	8.4	5.7						
» 3	**8.4**	8.3	8.2	**8.4**	**8.4**	8.0	7.3	6.7	6.0	5.4	5.0	4.6	4.1	3.4	2.9	**2.5**	**2.5**	2.7	3.4	4.5	5.4	6.2	7.3	8.2							

May 1905. **Table CVIII. — Hourly Values of Declination, West.** Gjøahavn.

Degrees. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	17.3	9.6	8.0	9.9	10.2	10.5	9.2	6.6	8.1	7.5	5.3	4.9	5.0	5.1	4.1	3.0	0.7	0.2	4.0	8.0	9.8	9.8	13.4	9.7	7.5	19.2	0 45 a	- 5.5	5 11 p	24.7	0
2	14.1	12.2	13.5	13.9	12.5	11.0	8.5	5.7	5.9	6.1	5.8	4.0	1.7	0.8	-0.1	0.8	1.8	0.4	-2.8	4.9	7.4	6.9	10.3	10.9	6.5	18.1	2 51 a	- 9.2	6 32 p	27.3	0
3	9.7	7.2	9.6	8.9	7.9	7.4	7.6	7.5	7.2	7.4	6.6	6.3	6.2	4.9	3.2	2.0	3.2	3.1	2.4	3.1	2.7	5.5	8.3	14.8	6.4	19.1	11 29 p	- 0.1	8 29 p	19.2	0
4	11.7	11.3	12.0	10.5	9.2	9.1	9.2	8.3	7.8	7.2	5.9	6.2	4.6	4.4	5.5	4.5	3.8	4.9	3.6	6.6	3.3	4.5	5.1	7.8	7.0	13.8	2 11 a	- 0.8	4 27 p	14.6	0
5	7.8	10.7	13.4	11.6	10.9	10.1	8.9	8.4	7.9	7.4	7.8	7.2	6.2	5.1	4.0	3.8	6.5	6.0	6.9	7.1	6.4	4.1	5.1	5.0	7.4	13.9	2 50 a	3.0	3 6 p	10.9	0
6	6.5	7.1	7.6	7.6	8.9	8.8	7.6	7.2	7.1	6.4	5.9	4.7	4.8	4.4	4.2	5.1	6.0	5.8	6.1	4.2	7.9	9.1	11.6	12.1	6.9	14.3	11 6 p	2.5	7 10 p	11.8	0
7	13.1	11.2	9.5	8.9	9.1	8.8	8.8	8.0	7.6	7.2	5.1	5.0	5.3	5.7	5.1	2.7	-0.1	-1.5	-0.7	0.9	0.0	3.7	8.2	9.2	5.9	14.7	0 23 a	- 3.9	5 32 p	18.6	0
8	11.8	10.3	8.7	8.3	10.0	9.9	9.5	8.8	8.5	7.1	6.6	5.9	5.0	4.1	4.4	4.3	3.8	0.2	1.1	7.7	4.3	2.7	9.1	7.0	6.6	12.9	0 21 a	- 1.5	5 44 p	14.4	0
9	7.0	7.1	7.2	7.4	7.8	7.1	7.0	7.4	4.8	4.6	6.6	5.7	4.7	0.6	2.0	3.7	4.9	1.4	2.5	7.1	1.7	-0.3	2.7	8.4	5.0	10.9	11 57 p	- 4.0	8 42 p	14.9	0
10	10.0	8.8	8.8	8.7	7.5	8.4	6.3	5.3	4.4	4.1	4.4	4.0	4.5	2.1	3.2	2.0	2.2	3.7	2.6	6.7	7.6	5.0	4.7	5.9	5.5	11.0	0 42 a	0.1	6 11 p	10.9	0
11	6.5	6.5	7.8	7.9	7.9	7.8	7.0	5.9	5.9	4.5	5.4	5.6	3.7	2.7	0.4	1.0	4.5	4.6	5.7	0.5	0.5	2.5	5.1	6.1	4.8	8.6	3 51 a	- 1.2	9 3 p	9.8	0
12	6.2	7.6	7.8	9.5	7.6	7.6	7.2	6.1	5.8	4.5	3.6	3.7	2.9	2.5	0.8	-4.5	-6.4	-6.7	2.1	4.4	4.5	3.8	5.9	4.5	3.8	9.9	3 37 a	- 7.9	5 42 p	17.8	0
13	4.7	6.2	8.2	6.1	5.7	4.9	4.8	4.8	4.8	5.8	4.2	3.4	0.7	-1.5	-6.0	0.1	3.2	-1.2	-0.9	0.9	-2.4	-1.7	2.2	3.7	2.5	8.5	9 53 a	- 9.7	5 51 p	18.2	0
14	5.1	7.6	7.5	6.3	6.2	6.3	6.3	4.4	4.4	5.1	4.0	3.7	4.5	2.8	2.8	2.4	1.5	-0.5	1.6	-1.4	0.0	3.4	6.5	6.2	4.0	8.9	1 58 a	- 3.4	6 50 p	12.3	0
15	5.8	6.5	7.4	6.3	6.3	5.7	5.3	5.1	4.4	4.9	5.4	4.6	3.6	2.7	3.8	4.9	5.9	5.3	3.2	5.0	4.0	5.0	6.6	5.7	5.1	7.6	2 45 a	1.3	6 43 p	6.3	1
16	5.9	6.3	6.6	7.0	7.4	7.1	6.7	6.1	5.7	4.8	4.9	3.4	3.6	2.1	2.6	3.2	4.0	5.4	5.5	6.6	5.7	4.1	3.6	3.6	5.1	8.0	5 2 a	1.0	1 12 p	7.0	1
17	6.2	5.9	5.9	6.2	5.9	5.5	4.5	3.3	4.1	3.3	3.3	2.2	2.1	2.8	2.6	-0.7	-6.6	-7.8	-6.4	-1.4	-6.8	-3.3	4.4	6.1	1.7	7.6	11 45 p	-10.9	6 12 p	18.5	0
18	6.9	6.8	7.8	6.7	5.7	4.8	4.4	2.8	2.2	0.4	0.8	0.4	-2.0	-2.5	-0.8	-3.3	-3.1	-4.5	-5.2	4.6	2.6	4.4	2.8	2.2	1.9	19.2	7 39 p	-13.6	8 6 p	32.8	2
19	5.9	7.6	6.1	6.2	5.5	5.0	3.7	2.8	2.8	2.6	1.2	-0.7	-1.7	-0.7	-2.5	-4.0	-2.3	-1.3	4.5	7.8	10.4	9.2	7.8	6.4	3.4	11.8	0 3 a	- 5.5	3 55 p	17.3	0
20	7.4	7.9	8.0	8.6	10.4	12.4	9.7	7.5	6.4	6.2	6.9	4.9	-0.3	-0.4	-1.4	-1.4	-2.5	-2.3	-2.5	-2.5	-1.8	-1.9	3.3	6.7	3.7	15.8	5 22 a	- 9.1	5 20 p	24.9	0
21	11.3	8.7	7.9	7.9	7.8	7.8	7.5	6.9	6.9	5.8	5.9	3.5	1.9	1.2	-1.6	0.9	0.9	1.1	2.9	4.9	4.9	4.9	6.3	6.4	5.1	12.4	0 26 a	- 2.7	2 52 p	15.1	0
22	6.9	7.5	8.2	9.1	9.1	8.9	7.5	6.7	6.3	5.8	5.4	4.8	2.4	1.8	2.9	3.4	3.4	5.5	5.7	7.3	6.2	8.3	8.2	9.8	6.3	12.2	11 1 p	1.2	1 31 p	11.0	0
23	8.6	8.6	9.2	8.2	7.9	7.5	7.3	7.1	6.0	5.1	5.1	2.9	2.9	3.4	2.5	2.5	1.8	0.7	-3.2	-5.5	-1.4	3.7	1.8	8.2	4.2	11.1	11 57 p	- 8.5	7 11 p	19.6	0
24	12.9	12.2	8.2	7.9	7.9	7.8	7.5	7.3	7.8	6.4	5.0	5.9	5.7	4.2	1.9	3.2	0.0	-0.1	1.3	-1.7	-3.8	-2.4	2.1	7.8	4.8	16.4	1 13 a	- 6.5	8 48 p	22.9	0
25	10.3	12.4	13.1	12.1	12.6	13.0	11.4	11.3	7.4	5.9	6.5	5.5	4.0	2.9	4.3	5.0	5.8	7.0	4.6	5.0	2.5	1.1	7.1	8.3	7.5	14.6	2 26 a	- 0.3	9 5 p	14.9	0
26	7.9	8.6	8.7	9.2	8.6	7.6	7.9	7.6	6.6	5.5	5.9	5.3	3.3	4.4	2.7	2.0	-0.4	-2.0	-3.8	-3.4	-1.2	8.4	8.3	12.0	5.0	15.0	12 0 p	- 6.8	7 30 p	21.8	0
27	14.1	15.0	17.5	13.3	11.0	9.2	10.0	8.3	5.9	5.9	2.5	3.4	1.7	1.1	0.4	-1.2	-9.2	3.7	-7.4	-9.6	-1.1	5.0	6.6	4.7	4.6	19.4	2 17 a	-16.2	5 54 p	35.6	2
28	14.6	14.9	7.8	9.2	13.7	10.4	7.9	7.4	6.3	5.0	4.6	3.7	1.4	0.3	1.5	1.9	-1.3	-1.6	-1.5	-4.3	1.2	7.3	11.4	12.1	5.6	20.6	1 6 a	-10.7	7 47 p	31.3	1
29	18.7	13.9	13.6	14.4	12.8	12.6	10.4	7.2	6.8	5.7	1.3	4.5	4.5	-0.5	-4.6	-4.6	-3.3	-5.6	-0.8	0.2	3.1	5.1	8.0	9.5	5.5	23.4	0 47 a	- 9.2	6 4 p	32.6	2
30	8.0	11.9	9.0	11.7	8.4	8.9	8.7	7.5	6.9	2.4	4.1	1.4	3.0	0.8	2.6	3.3	4.8	0.7	-5.0	0.2	-3.8	6.4	8.3	8.7	5.0	14.2	3 54 a	- 7.6	8 29 p	21.8	0
31	7.7	11.9	17.8	12.4	6.6	4.9	4.4	4.6	4.4	3.1	2.4	3.4	2.0	1.0	0.7	-1.8	-0.3	-0.9	2.0	-2.0	3.0	5.4	6.4	5.8	4.4	24.1	2 58 a	- 5.9	7 12 p	30.0	1
Mean 1	9.4	9.4	9.4	9.1	8.7	8.3	7.5	6.6	6.0	5.3	4.9	4.2	3.2	2.2	1.7	1.4	1.1	0.8	0.9	2.3	2.5	4.2	6.5	7.6	5.1	14.1		- 4.9		19.0	
» 2	8.9	9.0	9.0	8.8	8.5	8.1	7.3	6.5	6.0	5.2	5.1	4.2	3.2	2.3	1.9	1.7	1.6	0.9	1.3	2.8	2.6	4.1	6.4	7.6	5.1						
» 3	8.6	9.0	8.9	8.8	8.5	8.0	7.3	6.6	5.9	5.4	4.9	4.1	3.2	2.4	2.0	1.7	1.4	1.2	1.5	2.4	3.0	4.3	6.2	7.6							

November 1903. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	542	**523**	549	755	679	773	780	**790**	764	782	*778*	*768*	*756*	*745*	*737*	*731*	*725*	717	*700*	670	667	693	671	668	**707**	801	4 49 a	216	1 56 a	585	2
2	692	707	725	729	729	739	697	**539**	731	745	730	734	**748**	747	731	705	718	*675*	*696*	722	715	667	729	736	712	794	4 8 p	**179**	7 10 a	615	2
3	738	701	686	688	739	764	758	697	762	764	787	**797**	744	751	761	*742*	*665*	*641*	*673*	722	620	**608**	692	719	717	825	10 52 a	475	7 13 a	350	1
4	725	737	748	748	749	772	**780**	**573**	758	768	749	765	770	718	748	739	750	761	*695*	665	687	616	583	619	718	899	5 43 p	279	7 24 a	**620**	2
5	**646**	705	738	754	731	729	745	750	751	736	749	769	756	765	797	762	**809**	807	*784*	737	729	711	723	727	746	876	2 47 p	623	0 44 a	253	0
6	737	739	739	740	743	756	765	**777**	772	758	749	742	758	750	752	734	715	*736*	*725*	729	726	719	**712**	720	741	787	8 11 a	690	9 50 p	97	1
7	713	**680**	736	750	749	746	749	723	733	763	762	757	769	759	775	819	**823**	*799*	*767*	725	735	744	740	718	751	849	3 51 p	655	1 33 a	194	0
8	744	750	745	749	759	769	785	790	775	753	765	761	753	744	750	763	**801**	*785*	*772*	782	752	727	719	**715**	759	844	7 11 p	685	11 4 p	159	0
9	748	748	743	750	750	755	762	769	770	764	752	761	756	746	747	755	791	*827*	*878*	852	742	693	718	**680**	**761**	**921**	6 35 p	647	9 44 p	274	0
10	710	711	773	770	776	793	**806**	797	787	776	769	772	766	746	748	736	742	703	*759*	712	676	682	679	**659**	744	839	3 39 p	618	11 17 p	221	0
11	731	749	749	759	707	**643**	763	771	779	780	789	761	766	760	780	771	**817**	773	*789*	739	687	677	730	733	750	878	4 40 p	415	5 44 a	463	2
12	722	727	740	761	770	752	725	764	769	**780**	753	758	773	744	721	**709**	766	*748*	*760*	741	746	735	740	745	748	794	5 12 p	523	5 58 a	271	0
13	747	750	746	753	746	748	750	776	770	753	769	763	752	765	764	776	772	**790**	*754*	725	**712**	743	746	758	755	821	5 11 p	659	6 18 a	162	0
14	764	751	748	745	747	751	760	760	764	758	758	760	755	754	758	762	779	*787*	*776*	766	757	755	752	**743**	758	806	5 41 p	**736**	3 24 a	70	2
15	745	748	748	747	746	754	761	765	**767**	761	757	754	749	748	739	735	**733**	748	*743*	754	755	757	749	747	750	772	8 20 a	724	3 52 p	**48**	2
16	749	749	748	752	753	752	752	753	753	752	748	757	**763**	748	754	741	746	727	*707*	698	**696**	736	730	732	741	771	0 3 p	685	8 47 p	86	1
17	726	722	733	736	740	757	764	773	801	799	795	758	746	745	711	686	658	647	*780*	773	704	657	723	746	737	840	6 48 p	598	5 29 p	242	0
18	747	742	736	786	785	788	780	805	810	785	774	754	716	**831**	784	790	785	*765*	*668*	725	722	**617**	698	634	750	905	1 54 p	583	9 9 p	322	0
19	655	**626**	673	746	772	769	762	781	792	778	769	763	761	766	779	788	750	771	*792*	**793**	734	710	737	754	751	843	5 48 p	599	1 11 a	244	0
20	752	755	757	749	749	750	751	**766**	762	752	750	750	748	748	740	740	733	670	*674*	**664**	666	671	690	697	728	770	7 28 a	614	5 47 p	156	0
21	**673**	686	721	741	767	784	**791**	774	769	769	755	756	760	759	757	759	762	740	*727*	747	746	747	713	684	745	804	6 24 a	655	0 40 a	149	0
22	**691**	716	733	767	785	802	**808**	792	782	737	799	797	733	738	744	775	769	718	*731*	727	704	**691**	717	745	750	835	4 43 p	651	9 12 a	184	0
23	748	753	754	754	757	756	787	791	**795**	786	768	760	741	741	721	**678**	686	687	*712*	730	744	723	728	742	743	806	8 10 a	637	5 46 p	169	0
24	758	744	**740**	750	756	782	**789**	778	775	774	777	771	751	745	757	767	769	*768*	*755*	767	764	755	755	754	763	802	5 35 a	732	1 44 a	70	2
25	755	749	752	752	751	757	768	**772**	767	761	759	763	759	748	747	**745**	757	753	*757*	761	761	754	754	**745**	756	786	7 14 a	726	3 14 p	60	2
26	749	755	756	755	758	764	**777**	**777**	769	767	764	760	756	752	756	758	765	754	*744*	730	742	**719**	**719**	736	753	801	3 57 p	699	9 8 p	102	0
27	754	747	751	**762**	756	755	755	755	754	753	753	755	756	761	761	747	743	*730*	*710*	**686**	716	738	745	755	746	772	1 45 p	658	7 33 p	114	0
28	**763**	760	757	760	759	759	757	759	757	759	757	757	755	754	751	753	750	751	*738*	738	729	726	**717**	731	750	**769**	4 47 p	692	10 3 p	77	1
29	**719**	724	738	755	766	787	**792**	768	762	766	757	754	756	755	749	757	741	766	*755*	750	749	742	730	729	753	800	6 8 a	683	0 58 a	117	0
30	732	729	751	759	757	759	761	761	765	763	**766**	747	747	750	750	751	*751*	*748*	*713*	721	720	718	716	719	744	778	1 21 p	*702*	6 30 p	76	1
Mean 1	722	723	734	751	751	759	766	755	**769**	765	764	761	754	753	752	749	752	743	741	735	720	**708**	715	720	744	819		601		218	
» 2	719	722	740	753	758	764	769	**772**	771	765	764	762	755	752	751	750	757	746	756	742	725	**715**	723	724	748						
» 3	721	726	739	751	758	764	768	**771**	770	766	764	761	756	752	751	752	752	751	750	741	727	**720**	721	722							

December 1903. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøabavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	727	733	736	730	732	732	725	737	737	745	736	731	748	737	737	739	740	708	688	690	681	700	686	685	723	777	2 35 p	656	8 31 a	121	0
2	704	699	704	729	737	755	783	788	779	776	756	749	750	719	706	698	698	668	685	700	704	711	735	741	728	810	6 51 a	650	5 5 p	160	0
3	734	731	724	711	744	760	769	774	772	756	737	731	729	720	720	713	692	671	622	634	651	680	711	708	716	788	7 21 a	600	6 3 p	188	1
4	726	732	725	716	740	748	759	763	768	748	750	731	713	694	673	654	637	607	678	633	650	748	748	748	712	781	8 23 a	536	5 0 p	245	2
5	714	706	739	736	736	737	745	750	746	746	713	708	751	749	737	724	730	727	715	709	650	716	726	726	726	779	5 1 p	628	8 42 p	151	0
6	720	726	736	733	751	762	752	765	762	759	723	754	760	757	750	766	772	771	741	749	714	712	700	641	745	815	3 38 p	619	11 41 p	196	1
7	671	714	727	733	746	696	763	780	753	750	772	758	758	729	713	704	630	752	735	745	702	698	707	728	728	790	10 24 a	594	4 39 p	196	1
8	753	747	749	745	692	691	755	731	768	762	752	738	740	762	722	746	740	707	761	707	732	708	721	718	735	793	1 41 p	553	5 6 a	240	2
9	721	739	745	666	738	745	721	734	769	752	761	758	735	738	753	740	727	735	724	729	739	742	748	735	737	789	7 58 a	660	3 44 a	129	0
10	728	727	732	738	738	750	756	743	740	740	739	740	747	738	739	737	732	737	734	726	731	713	731	739	736	763	6 2 a	702	7 31 p	61	1
11	734	722	720	729	733	741	742	741	742	741	745	744	735	733	734	736	733	729	729	739	739	741	740	741	736	753	11 10 a	704	2 20 a	49	1
12	739	739	735	736	738	740	744	745	745	744	742	744	742	741	741	740	728	734	727	740	738	748	751	751	741	763	9 52 p	719	4 25 p	44	1
13	748	740	734	740	752	752	753	756	756	754	744	754	734	658	632	635	605	585	599	572	537	594	640	674	685	759	9 49 a	513	8 41 p	246	2
14	705	745	738	734	738	768	766	736	733	730	730	728	721	714	711	719	705	709	719	727	727	723	730	728	728	785	5 57 a	685	4 3 p	100	0
15	726	726	723	726	733	734	738	739	739	735	734	736	738	754	693	673	699	714	703	693	688	689	714	719	719	772	1 39 p	650	3 22 p	122	0
16	728	717	730	740	737	740	734	739	736	731	737	741	741	731	729	724	721	711	704	709	717	712	727	733	728	757	0 1 p	688	5 51 p	69	0
17	730	735	744	737	739	741	751	757	758	751	748	746	736	739	730	729	722	722	727	718	742	741	741	744	737	759	9 17 a	711	4 59 p	48	1
18	744	744	742	742	741	738	741	742	742	742	742	743	740	740	740	738	731	730	735	736	738	740	744	740	740	754	10 26 p	716	6 0 p	38	2
19	739	740	739	740	736	739	741	740	736	737	739	741	740	741	746	741	735	730	726	726	728	730	724	694	735	758	3 33 p	682	11 27 p	76	0
20	730	739	737	736	747	756	768	789	771	765	760	754	729	664	672	687	667	705	697	723	724	700	735	714	728	818	7 16 a	628	2 3 p	190	1
21	703	726	735	736	748	758	783	785	791	763	764	755	740	728	715	702	727	724	716	708	700	717	731	743	739	806	8 40 a	673	0 2 a	133	0
22	740	739	737	738	737	737	740	744	743	738	761	753	743	737	749	752	752	767	737	721	713	730	748	754	742	785	5 39 p	695	7 53 p	90	0
23	749	748	743	733	752	754	753	767	774	766	750	753	744	734	733	723	734	740	734	742	737	741	748	743	746	782	8 42 a	700	3 6 p	82	0
24	742	741	737	738	739	738	739	739	745	741	741	739	741	744	743	737	737	734	741	742	738	739	743	734	740	762	6 39 p	723	11 32 p	39	2
25	740	746	743	742	740	741	747	758	754	746	743	744	756	743	744	744	746	744	747	750	739	746	738	735	745	764	6 48 p	727	6 11 p	37	2
26	746	738	742	745	742	742	742	741	743	747	746	747	745	740	735	736	741	731	738	734	734	740	739	730	740	758	4 28 p	709	5 8 p	49	1
27	731	730	735	743	740	743	743	750	752	745	755	746	745	743	734	712	728	743	719	727	731	741	743	746	739	762	10 56 p	691	3 47 p	71	0
28	742	746	744	740	743	748	755	753	747	748	743	741	747	746	740	734	723	698	677	671	700	711	711	729	731	760	7 8 a	650	6 53 p	110	0
29	732	736	739	743	747	744	743	742	743	742	741	741	744	746	741	748	744	754	757	713	711	713	730	725	738	779	6 27 p	679	9 9 p	100	0
30	718	739	750	743	718	763	827	836	820	806	809	806	741	748	755	747	735	712	712	701	689	669	701	690	747	876	6 55 a	645	9 17 p	231	2
31	687	664	676	722	758	772	823	816	811	753	759	747	748	758	741	738	720	690	698	639	711	720	734	729	734	867	6 31 a	601	7 17 p	266	2
Mean 1	727	731	734	733	739	744	755	757	757	750	747	745	741	733	726	723	717	716	714	708	708	717	727	725	732	783		658		125	
» 2	725	730	735	731	740	747	749	752	754	748	746	742	742	735	732	726	727	724	715	712	709	721	730	732	733						
» 3	728	730	733	734	740	746	749	752	752	749	746	743	740	736	731	728	726	722	717	712	713	720	728	729							

January 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	728	699	719	735	746	385	714	762	780	761	748	746	759	725	702	694	654	656	666	704	736	731	714	716	707	832	8 27 a	274	5 35 a	558	2
2	721	724	737	721	629	743	714	745	761	766	754	751	754	752	751	706	670	646	685	705	719	721	730	731	722	790	11 59 a	417	4 9 a	373	2
3	729	731	729	736	742	748	754	750	751	772	739	785	757	754	748	718	683	733	727	731	717	700	718	706	736	817	2 14 p	654	4 30 p	163	0
4	705	694	703	705	742	750	763	721	755	760	757	760	755	742	743	724	696	741	756	745	736	737	735	727	737	803	7 2 a	618	7 36 a	185	0
5	703	715	727	739	681	597	762	768	767	769	737	763	772	713	706	685	726	744	757	750	739	739	732	718	730	790	8 31 a	304	5 0 a	486	2
6	702	725	738	753	617	742	762	762	766	762	756	748	759	749	737	750	714	679	697	691	695	715	717	726	728	787	0 36 p	298	4 23 a	489	2
7	735	739	742	742	743	743	744	747	743	744	744	724	750	748	748	738	736	737	736	736	748	745	750	747	742	776	1 40 p	700	11 50 a	76	1
8	746	727	734	752	749	745	755	744	744	744	745	745	743	746	745	758	744	756	757	744	744	746	749	743	746	791	6 47 p	674	3 58 p	117	0
9	743	745	745	746	743	743	745	744	745	739	739	742	738	736	736	734	742	704	651	761	773	744	690	631	732	815	8 49 p	569	6 24 p	246	0
10	673	701	724	725	728	735	740	744	745	741	737	730	723	716	708	695	680	673	673	678	645	682	713	713	709	773	7 32 p	545	7 59 p	228	0
11	725	723	736	720	678	725	749	760	759	748	732	735	750	729	682	696	673	569	646	647	673	695	725	725	708	767	0 33 p	485	5 26 p	282	0
12	713	708	736	745	745	750	753	755	753	748	742	733	724	715	705	690	673	664	662	665	685	691	703	703	715	765	7 30 a	629	7 35 p	136	0
13	724	749	744	721	734	747	750	760	760	758	761	755	749	744	737	725	714	718	728	730	715	707	722	749	738	767	1 49 a	671	5 7 p	96	0
14	760	769	753	745	745	745	750	755	756	755	760	750	750	752	751	745	739	739	726	726	736	738	741	749	747	770	1 18 a	717	6 37 p	53	0
15	742	739	743	742	741	744	751	753	757	754	773	793	812	833	851	864	805	781	748	756	763	754	742	736	770	870	5 17 p	689	3 53 p	181	2
16	737	715	698	730	758	782	798	816	823	817	806	791	743	767	704	665	643	672	677	696	695	727	750	746	740	836	7 22 a	622	3 53 p	214	0
17	742	743	740	738	740	744	757	761	752	752	760	745	740	734	757	763	785	795	753	719	773	756	738	742	751	835	5 22 p	695	7 47 p	140	0
18	749	747	744	743	743	745	749	749	768	761	766	748	748	747	742	735	751	762	749	749	744	751	753	750	750	786	5 38 p	718	3 37 p	68	2
19	749	743	745	744	744	748	745	746	746	746	749	752	751	751	747	749	750	752	753	746	738	744	747	744	747	760	5 29 p	734	5 43 p	26	2
20	749	746	747	744	743	743	744	749	751	756	756	753	753	752	764	759	747	774	786	765	759	744	731	734	752	802	6 48 p	721	10 37 p	81	1
21	739	744	751	751	752	787	799	807	794	783	771	757	749	740	739	729	721	741	758	743	696	697	715	696	749	823	7 23 a	672	9 11 p	151	0
22	697	716	730	744	745	733	749	756	796	772	755	778	748	746	737	720	725	686	677	665	704	700	716	718	730	821	11 3 a	641	7 43 p	180	0
23	738	742	743	745	743	744	745	745	745	749	744	744	732	752	743	736	731	715	703	731	728	738	739	738	739	770	2 54 p	694	6 50 p	76	1
24	740	745	744	740	731	751	754	767	764	762	755	754	750	746	749	710	710	674	719	700	715	722	734	731	736	772	8 13 a	632	5 56 p	140	0
25	736	748	757	752	745	748	746	751	751	758	756	754	744	739	723	715	714	734	740	764	740	743	756	750	744	826	7 39 p	685	4 7 p	141	0
26	732	731	744	750	743	750	744	760	756	750	754	744	749	745	744	739	741	739	743	745	743	744	746	750	745	761	6 59 a	722	5 5 p	39	2
27	749	751	752	745	752	753	775	781	764	765	758	761	755	753	746	741	739	733	749	753	750	738	739	746	752	805	6 51 p	704	5 27 p	101	1
28	750	753	751	750	746	752	761	763	762	761	788	762	732	762	776	707	668	620	635	610	654	709	719	719	725	839	2 20 p	570	7 0 p	269	0
29	722	725	728	740	749	768	805	686	798	795	684	752	756	759	756	771	763	765	771	753	773	745	723	637	747	845	6 46 a	351	7 11 a	494	2
30	714	748	752	750	757	746	751	706	790	786	748	754	745	756	770	730	590	758	738	760	778	678	662	738	738	844	5 46 p	435	7 27 a	409	2
31	737	745	742	748	748	751	757	750	778	767	761	762	734	752	752	797	724	691	740	736	734	737	746	745	747	847	3 45 p	665	5 42 p	182	0
Mean 1	730	733	738	740	732	732	754	754	764	761	753	754	749	747	742	732	715	715	720	723	727	726	729	726	737	803		597		206	
» 2	733	733	735	739	740	751	761	761	767	764	759	759	745	746	738	726	710	701	710	712	720	724	730	721	737						
» 3	730	733	736	738	743	751	758	763	765	763	760	755	749	744	737	725	712	706	708	714	719	724	726	726							

February 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	742	742	739	716	725	751	758	783	783	784	783	783	724	752	763	763	776	802	802	749	775	746	728	739	759	879	6 8 p	666	7 36 p	213	0
2	749	748	738	738	742	751	762	779	790	786	785	775	770	779	738	733	715	712	792	774	736	734	733	757	755	822	5 55 p	660	5 45 p	162	0
3	747	736	744	738	747	748	750	750	754	752	754	751	752	753	768	764	772	764	756	740	750	751	765	756	753	800	4 43 p	719	7 20 p	81	1
4	754	754	748	742	747	752	757	758	760	759	755	758	753	751	753	776	796	788	743	707	679	674	691	731	745	835	5 27 p	626	8 49 p	209	0
5	720	651	695	707	733	762	781	816	822	788	763	761	741	745	741	761	769	695	661	711	707	690	692	704	734	845	7 45 a	628	6 40 p	217	0
6	717	673	738	758	751	752	753	753	702	738	764	761	758	770	702	725	745	743	649	650	636	680	719	739	724	818	4 20 p	578	8 28 p	240	0
7	737	739	726	720	745	756	763	761	761	765	764	756	773	771	763	715	728	684	689	674	662	679	662	719	730	817	2 1 p	628	10 19 p	189	0
8	734	750	755	745	743	755	799	779	775	770	761	775	758	737	765	753	709	691	757	768	698	681	693	713	744	820	6 54 a	650	5 28 p	170	0
9	750	744	750	750	753	749	762	679	756	757	752	732	762	746	714	731	781	775	749	704	669	698	699	702	736	822	4 33 p	362	7 36 a	460	2
10	725	737	734	739	720	750	753	746	690	713	769	762	753	744	763	761	780	805	749	707	668	695	719	732	738	839	10 20 a	562	8 41 a	277	0
11	741	746	753	745	740	735	749	753	751	751	753	750	753	753	745	739	721	702	697	696	693	690	696	721	732	764	1 35 p	674	9 9 p	90	1
12	721	719	745	750	750	755	753	762	771	765	752	750	745	753	751	733	735	747	715	707	685	675	686	713	735	780	8 36 a	646	8 8 p	134	0
13	715	733	740	744	749	764	774	711	779	775	773	759	755	766	814	769	788	758	747	749	739	712	732	740	754	881	2 54 p	507	7 29 a	374	2
14	732	726	740	750	756	758	770	769	769	757	750	748	759	753	766	804	741	781	774	752	743	715	711	707	751	834	3 20 p	654	9 58 p	180	0
15	714	718	724	729	736	746	756	748	766	766	778	755	731	714	736	704	750	774	783	818	801	748	712	721	747	975	4 53 p	639	4 25 p	336	1
16	740	758	753	785	538	796	787	798	815	805	820	773	798	777	788	988	779	651	729	814	782	726	702	655	765	1076	3 32 p	182	4 35 a	894	2
17	665	723	726	741	761	751	757	753	767	773	769	758	769	738	757	786	798	782	745	707	717	711	729	741	747	818	6 1 p	676	7 21 p	142	0
18	746	748	750	753	756	753	753	761	765	782	776	776	782	803	812	794	794	856	829	753	757	729	739	738	771	917	6 38 p	667	7 24 p	250	0
19	740	742	739	746	752	754	757	761	756	757	771	770	763	763	729	721	718	732	763	748	758	742	738	741	748	856	6 18 p	710	3 36 p	146	0
20	748	747	744	752	732	741	769	783	779	765	763	759	750	748	730	734	742	732	721	730	735	745	754	756	748	792	7 12 a	709	4 58 a	83	1
21	753	752	750	745	747	752	753	759	761	767	757	752	753	746	742	729	726	722	726	737	741	722	717	732	743	775	9 2 a	715	8 57 p	60	2
22	745	750	756	749	749	751	753	752	755	758	756	757	757	758	768	772	748	692	685	699	734	702	707	725	741	781	3 5 p	655	6 2 p	126	0
23	742	751	759	762	762	776	807	792	822	791	769	775	765	751	776	757	818	834	781	763	704	703	736	739	768	851	5 9 p	679	8 44 p	172	0
24	761	751	751	751	758	775	800	793	777	754	751	752	753	754	762	763	785	794	809	781	752	726	742	739	764	823	6 3 p	714	9 52 p	109	0
25	746	753	754	753	756	756	763	768	762	762	758	764	754	764	774	780	804	819	859	822	800	742	721	746	770	882	5 14 p	702	10 28 p	180	0
26	750	750	751	744	747	754	781	779	770	763	762	762	746	751	745	744	786	775	751	750	746	759	762	748	757	856	5 3 p	730	3 29 p	126	0
27	741	740	752	752	753	752	752	758	754	752	754	751	754	753	756	758	760	771	763	741	729	742	753	753	752	780	4 52 p	722	8 42 p	58	2
28	753	745	745	753	753	754	759	759	758	758	760	761	754	754	754	755	754	760	763	765	758	769	765	759	757	800	7 34 p	733	7 20 p	67	1
29	752	753	752	756	751	748	758	764	781	782	791	774	775	780	794	824	807	767	789	794	779	752	754	760	771	847	3 4 p	724	6 44 p	123	0
Mean 1	737	737	743	745	740	755	765	763	767	766	766	761	757	756	758	763	763	755	749	742	728	718	723	735	750	841		639		202	
» 2	736	735	742	743	748	756	767	770	767	766	766	761	758	759	759	761	766	763	752	738	723	712	719	733	750						
» 3	735	737	741	744	749	757	765	768	768	766	765	763	760	759	760	762	764	761	751	738	724	716	721	730							

March 1904.

Table CIX. — Hourly Values of Horizontal Intensity.

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	771	772	771	770	771	773	776	778	776	768	761	758	760	762	757	747	738	728	718	711	720	747	770	750	756	781	10 35 p	691	7 15 p	90	0
2	749	752	752	752	750	755	767	782	772	761	771	756	763	758	773	821	751	731	751	752	724	721	729	701	754	845	3 28 p	673	11 5 p	172	0
3	733	755	757	759	752	763	782	768	764	768	768	765	756	764	781	792	794	752	650	696	735	717	764	716	752	834	4 44 p	618	9 20 p	216	0
4	728	736	707	712	764	776	789	831	834	793	769	752	768	786	750	685	712	752	741	740	700	718	715	721	749	863	7 52 a	645	3 47 p	218	0
5	692	705	741	729	768	781	781	795	799	782	775	777	777	783	747	768	745	748	782	742	742	719	735	741	756	840	4 20 p	657	0 45 a	183	0
6	757	746	750	749	750	749	752	762	762	758	755	750	751	742	728	722	674	621	660	699	714	758	748	721	732	793	9 57 p	600	5 37 p	193	0
7	736	730	746	757	757	765	759	769	771	763	765	754	777	798	770	735	720	724	698	742	754	774	744	752	752	812	1 45 p	669	6 59 p	143	0
8	752	746	762	761	765	776	785	789	776	765	763	753	746	740	718	694	725	801	732	739	740	748	738	751	753	839	5 36 p	668	3 32 p	171	0
9	744	752	753	754	752	764	757	761	762	759	759	760	752	741	721	705	740	686	728	740	646	745	710	721	738	777	7 32 p	599	8 29 p	178	0
10	739	736	740	753	754	744	764	764	779	767	757	748	753	776	754	722	706	715	711	738	744	740	741	746	745	789	1 39 p	689	5 3 p	100	0
11	754	755	755	752	752	754	775	776	764	766	763	755	752	747	783	787	797	775	842	847	820	686	739	763	769	903	6 47 p	656	9 34 p	247	1
12	764	752	755	753	750	750	766	776	789	766	794	785	803	773	785	815	742	786	780	773	709	738	739	741	766	854	3 10 p	523	4 57 a	331	2
13	749	760	760	751	743	756	756	754	758	760	754	760	778	785	800	776	769	765	787	816	793	758	725	740	765	859	6 50 p	705	10 15 p	154	0
14	744	760	762	755	754	755	766	766	770	770	761	770	773	762	748	742	732	746	760	739	754	737	761	757	756	787	0 0 p	714	9 50 p	73	1
15	750	752	755	754	754	755	760	766	779	768	761	760	760	755	743	737	739	745	744	745	763	763	761	754	755	805	8 49 a	729	7 9 p	76	1
16	760	756	756	756	760	757	762	764	769	775	763	763	754	754	774	788	756	731	760	745	754	762	762	752	760	799	3 7 p	680	5 53 p	119	0
17	754	756	758	759	759	759	761	758	758	756	756	756	761	774	774	774	764	748	731	739	752	763	764	757	758	782	3 5 p	726	6 52 p	56	1
18	750	752	755	756	758	758	762	765	763	763	764	763	761	750	730	730	716	682	665	666	694	706	717	734	736	767	0 42 p	659	6 32 p	108	0
19	744	759	761	761	758	758	756	757	758	759	761	759	761	762	767	776	777	782	773	744	761	763	745	751	761	800	5 51 p	729	10 0 p	71	1
20	754	751	747	758	760	762	762	763	764	762	764	777	776	788	789	765	793	860	834	804	764	752	764	764	774	885	5 47 p	728	3 47 p	157	0
21	755	763	762	759	761	761	759	763	764	774	765	765	764	763	776	776	789	773	748	741	751	756	752	752	762	809	4 34 p	735	7 20 p	74	1
22	752	751	752	753	758	757	758	758	756	756	755	755	756	752	752	751	748	763	755	740	755	752	757	764	754	794	8 50 p	735	7 57 p	59	1
23	759	757	758	759	758	759	761	759	761	761	758	761	763	780	792	806	797	810	764	764	773	759	764	764	769	846	5 22 p	744	6 42 p	102	0
24	755	754	754	755	758	760	764	764	768	766	761	758	778	805	804	811	769	763	732	761	740	710	726	744	761	861	4 0 p	704	9 50 p	157	0
25	741	746	752	755	764	760	764	762	762	763	764	764	772	798	792	831	816	831	773	735	729	755	729	762	767	855	5 41 p	717	10 33 p	138	0
26	752	752	764	767	788	792	782	785	764	775	778	776	825	800	796	819	823	892	843	854	801	701	748	731	788	962	5 49 p	656	9 46 p	306	2
27	740	763	757	756	757	760	782	822	826	816	798	786	822	825	816	826	837	839	782	733	714	750	748	735	783	913	4 51 p	685	8 24 p	228	0
28	741	743	749	754	752	755	764	768	766	763	752	757	776	801	831	848	844	810	773	788	733	737	732	732	770	915	5 21 p	697	10 31 p	218	0
29	744	755	756	755	763	761	763	758	760	766	770	763	796	791	744	784	775	807	776	650	617	672	691	721	747	855	5 0 p	595	8 28 p	260	1
30	741	750	755	752	758	762	764	770	767	766	761	775	784	795	810	781	757	737	734	773	750	722	758	772	762	828	2 23 p	680	9 6 p	148	0
31	770	769	767	745	750	760	760	761	758	757	769	778	782	782	757	760	739	769	743	740	745	732	737	755	758	799	1 29 p	708	7 29 p	91	0
Mean 1	748	751	754	754	758	761	766	772	772	767	765	763	771	774	770	770	761	764	751	748	738	737	742	744	758	834		678		156	
» 2	744	748	751	751	756	761	767	774	774	768	765	763	769	778	772	768	758	756	740	746	734	739	739	741	757						
» 3	744	748	750	752	756	761	767	772	773	769	765	765	770	774	773	766	760	753	746	742	738	738	739	741							

April 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	746	704	674	740	769	790	791	821	846	**868**	849	804	784	791	775	725	685	660	*593*	**543**	558	596	607	672	725	885	9 54 a	508	7 50 p	377	0
2	701	737	766	717	743	780	815	**826**	823	778	773	817	768	776	751	675	666	629	*608*	627	**587**	613	637	658	720	851	6 49 a	517	5 54 p	334	0
3	702	713	747	769	762	759	775	**807**	794	784	778	759	774	790	775	749	727	707	*703*	**554**	621	651	638	669	729	830	2 5 p	468	7 11 p	362	0
4	692	710	759	756	767	783	787	**812**	775	789	786	786	810	774	743	804	*719*	*672*	*613*	716	716	708	708	721	746	885	3 36 p	*553*	6 9 p	332	0
5	721	708	733	754	754	762	759	767	768	769	768	781	761	801	**810**	771	744	725	*709*	748	**634**	673	710	745	745	848	1 41 p	598	8 37 p	250	0
6	756	737	733	755	760	759	763	765	778	798	812	797	777	744	736	697	704	690	*620*	**605**	682	718	727	753	736	836	10 45 a	578	7 11 p	258	0
7	757	755	754	753	761	*764*	*767*	*767*	*765*	*761*	*759*	*756*	*752*	*745*	*732*	*716*	*707*	*698*	677	**650**	686	654	673	705	730	**768**	5 18 a	582	6 33 p	186	0
8	720	710	746	754	**781**	769	776	770	779	775	776	*778*	*780*	*779*	*771*	*761*	*757*	*753*	*738*	716	773	**702**	733	742	756	830	8 30 p	655	7 14 p	175	0
9	762	**769**	748	756	756	766	767	765	766	766	761	760	*760*	*758*	*748*	*736*	*730*	*725*	*707*	**684**	718	698	740	715	744	782	6 0 a	415	6 16 p	367	0
10	664	721	764	767	766	766	**770**	769	764	764	766	762	755	738	710	697	674	676	*662*	593	**592**	607	687	709	714	776	6 24 a	520	8 20 p	256	0
11	727	752	778	788	782	802	775	775	786	786	800	807	813	861	855	**897**	868	467	*456*	510	563	561	657	728	733	944	1 43 p	**366**	7 0 p	**578**	2
12	**740**	753	756	756	760	763	766	765	766	767	788	796	770	787	805	863	887	**889**	*842*	818	796	804	824	800	794	941	6 5 p	724	0 0 a	217	0
13	794	781	773	790	792	808	809	816	802	814	822	822	825	**844**	810	819	765	750	*745*	**734**	747	761	745	753	788	859	1 27 p	716	7 24 p	143	0
14	763	763	762	759	756	756	754	761	767	768	762	775	804	796	**820**	761	**742**	808	*775*	744	768	768	780	763	770	860	5 39 p	727	4 16 p	133	0
15	769	767	767	757	773	774	769	779	786	786	806	798	832	794	**859**	820	795	791	*748*	**738**	750	756	762	764	781	902	2 26 p	721	6 29 p	181	0
16	771	771	768	763	767	775	775	777	769	769	769	783	**798**	787	763	763	751	738	*721*	737	749	747	763	767	764	821	0 56 p	*697*	6 15 p	124	1
17	749	753	762	763	763	763	765	763	762	763	762	761	761	760	736	**707**	726	809	*836*	721	740	806	748	756	760	931	6 42 p	622	7 20 p	309	0
18	774	774	797	792	798	**820**	806	789	765	761	769	776	769	732	671	651	614	**454**	*525*	557	583	583	607	646	**701**	838	5 50 a	384	5 22 p	454	2
19	**713**	775	795	822	804	838	844	856	869	886	890	894	856	867	822	802	861	876	*943*	**971**	925	817	764	776	**844**	**1046**	7 42 p	665	0 0 a	381	0
20	778	778	774	769	767	765	766	768	771	784	786	774	763	771	781	790	**819**	781	*755*	744	**738**	745	748	757	770	886	4 41 p	728	9 27 p	158	0
21	764	764	765	761	765	760	762	761	764	765	768	753	**775**	738	739	**775**	*745*	*709*	*724*	729	744	766	772	770	756	812	0 38 p	689	5 58 p	123	1
22	771	766	765	772	774	779	782	774	772	768	768	765	753	749	733	750	**786**	714	*779*	**615**	639	655	666	701	741	918	6 23 p	542	7 35 p	376	0
23	**746**	755	767	767	773	771	767	772	773	774	780	780	791	815	836	837	820	837	*841*	764	768	789	786	768	787	919	6 14 p	714	0 0 a	205	0
24	756	772	772	766	771	788	833	**838**	*823*	*823*	*825*	*827*	*827*	*825*	*817*	*805*	*800*	*796*	*779*	756	714	**696**	737	767	788	850	7 6 a	679	9 17 p	171	0
25	768	756	759	779	780	783	772	782	795	789	778	846	853	**867**	814	756	800	815	*758*	757	795	839	792	**738**	790	889	1 39 p	**733**	3 22 p	156	0
26	753	759	761	781	799	818	835	**860**	823	805	811	828	817	808	770	720	**702**	817	*792*	779	785	775	757	758	788	882	7 15 a	663	4 27 p	219	0
27	749	755	760	763	760	764	765	772	777	764	772	772	763	752	735	**718**	728	735	*749*	769	775	**782**	777	778	760	798	11 30 p	713	3 44 p	**85**	2
28	783	778	772	767	771	787	798	795	787	789	789	781	776	777	800	792	817	**861**	*806*	779	746	**741**	*751*	*768*	784	888	5 45 p	726	1 20 p	162	0
29	766	778	764	760	770	781	788	785	781	778	783	802	826	833	816	816	**849**	817	*822*	736	**620**	638	629	749	770	907	4 48 p	599	10 42 p	308	0
30	684	722	726	777	779	755	761	764	763	761	760	757	764	760	785	660	**540**	657	*822*	688	649	663	670	682	723	883	5 56 p	466	4 25 p	417	1
Mean 1	745	751	759	766	771	778	782	787	785	785	787	**790**	789	787	777	761	751	735	729	**703**	705	710	720	736	758	869		609		260	
» 2	744	750	758	765	770	779	784	792	790	791	793	**796**	793	794	785	768	764	766	747	714	**710**	723	723	739	764						
» 3	744	751	758	764	771	778	785	789	791	791	793	**794**	**794**	792	783	771	766	761	744	721	**714**	720	727	736							

May 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	713	743	752	751	767	781	818	**840**	834	794	795	794	775	726	688	652	572	560	551	589	634	644	671	670	713	861	7 54 a	508	5 58 p	353	0
2	689	724	736	760	766	760	776	784	**785**	778	771	760	758	700	644	**590**	634	717	687	671	683	730	732	741	724	808	7 56 a	547	3 32 p	261	0
3	740	729	735	752	769	**798**	793	789	783	782	772	745	732	726	738	604	**572**	581	599	678	684	667	677	708	715	822	5 42 a	497	3 48 p	325	0
4	747	747	746	747	755	756	757	765	769	784	**789**	776	748	723	712	629	569	**535**	652	622	647	649	656	683	**707**	804	9 52 a	500	5 37 p	304	0
5	707	738	770	784	777	779	777	**785**	772	766	766	767	772	760	745	723	731	731	745	747	748	**701**	712	734	752	793	7 45 a	693	4 32 p	**100**	1
6	748	742	751	754	755	757	759	767	766	788	**817**	798	752	726	699	712	712	713	707	**671**	732	742	724	717	744	825	10 26 a	655	7 32 p	170	0
7	728	743	745	757	753	747	747	755	764	765	**770**	760	747	731	682	648	**646**	701	731	754	723	710	725	741	732	**784**	7 49 p	626	4 15 p	158	0
8	771	776	777	759	770	794	798	802	799	810	830	870	839	857	865	881	924	939	978	**981**	909	710	**693**	751	**828**	1094	7 17 p	666	10 19 p	428	0
9	731	743	749	752	752	757	760	760	769	781	785	798	802	819	823	**846**	837	793	765	725	**717**	731	761	754	771	865	4 2 p	708	7 57 p	157	0
10	757	763	761	767	763	776	782	783	784	794	**818**	810	751	725	728	720	**716**	731	755	759	764	754	742	765	761	839	11 11 a	708	4 21 p	131	1
11	751	777	746	742	748	763	772	781	771	771	778	782	**818**	747	694	694	**688**	734	742	781	800	766	778	809	760	847	0 41 p	668	3 3 p	179	0
12	792	766	772	774	763	788	819	797	786	828	899	900	923	878	983	**1001**	**1001**	978	892	683	568	**527**	604	707	810	1098	4 45 p	459	8 51 p	**639**	2
13	748	711	775	795	821	844	842	881	895	903	883	921	**977**	966	888	857	759	740	698	631	676	593	**574**	618	791	1095	1 12 p	556	10 5 p	539	2
14	704	734	762	757	757	774	815	**828**	809	806	760	750	731	717	656	652	695	627	513	588	634	618	636	659	708	856	7 35 a	471	6 16 p	385	0
15	**677**	688	710	731	737	747	751	754	752	776	**781**	778	766	737	727	718	721	725	728	724	713	722	707	724	733	791	11 11 a	653	0 47 a	138	1
16	746	758	752	752	752	748	742	754	754	760	774	766	770	783	766	788	793	789	782	742	**719**	753	805	**856**	767	876	11 15 p	692	9 0 p	184	0
17	**853**	818	762	805	783	766	764	794	845	834	823	810	791	763	728	696	675	660	645	**633**	651	642	765	687	746	874	0 37 a	593	9 56 p	281	0
18	**665**	712	751	746	751	757	765	760	769	763	778	783	803	**845**	789	713	707	765	763	730	745	763	741	770	756	880	1 18 p	609	4 12 p	271	0
19	786	751	741	772	801	842	844	836	849	787	789	875	866	839	906	875	880	922	995	784	685	**647**	670	717	811	**1107**	6 41 p	619	9 24 p	488	1
20	**729**	754	763	750	759	770	779	791	806	799	819	827	804	775	806	788	807	**851**	764	729	737	760	747	757	778	880	5 12 p	706	0 0 a	174	0
21	760	742	757	759	762	769	784	807	824	815	831	848	830	834	843	**880**	**880**	750	679	696	730	737	722	765	784	901	4 5 p	625	5 39 p	276	0
22	777	774	763	**761**	762	768	777	781	783	786	787	811	834	841	868	840	**888**	850	779	765	859	823	777	733	799	946	4 56 p	711	11 44 p	235	0
23	773	777	785	777	797	815	817	835	837	845	865	866	886	834	825	777	760	823	919	**930**	766	**719**	754	770	814	970	6 42 p	659	9 17 p	311	0
24	**739**	763	741	741	762	824	823	831	852	858	822	874	888	881	848	884	**913**	901	823	770	822	804	812	802	824	934	4 31 p	718	0 13 a	216	0
25	794	791	786	765	774	779	781	795	790	788	776	803	826	**840**	816	821	794	765	752	759	779	771	769	**752**	786	862	1 11 p	**740**	6 27 p	122	1
26	752	749	755	762	770	783	790	792	796	799	806	821	822	827	828	857	**887**	856	790	790	**722**	729	729	746	790	945	4 57 p	705	8 41 p	240	0
27	773	776	771	764	763	777	771	761	779	781	783	756	741	729	705	673	687	829	910	**912**	744	694	633	**605**	755	1103	7 25 p	569	11 18 p	534	2
28	689	779	786	798	847	830	838	873	886	859	856	820	811	718	804	887	**890**	790	410	442	503	530	597	655	746	934	3 57 p	**356**	6 58 p	578	2
29	**642**	705	764	769	758	746	759	794	810	809	800	816	876	804	849	799	669	757	783	909	**912**	910	844	815	796	961	7 38 p	614	0 38 a	347	0
30	747	783	791	779	768	794	812	796	811	823	**853**	844	830	802	727	**656**	681	662	735	757	806	800	779	741	774	888	10 48 a	609	4 44 p	279	0
31	696	720	732	745	755	752	758	763	772	**786**	774	782	752	769	731	691	686	688	746	750	746	**655**	659	661	732	893	7 6 p	629	9 10 p	264	0
Mean 1	739	751	758	762	768	779	785	795	800	801	805	**810**	807	788	778	760	754	757	743	732	728	**710**	716	729	765	908		615		293	
» 2	**730**	747	755	756	761	772	781	789	793	795	799	**803**	800	784	766	742	739	743	738	744	749	734	734	745	763						
» 3	738	745	753	757	762	772	781	788	792	795	799	**801**	797	784	764	747	741	741	741	744	744	738	**737**	738							

June 1904.

Table CIX. — Hourly Values of Horizontal Intensity.

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	711	752	775	769	773	768	770	778	773	770	764	757	744	739	728	**781**	**670**	734	*755*	748	699	696	734	734	747	861	3 31 p	637	4 56 p	224	0
2	731	750	773	774	782	775	786	776	801	806	805	**829**	792	764	746	716	**699**	710	*755*	760	761	772	769	756	766	846	11 42 a	679	5 16 p	167	0
3	745	757	760	761	772	769	775	786	794	792	788	782	762	749	790	757	**703**	715	*757*	791	**805**	803	774	769	769	821	8 18 p	667	4 43 p	154	0
4	767	772	762	762	767	776	778	784	815	**817**	813	803	767	757	740	**710**	737	717	*742*	768	784	769	734	747	766	846	8 42 a	679	10 45 p	167	0
5	783	785	748	**736**	755	761	767	767	780	794	808	832	867	902	885	880	895	846	*907*	866	836	835	774	802	817	1017	5 54 p	711	5 22 p	306	0
6	819	803	796	787	784	805	815	824	848	788	931	972	950	**1017**	1010	825	**676**	803	*950*	816	700	757	787	813	837	1074	2 46 p	569	4 11 p	505	2
7	785	826	836	821	818	812	831	845	854	896	**922**	910	898	890	822	785	751	749	*748*	763	794	791	774	771	821	951	11 14 a	710	5 57 p	241	0
8	762	761	742	739	747	761	783	794	**801**	800	786	773	769	750	**721**	**721**	753	728	*742*	738	757	771	724	733	756	807	8 18 a	704	2 50 p	103	1
9	**731**	753	763	767	762	768	781	790	801	799	798	809	**825**	804	790	792	791	781	*752*	748	755	768	780	759	778	843	0 30 p	721	0 12 a	122	1
10	777	772	774	778	773	774	787	812	810	816	846	**883**	810	773	770	744	739	**732**	*812*	798	774	760	797	855	790	877	11 20 p	688	4 56 p	189	0
11	763	**663**	725	742	765	783	792	**800**	794	781	775	774	761	748	726	698	684	716	*738*	753	773	751	763	757	751	854	0 10 a	631	1 5 a	223	0
12	733	731	743	762	779	785	792	797	783	778	772	773	778	779	748	779	**820**	716	*780*	747	749	735	727	**703**	762	854	4 23 p	603	5 27 p	251	0
13	727	759	768	775	**786**	781	774	773	775	777	780	775	765	743	722	**708**	710	725	*733*	748	762	757	775	771	757	**790**	4 35 a	691	4 21 p	**99**	1
14	781	780	769	760	760	765	772	778	779	777	769	**800**	741	691	672	**633**	639	706	*720*	733	709	677	738	779	739	817	11 16 p	579	4 2 p	238	0
15	711	723	732	732	746	759	760	783	788	799	842	875	843	936	**1002**	963	871	710	*871*	*978*	649	**484**	529	584	778	1133	7 54 p	**371**	9 20 p	**762**	2
16	**711**	831	878	919	883	907	907	847	878	926	938	954	917	909	942	922	**1000**	909	*823*	896	953	749	**711**	784	**879**	**1155**	5 11 p	566	10 35 p	589	2
17	752	771	760	770	790	797	780	770	793	827	870	914	857	860	**915**	819	831	777	*744*	724	**696**	705	764	721	792	962	2 33 p	637	6 38 p	325	0
18	724	756	746	762	768	821	**827**	809	793	802	804	817	803	819	814	712	**688**	700	*762*	737	742	812	749	753	772	923	9 12 p	630	5 14 p	293	0
19	726	744	748	752	753	766	768	784	795	788	770	770	800	**829**	794	756	**725**	733	*744*	767	761	738	770	768	765	841	1 3 p	707	4 30 p	134	0
20	755	754	**735**	741	755	770	783	817	832	848	878	884	**908**	894	865	861	842	813	*832*	760	738	750	771	782	807	940	0 26 p	720	8 57 p	220	0
21	779	744	**712**	723	764	773	783	801	809	819	824	809	848	847	844	759	742	840	*835*	**864**	770	771	733	729	788	913	7 3 p	690	11 5 p	223	0
22	768	764	748	756	760	762	768	793	797	797	**803**	795	786	766	726	720	703	**696**	*729*	753	755	746	771	776	760	809	8 48 a	654	5 34 p	155	0
23	775	777	768	754	751	760	772	785	800	803	808	819	813	781	794	844	**868**	839	*761*	**749**	753	791	795	780	789	919	5 16 p	**730**	7 21 p	189	0
24	762	746	749	756	755	765	769	780	787	785	784	780	759	757	785	702	**689**	710	*726*	766	780	773	**793**	770	757	837	8 51 p	614	9 0 p	223	0
25	761	756	762	756	756	754	767	767	765	766	766	765	783	811	824	**834**	823	761	*820*	780	802	**727**	753	735	775	846	3 55 p	702	9 15 p	144	0
26	734	758	768	779	780	777	794	791	795	802	809	823	**826**	780	821	808	735	765	*738*	711	631	**567**	595	641	751	890	5 11 p	545	9 6 p	345	0
27	690	743	730	784	796	794	797	801	811	794	793	846	762	668	689	708	680	632	*876*	683	758	**616**	667	694	742	943	6 10 p	531	5 38 p	412	1
28	736	742	748	754	766	783	**799**	768	761	764	768	772	762	744	748	708	**654**	662	*676*	669	732	708	687	689	**733**	831	6 2 a	635	4 15 p	196	0
29	707	710	733	733	734	752	749	750	756	755	774	770	768	747	**664**	**664**	674	673	*690*	*749*	*773*	*785*	770	**785**	739	803	11 12 p	641	3 14 p	162	0
30	765	752	758	746	745	742	750	753	770	776	765	759	737	723	694	648	**637**	657	*733*	778	790	790	802	**810**	745	786	8 52 a	620	4 42 p	166	0
Mean 1	749	758	760	765	771	779	786	790	798	801	812	**821**	807	799	791	765	748	742	775	771	758	**738**	744	752	774	890		642		248	
» 2	751	754	757	759	766	773	781	787	792	797	803	**810**	801	791	778	757	**739**	740	762	761	756	750	756	758	770						
» 3	753	754	757	760	766	773	780	787	792	797	803	**806**	801	790	776	758	**744**	745	756	760	756	773	755	757							

July 1904.

Table CIX. — Hourly Values of Horizontal Intensity.

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	811	792	790	785	788	789	792	792	794	800	820	853	889	777	734	959	**1042**	1018	793	966	856	731	**728**	841	831	1134	5 45 p	690	10 44 p	444	1
2	795	802	794	790	788	785	793	802	790	792	803	820	788	812	824	**751**	808	833	865	856	780	769	762	**751**	798	966	7 7 p	671	3 44 p	295	0
3	750	776	776	783	792	780	770	778	783	793	833	829	831	**841**	796	765	**746**	766	759	780	788	802	800	802	787	859	11 0 a	704	3 42 p	155	0
4	794	776	777	777	778	779	781	785	787	793	798	**818**	799	793	816	**818**	**818**	764	744	745	722	**656**	684	775	774	840	4 10 p	642	9 38 p	198	0
5	794	782	813	796	787	795	807	818	819	822	826	852	839	**861**	857	814	770	**730**	772	771	766	784	793	795	803	888	1 27 p	700	5 25 p	188	0
6	782	765	769	776	773	772	787	807	839	863	883	925	**951**	936	906	800	813	**426**	812	817	566	444	522	602	764	1082	7 6 p	**136**	5 32 p	**946**	2
7	665	689	748	757	790	819	**846**	810	803	800	783	799	777	761	769	673	712	**606**	635	613	611	622	632	667	724	857	6 54 a	510	5 37 p	347	0
8	696	717	710	761	765	765	782	784	784	794	793	830	810	**845**	775	712	700	**685**	718	753	762	699	711	736	754	875	1 6 p	643	4 16 p	232	0
9	733	745	745	759	783	797	**804**	802	788	784	787	775	789	773	766	730	682	690	589	**489**	524	558	652	637	716	823	6 51 a	461	7 47 p	362	0
10	670	652	764	792	813	801	801	**816**	784	793	793	790	778	767	743	723	677	**649**	723	726	719	743	763	761	754	849	4 19 a	625	0 9 a	224	0
11	731	723	734	748	753	771	771	776	781	**784**	**784**	773	765	759	747	711	**674**	678	722	733	759	772	767	772	750	**794**	9 42 p	630	4 49 p	164	0
12	778	784	787	773	770	767	779	785	795	795	793	807	**849**	829	790	763	732	**698**	742	745	781	772	769	766	777	860	1 2 p	660	5 38 p	200	0
13	781	748	**740**	753	764	770	772	771	773	776	816	824	866	778	761	782	800	955	971	883	831	954	960	918	820	1064	9 53 p	626	4 11 p	438	1
14	866	792	765	764	**760**	769	794	812	877	892	887	913	941	969	928	876	958	**1025**	987	994	939	926	986	851	**886**	**1174**	5 42 p	**752**	2 49 a	422	0
15	807	823	803	806	814	825	846	830	853	846	857	877	895	**898**	866	833	861	818	798	787	783	733	**672**	690	818	918	1 9 p	652	10 31 p	266	0
16	713	733	763	783	781	798	790	787	794	798	814	834	817	789	**852**	785	749	793	745	736	730	**641**	657	806	770	902	2 20 p	600	9 31 p	302	0
17	824	810	786	792	804	787	791	822	807	823	861	833	835	879	866	**894**	857	885	805	**764**	801	842	833	798	825	918	3 45 p	725	7 31 p	193	0
18	789	777	757	757	783	796	796	797	786	792	804	836	834	830	793	751	**726**	739	739	**841**	822	797	811	781	789	877	7 10 p	680	4 42 p	197	0
19	774	774	771	764	752	753	787	816	801	817	816	828	842	839	843	**887**	878	884	877	868	769	**733**	739	752	807	907	4 6 p	704	9 12 p	203	0
20	**752**	754	759	756	753	757	758	772	776	775	810	833	845	892	881	876	901	894	956	765	841	825	802	802	814	998	6 37 p	716	7 59 p	282	0
21	793	775	**736**	744	746	763	764	774	782	781	793	806	819	814	800	766	802	810	739	778	**865**	774	745	752	780	907	8 43 p	657	6 34 p	250	0
22	762	769	775	756	757	757	763	765	772	792	799	799	**805**	783	733	**669**	706	729	728	742	751	742	744	758	756	823	0 33 p	643	3 44 p	180	0
23	754	762	735	744	744	750	752	751	752	749	755	**819**	807	770	741	722	**555**	764	711	702	653	631	684	706	730	845	11 47 a	502	4 54 p	343	0
24	725	750	733	746	756	747	757	761	763	763	755	752	740	728	720	695	677	**635**	683	718	762	781	**787**	771	738	799	10 19 p	564	4 52 p	235	0
25	763	756	752	758	762	781	786	775	771	782	800	**812**	811	753	**695**	709	745	784	769	801	757	758	811	787	770	835	7 38 p	664	2 51 p	171	0
26	777	769	753	759	751	769	776	**788**	774	771	766	754	722	704	658	728	629	**478**	575	665	668	671	680	660	**710**	799	4 7 p	371	5 2 p	428	0
27	650	659	733	760	777	774	809	782	783	806	800	790	766	769	760	689	**627**	646	696	**848**	829	797	762	768	753	966	7 10 p	529	5 48 p	437	1
28	748	**740**	766	795	776	791	813	824	819	837	822	770	803	802	817	854	806	**895**	888	765	856	775	804	764	805	957	3 3 p	665	7 41 p	292	0
29	824	801	801	802	798	805	807	809	809	807	819	822	**832**	824	800	764	**753**	**753**	753	789	792	802	799	782	798	844	0 30 p	727	4 31 p	**117**	1
30	790	781	769	783	793	806	830	835	828	841	848	**885**	**885**	864	858	832	839	825	856	855	747	**657**	694	700	808	927	7 17 p	614	9 45 p	313	0
31	729	**715**	741	787	782	780	778	777	780	787	799	813	805	827	828	838	**850**	764	749	769	808	823	824	800	790	871	4 18 p	688	1 39 a	183	0
Mean 1	762	758	763	771	775	781	790	794	795	802	810	**822**	812	815	798	778	771	764	771	776	763	**742**	754	760	781	908		618		290	
» 2	760	759	762	770	774	780	789	794	794	800	807	**818**	817	815	799	774	764	764	764	760	760	**742**	754	755	778						
» 3	758	760	763	769	775	781	788	793	795	800	808	815	**817**	812	797	778	766	764	763	761	756	**749**	751	756							

August 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.
γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	763	785	792	780	782	791	793	791	789	801	795	778	766	742	698	695	692	701	728	741	755	727	715	737	756	807	9 39 a	663	4 21 p	144	0
2	746	782	809	808	817	847	863	823	830	829	807	824	878	845	866	824	800	893	888	873	861	839	800	828	832	928	7 37 p	700	4 39 p	228	0
3	800	780	800	813	805	813	812	844	840	868	871	911	934	935	934	874	858	607	531	653	575	612	764	623	786	1016	1 57 p	376	6 51 p	640	2
4	630	625	736	759	757	774	782	800	825	845	841	850	886	918	886	834	789	772	758	728	729	724	738	776	782	952	1 14 p	600	1 15 a	352	1
5	783	806	778	800	813	823	827	797	795	801	822	838	836	799	811	818	817	784	769	744	716	693	694	727	787	850	6 1 a	687	10 10 p	163	0
6	751	750	760	750	763	765	764	771	756	759	775	782	762	709	668	633	650	697	731	693	688	674	695	696	727	795	11 15 a	610	4 14 p	185	0
7	706	715	722	727	734	743	750	753	758	764	770	774	774	768	757	745	737	741	754	763	757	706	703	716	743	800	0 0 p	687	10 32 p	113	0
8	756	771	766	756	759	759	759	764	769	773	779	776	766	752	737	700	643	612	694	736	741	762	778	788	747	804	10 35 p	610	4 48 p	194	0
9	775	766	756	758	759	757	757	758	761	761	766	766	765	764	736	722	712	694	729	763	753	770	798	776	755	825	10 6 p	676	9 6 p	149	0
10	768	765	760	773	779	785	793	794	811	812	825	814	812	770	743	753	813	889	805	745	888	865	760	757	795	1014	4 51 p	689	4 18 p	325	0
11	777	772	772	765	762	759	760	769	772	775	766	772	778	803	802	818	845	808	802	783	769	788	779	775	782	882	4 51 p	753	9 51 p	129	0
12	760	757	754	752	755	758	764	771	775	789	803	807	810	828	778	755	746	742	741	751	773	779	767	755	770	858	1 35 p	718	6 43 p	140	0
13	760	757	757	773	763	765	772	765	776	785	792	803	805	814	765	788	814	777	736	745	770	755	748	752	772	845	5 4 p	688	7 1 p	157	0
14	753	761	761	763	777	777	798	788	773	772	772	767	754	748	736	693	676	625	654	688	728	718	710	708	738	811	6 54 a	594	5 47 p	217	0
15	765	783	778	776	773	776	784	798	802	803	808	826	828	765	740	845	893	949	903	909	866	881	825	781	819	990	5 44 p	718	2 36 p	272	0
16	766	781	787	769	787	801	842	828	851	861	879	900	899	920	941	888	825	811	828	828	818	811	731	720	828	947	2 25 p	695	11 6 p	252	0
17	743	779	753	760	777	781	777	781	789	794	837	843	849	822	807	757	688	661	731	755	764	808	781	678	771	865	11 2 a	542	4 57 p	323	0
18	730	742	776	732	752	781	783	789	782	790	777	754	745	779	752	708	648	634	722	714	677	671	687	710	735	819	9 51 a	606	4 49 p	213	0
19	733	745	766	757	757	758	757	761	759	758	758	767	773	800	802	777	746	716	725	743	760	779	781	776	761	823	2 24 p	701	6 0 p	122	0
20	767	761	759	760	761	766	770	773	781	777	773	771	772	767	761	818	663	739	779	764	743	740	706	695	757	829	3 12 p	618	4 48 p	211	0
21	718	765	750	760	770	756	765	764	772	774	760	776	752	826	677	639	842	862	670	644	705	689	752	707	746	935	4 51 p	441	6 24 p	494	2
22	718	730	766	795	801	813	831	836	802	807	793	788	770	733	784	739	690	645	723	694	623	673	702	728	749	847	6 58 a	578	8 23 p	269	0
23	724	729	743	767	784	786	784	777	776	780	796	779	772	752	743	735	686	697	740	737	713	680	700	729	746	814	10 13 a	639	9 6 p	175	0
24	754	749	771	765	756	760	765	777	767	760	754	748	738	718	706	678	658	685	713	718	699	726	761	758	737	788	7 17 a	627	4 37 p	161	0
25	752	747	748	746	753	754	754	749	749	749	750	756	754	742	713	694	691	682	715	749	742	750	767	768	741	778	11 48 p	661	5 35 p	117	0
26	772	770	760	753	752	753	752	756	756	759	767	767	741	726	701	688	677	700	719	749	750	740	754	759	743	774	1 5 a	668	4 17 p	106	1
27	766	771	772	766	760	760	764	766	767	770	765	767	772	760	771	733	738	738	715	738	760	772	762	766	759	802	5 17 p	688	6 33 p	114	0
28	773	771	762	762	761	762	760	760	760	762	756	756	756	762	717	700	697	702	714	740	756	766	780	778	751	797	10 15 p	678	5 35 p	119	0
29	766	768	772	764	759	764	772	773	773	794	803	829	843	866	846	829	866	947	971	870	724	789	848	762	812	1073	5 23 p	672	4 3 p	401	2
30	740	783	789	780	796	809	824	835	814	788	777	777	772	726	661	884	774	783	796	804	810	812	811	813	790	966	3 10 p	603	2 50 p	363	1
31	813	799	762	789	823	846	814	818	802	801	795	807	830	861	877	838	841	837	832	821	808	791	772	754	814	890	2 28 p	750	2 19 a	140	0
Mean 1	753	760	766	767	772	779	784	785	785	789	791	796	797	791	771	761	749	747	752	754	749	751	754	745	769	868		643		225	
» 2	756	763	767	767	772	778	784	782	782	786	789	791	790	778	764	751	732	736	752	754	755	758	749	747	766						
» 3	756	762	766	768	772	778	782	782	783	786	789	790	787	778	764	749	738	739	749	754	756	755	751	749							

September 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	738	**725**	**725**	748	762	772	768	799	794	797	794	783	791	821	827	830	820	813	803	785	**866**	817	756	760	787	914	8 9 p	709	2 5 a	205	0
2	755	**740**	742	753	756	758	770	770	776	764	768	773	815	832	826	823	840	865	860	842	826	809	779	758	792	890	5 15 p	**733**	1 36 a	157	0
3	765	766	761	770	770	778	786	796	794	814	825	843	865	842	838	813	814	**878**	826	799	779	746	754	**741**	798	926	5 33 p	726	9 26 p	200	0
4	720	726	752	759	776	794	**800**	795	794	788	785	766	758	742	734	**673**	699	712	738	758	743	737	738	740	751	812	5 54 a	641	3 41 p	171	0
5	743	746	749	752	753	754	758	760	760	760	759	776	761	737	779	**861**	821	790	806	819	747	790	779	**732**	770	902	6 50 p	699	2 9 p	203	0
6	764	761	765	764	778	784	765	767	765	770	783	808	800	821	830	**870**	840	797	806	776	**596**	720	727	752	775	929	7 35 p	494	8 11 p	435	2
7	764	747	752	759	765	782	778	777	770	762	770	772	759	719	682	727	**654**	744	793	738	709	700	718	723	744	844	5 51 p	577	4 38 p	267	0
8	755	756	721	741	771	775	780	807	805	773	769	756	825	849	768	862	**915**	845	631	**624**	689	654	681	710	761	**1030**	4 42 p	544	7 23 p	**486**	2
9	**724**	748	742	743	753	772	803	797	796	771	765	749	807	809	796	807	813	820	830	**854**	769	773	794	761	783	915	7 6 p	706	0 35 a	209	0
10	**748**	757	760	779	794	794	808	825	819	789	805	820	786	798	813	800	808	842	872	**894**	862	749	**748**	**748**	**801**	961	8 3 p	728	9 38 p	233	0
11	735	745	739	741	740	743	760	791	797	786	794	759	773	798	780	778	**695**	798	831	810	799	725	767	751	768	939	5 41 p	649	4 24 p	290	1
12	757	730	735	755	768	764	772	782	780	788	772	780	**841**	783	798	804	800	771	723	**723**	735	750	764	754	768	861	4 5 p	657	6 27 p	204	0
13	750	745	752	751	766	787	787	787	791	**803**	781	754	770	748	762	762	754	**741**	756	754	777	775	760	754	765	818	9 44 a	711	3 43 p	107	0
14	753	751	749	744	741	755	752	760	766	772	766	771	766	778	760	766	787	**794**	762	764	**794**	783	**734**	760	764	847	8 15 p	716	10 14 p	131	0
15	766	766	756	751	754	754	760	767	766	777	767	761	746	787	767	**858**	**743**	767	743	754	772	771	756	760	765	932	3 41 p	692	4 34 p	240	0
16	756	750	754	759	762	772	**811**	775	809	788	762	745	745	699	677	595	611	543	539	748	631	680	717	740	**715**	938	7 18 p	**455**	5 25 p	483	2
17	759	762	756	766	776	**782**	**782**	772	776	772	768	766	754	735	729	724	**707**	716	739	745	721	755	732	729	751	797	5 54 a	674	5 0 p	123	0
18	738	749	754	760	762	766	770	**771**	766	765	764	756	741	732	716	701	**683**	703	723	755	751	746	751	756	745	778	7 19 a	667	4 32 p	111	0
19	764	766	765	756	765	765	**767**	766	762	760	756	756	751	748	734	737	**718**	740	748	760	761	763	759	759	755	**770**	9 48 p	706	4 48 p	**64**	1
20	761	**768**	759	758	756	756	756	758	759	757	757	756	750	748	729	745	**724**	728	734	745	751	734	740	762	750	776	11 21 p	700	4 53 p	76	1
21	757	755	757	756	756	756	760	755	755	757	756	754	759	754	761	**782**	777	772	753	**676**	699	705	718	728	748	814	6 6 p	662	8 8 p	152	0
22	757	757	759	757	759	757	756	757	757	762	757	759	961	756	757	728	728	749	751	759	**766**	735	**716**	718	751	781	8 30 p	696	3 41 p	85	1
23	738	737	739	769	775	780	807	**825**	800	800	791	751	743	726	732	712	707	**676**	722	740	755	757	755	761	754	835	7 20 a	657	5 2 p	178	0
24	756	754	750	751	751	754	754	754	753	751	754	750	744	737	721	723	732	727	734	759	**764**	697	**694**	716	741	792	8 3 p	658	11 5 p	134	0
25	719	741	772	794	824	847	**866**	842	824	787	808	754	812	771	733	705	739	789	759	**645**	696	760	735	735	769	891	7 0 a	606	7 44 p	285	0
26	**741**	760	770	756	760	777	788	792	785	788	791	796	**800**	**800**	788	750	780	773	794	762	781	780	767	772	777	821	1 32 p	723	3 29 p	98	0
27	773	762	759	757	753	760	764	773	771	770	765	769	765	751	750	760	750	**780**	760	**741**	748	774	779	768	763	816	5 36 p	723	2 57 p	93	1
28	752	744	764	759	765	767	769	783	788	777	769	769	773	749	738	**713**	751	777	796	782	782	787	786	776	767	821	6 32 p	692	3 13 p	129	0
29	759	760	761	766	775	786	783	780	781	780	781	773	785	786	786	794	**810**	804	797	765	739	**730**	748	748	774	823	5 52 p	710	8 56 p	113	0
30	756	765	770	766	767	769	**780**	771	767	771	777	754	761	757	759	751	**728**	745	746	739	756	775	769	755	761	798	9 11 p	707	4 46 p	91	1
Mean 1	751	751	753	758	765	772	779	**782**	781	777	775	769	777	770	762	765	758	767	763	761	752	749	**747**	748	764	859		667		192	
» 2	**748**	749	753	759	766	774	781	**782**	780	778	776	769	779	767	760	763	758	769	771	760	755	755	751	**748**	765						
» 3	**748**	750	754	759	766	774	779	**781**	780	778	775	773	773	768	763	761	762	767	768	762	756	754	751	749							

October 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn. Gr. M. T.

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Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	757	759	762	761	762	760	762	772	781	773	776	778	798	799	825	833	825	824	*831*	**836**	815	800	740	**724**	786	879	5 3 p	704	11 7 p	175	0
2	746	742	750	763	766	765	790	**841**	803	774	772	801	795	777	**724**	758	792	735	*762*	787	735	756	763	767	769	865	7 32 a	684	6 4 p	181	0
3	**752**	756	757	760	767	772	773	770	770	771	776	768	765	776	771	765	**815**	803	*789*	766	782	793	792	772	774	836	6 5 p	731	7 29 p	105	0
4	767	765	768	770	771	786	787	786	774	777	775	785	785	778	759	**758**	762	772	*795*	**815**	793	764	759	764	776	843	7 42 p	**741**	2 8 p	102	0
5	763	759	761	772	782	796	809	796	788	779	787	785	795	780	751	713	**704**	755	*775*	**811**	778	793	779	759	774	831	7 12 p	685	4 48 p	146	0
6	746	761	783	784	791	804	800	802	**827**	802	795	799	802	826	804	737	737	759	*763*	769	741	**720**	745	755	777	836	1 29 p	691	9 22 p	145	0
7	759	783	789	776	790	809	832	836	840	842	804	793	789	779	758	790	*755*	765	*816*	**871**	777	737	731	**712**	**789**	918	7 11 p	683	12 0 p	235	0
8	**677**	728	780	761	772	812	**842**	832	834	794	789	809	795	795	832	748	703	691	*696*	758	759	750	766	761	770	874	6 24 a	**540**	5 51 p	334	2
9	743	746	753	764	779	785	790	798	793	799	775	791	**811**	773	775	782	764	771	*739*	769	748	**739**	747	767	771	825	0 35 p	678	6 34 p	147	0
10	763	759	756	763	774	**806**	799	789	784	773	773	767	766	769	750	740	**726**	739	*785*	759	755	751	748	755	765	834	5 11 a	687	4 35 p	147	0
11	755	757	768	755	756	763	766	766	766	758	761	762	762	758	757	752	750	762	*761*	**771**	**741**	747	764	755	759	790	7 27 p	720	9 2 p	70	1
12	763	761	762	763	763	768	779	791	**793**	778	773	768	762	773	790	761	**757**	766	*773*	772	767	775	773	769	771	807	2 39 p	*739*	6 18 p	68	1
13	766	767	764	764	763	773	777	784	799	807	799	789	803	824	846	856	**885**	882	*861*	838	710	**623**	643	632	781	**963**	5 54 p	592	9 11 p	**371**	2
14	678	720	746	776	788	776	776	772	768	768	764	774	**789**	787	759	705	753	720	*638*	659	640	720	725	725	**739**	868	2 4 p	591	6 41 p	277	2
15	**714**	750	745	769	771	769	**779**	769	769	768	766	769	768	758	772	**779**	758	734	*740*	**714**	723	723	731	747	753	798	3 37 p	687	7 37 p	111	0
16	753	741	714	747	759	769	775	782	**806**	772	772	755	758	794	794	774	757	741	*705*	714	725	720	734	736	754	837	3 0 p	*665*	6 30 p	172	0
17	735	749	758	**768**	764	762	764	763	762	765	762	765	760	751	749	**726**	736	741	*741*	732	738	749	754	759	752	**773**	11 35 a	708	4 36 p	**65**	1
18	758	758	765	763	762	764	768	**778**	773	773	773	765	764	769	767	748	737	**727**	*740*	748	757	759	760	762	760	785	7 16 a	717	5 8 p	68	1
19	762	760	760	760	760	772	783	**797**	785	772	767	762	759	753	733	720	711	**709**	*742*	724	737	747	753	758	754	808	7 18 a	684	5 45 p	124	0
20	753	753	760	763	764	767	**773**	767	764	764	765	768	764	763	758	764	752	746	*730*	738	752	**721**	726	751	755	780	3 5 p	709	5 56 p	71	1
21	742	727	759	765	773	783	**819**	806	810	813	796	779	765	768	764	705	691	671	*663*	650	**649**	684	744	744	744	846	6 33 a	589	9 9 p	257	1
22	737	687	726	741	727	742	785	**791**	776	765	764	751	749	748	756	751	703	684	*668*	716	737	730	763	757	740	818	7 48 a	634	1 36 a	184	0
23	754	754	**748**	749	765	779	781	780	763	775	765	775	774	775	771	771	801	**822**	*771*	765	753	761	760	753	769	839	5 39 p	727	3 18 a	112	0
24	**753**	**753**	754	**753**	759	758	758	760	761	766	763	763	763	781	790	747	759	**793**	*786*	775	766	768	765	766	765	822	6 3 p	715	3 43 p	107	0
25	761	759	764	764	766	775	777	784	**786**	779	777	774	766	760	754	747	776	722	*669*	**660**	663	677	682	693	743	834	5 13 p	556	5 56 p	278	2
26	721	749	763	755	763	764	763	763	763	761	757	753	752	753	768	**774**	768	758	*732*	728	**716**	726	752	750	752	819	3 11 p	700	8 25 p	119	0
27	737	743	752	752	759	768	780	**789**	779	779	761	779	776	755	**721**	**721**	761	737	*727*	771	738	753	754	753	756	795	4 36 p	656	5 47 p	139	0
28	**727**	754	767	769	766	775	791	814	817	824	**830**	797	782	759	772	732	785	788	*772*	745	766	743	753	762	775	850	7 45 a	700	3 18 p	150	0
29	755	759	755	762	762	766	767	766	766	764	756	778	762	735	775	781	786	738	*765*	**797**	764	**726**	740	751	762	850	4 26 p	696	5 45 p	154	0
30	742	735	742	745	748	759	**778**	**778**	776	770	765	759	745	776	**778**	740	737	762	*752*	775	765	774	738	**705**	756	815	5 27 p	692	11 29 p	123	0
31	**722**	**722**	724	744	766	776	819	831	837	**855**	835	823	791	793	744	754	*742*	826	815	*797*	787	761	752	758	782	871	9 56 a	707	0 1 a	164	0
Mean 1	744	750	757	761	766	775	785	**789**	787	783	777	777	775	774	770	756	758	756	752	759	744	**742**	746	746	764	836		678		158	
» 2	**746**	750	754	760	766	775	786	**791**	788	784	778	778	775	773	767	758	759	763	763	772	757	752	752	751	767						
» 3	**748**	750	755	760	767	775	784	**789**	788	784	780	777	775	773	766	760	760	762	765	766	759	753	752	750							

November 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn. Gr. M. T.

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Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	760	755	750	748	756	774	778	780	786	782	780	778	805	805	797	791	**821**	819	*781*	**722**	754	781	791	776	**778**	871	4 51 p	694	7 30 p	177	0
2	769	772	762	759	767	766	773	776	770	790	789	784	774	731	745	684	**649**	692	*851*	710	683	710	736	771	751	**937**	6 45 p	606	8 2 p	331	2
3	748	743	757	748	753	768	780	781	793	795	792	761	766	780	**807**	722	741	765	*753*	712	**692**	696	734	733	755	888	2 53 p	661	8 42 p	227	1
4	747	759	764	764	761	773	781	785	818	831	819	808	760	695	711	722	692	739	*834*	792	754	715	**679**	696	758	893	6 45 p	658	10 46 p	235	1
5	711	775	755	712	723	769	797	**814**	777	771	790	731	777	736	715	726	**692**	694	*743*	736	759	753	755	754	749	851	0 6 p	660	3 57 a	191	0
6	753	750	761	757	757	787	791	791	796	786	773	777	738	750	749	**744**	764	782	*801*	**808**	748	747	750	751	767	833	7 48 p	717	8 34 p	116	0
7	761	761	760	759	758	765	781	792	796	793	782	779	773	763	775	**797**	795	769	*775*	763	759	766	759	**750**	772	824	4 33 p	**747**	8 18 p	77	0
8	**750**	752	753	752	752	752	754	766	**782**	777	760	765	754	764	769	779	770	768	*782*	769	769	761	763	763	764	818	4 8 p	734	4 22 p	84	0
9	760	747	749	755	764	773	779	777	774	766	762	766	754	761	765	778	781	**791**	*785*	*772*	760	**744**	754	767	766	809	4 53 p	735	9 0 p	74	0
10	767	764	764	765	766	766	758	**782**	778	777	770	766	762	756	**752**	753	757	759	*763*	758	761	768	759	760	764	785	7 46 a	737	3 58 p	48	2
11	761	759	761	760	760	759	760	**769**	766	765	759	759	760	751	751	754	750	742	*751*	753	**724**	726	**724**	744	753	774	8 2 p	695	8 39 p	79	0
12	760	754	755	758	758	758	755	758	757	758	753	755	755	755	744	747	734	**728**	*728*	732	736	744	753	**764**	750	770	11 41 p	704	6 23 p	66	0
13	766	762	762	758	760	760	762	**769**	766	762	760	760	758	760	758	749	**734**	735	*749*	748	746	746	748	748	755	770	7 28 a	727	4 41 p	43	2
14	754	760	**767**	762	761	762	762	764	765	**767**	761	760	762	756	752	734	718	**713**	*738*	736	743	746	743	745	751	774	9 23 a	694	4 40 p	80	0
15	754	761	762	761	759	757	760	767	761	762	756	755	755	754	752	751	749	760	*775*	762	756	734	723	**701**	754	*786*	6 21 p	687	11 14 p	99	0
16	740	765	768	743	804	820	**835**	**835**	**835**	798	761	755	761	798	752	671	733	771	*781*	768	738	749	735	**666**	766	865	6 42 a	509	3 32 a	356	2
17	730	766	762	765	689	694	**803**	712	750	716	792	762	786	749	749	722	665	674	*704*	**650**	711	718	713	726	729	841	7 27 a	**201**	7 56 a	**640**	2
18	745	734	738	739	804	**807**	755	803	804	777	792	794	728	**731**	**731**	744	759	790	*771*	754	761	759	760	765	764	840	4 57 a	656	6 10 a	184	0
19	760	751	751	751	753	760	765	771	**778**	772	765	758	756	758	754	755	766	776	*764*	**743**	744	749	751	750	758	796	8 38 a	735	7 42 p	61	1
20	754	753	748	749	748	750	750	751	753	753	751	752	751	750	747	**745**	**745**	752	*755*	751	752	747	749	**756**	750	**759**	11 12 p	738	4 30 p	**21**	2
21	752	754	755	749	747	751	755	**767**	766	764	754	760	749	751	**735**	746	738	749	*750*	750	744	746	750	758	752	772	7 29 a	713	4 33 p	59	1
22	758	761	753	762	754	777	**785**	782	774	**785**	772	764	770	754	742	727	**680**	706	*769*	753	731	745	749	744	754	791	9 48 a	664	5 7 p	127	0
23	743	734	739	750	753	751	754	754	754	753	754	755	748	**760**	742	735	729	729	*726*	735	743	746	748	748	745	776	1 13 p	710	6 9 p	66	1
24	748	751	760	761	759	755	762	**770**	767	766	762	760	760	750	750	740	744	750	*756*	761	755	749	734	**726**	754	772	6 56 p	717	11 5 p	55	1
25	749	773	767	765	751	762	781	786	779	787	810	**822**	760	761	**678**	687	709	703	*696*	707	730	738	736	734	749	851	11 54 a	656	2 20 p	195	0
26	743	743	739	718	730	743	761	761	**767**	**767**	762	756	**767**	735	752	666	671	675	*678*	**649**	658	684	674	687	**720**	791	0 44 p	600	3 58 p	191	0
27	745	770	770	755	752	776	777	**795**	784	779	771	762	787	788	754	736	719	747	*733*	**703**	705	735	749	771	757	810	1 48 p	675	6 52 p	135	0
28	777	763	767	755	765	766	777	792	793	776	773	776	**795**	770	755	741	728	736	*741*	730	**722**	751	752	757	761	813	0 28 p	692	4 39 p	121	0
29	761	757	756	750	749	745	746	766	778	788	791	778	772	762	775	776	767	768	*792*	760	787	779	**727**	757	766	*822*	6 24 p	706	10 39 p	116	0
30	767	766	767	771	767	767	775	777	**778**	768	768	766	768	759	759	745	751	747	*741*	755	714	**695**	**695**	705	753	783	1 59 p	666	10 46 p	117	0
Mean 1	753	757	757	753	756	764	772	776	775	774	**777**	767	764	756	751	739	**735**	744	759	741	738	741	740	742	755	816		670		146	
» 2	753	758	758	752	756	766	770	**780**	779	776	774	769	766	758	750	744	740	744	753	741	**739**	744	741	745	757						
» 3	752	757	756	755	758	764	771	777	**778**	776	773	770	765	758	751	744	742	745	748	744	**741**	742	743	746							

December 1904. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	720	716	**694**	740	736	776	793	797	795	794	800	776	799	**821**	751	740	760	800	*802*	776	745	747	763	762	767	**846**	1 29 p	681	2 20 a	165	0
2	749	728	749	755	765	766	773	**784**	782	777	763	770	771	763	778	741	775	761	*747*	**694**	706	738	760	767	757	806	5 15 p	664	7 54 p	142	0
3	755	754	761	755	759	771	792	806	822	**827**	816	803	735	761	729	671	717	757	*694*	692	**657**	754	739	739	753	**846**	8 15 a	574	8 14 p	272	2
4	751	763	759	759	762	767	781	781	768	768	767	775	775	767	751	743	751	759	*803*	741	725	701	**700**	725	756	829	6 56 p	660	10 5 p	169	1
5	739	732	724	755	757	768	778	792	**804**	792	783	762	784	757	752	723	731	**707**	*714*	748	736	734	719	730	751	822	8 12 a	675	2 8 a	147	0
6	**739**	755	756	762	771	773	780	790	772	774	785	774	741	768	771	771	**793**	771	*740*	740	763	762	755	762	765	836	5 21 p	704	0 16 p	132	0
7	760	760	758	757	760	762	768	771	**777**	**777**	771	768	745	750	**739**	745	750	753	*762*	763	771	762	773	774	760	783	8 57 a	715	2 34 p	68	0
8	762	762	764	763	766	776	**779**	778	774	774	771	764	766	774	773	773	773	776	*768*	**752**	**752**	761	768	764	**768**	793	5 22 p	740	8 17 p	53	1
9	762	762	764	762	758	766	757	762	763	763	769	771	**777**	762	729	730	721	718	*696*	**674**	731	702	761	761	747	798	0 33 p	649	7 9 p	149	0
10	771	758	752	756	755	757	768	767	**777**	768	757	756	734	762	741	737	**720**	**720**	*725*	737	745	746	733	744	749	787	8 50 a	702	5 49 p	85	0
11	764	763	758	757	756	757	756	761	764	758	762	761	753	756	753	748	**766**	742	*728*	735	729	730	737	748	752	774	4 42 p	*707*	6 12 p	67	0
12	**768**	767	762	761	762	758	758	756	756	755	755	755	758	745	744	747	751	730	*723*	739	737	748	752	756	752	777	0 27 p	701	6 43 p	76	0
13	754	756	751	756	757	758	761	758	757	757	758	763	762	758	753	757	754	754	*748*	755	752	762	757	**764**	757	775	9 11 p	732	8 8 p	43	1
14	761	753	756	759	758	759	759	**781**	770	768	765	763	757	757	748	769	732	705	*668*	719	745	709	716	683	744	824	3 27 p	622	6 32 p	202	2
15	670	747	772	770	777	**796**	716	785	774	778	762	765	762	749	762	758	763	*757*	*731*	706	682	**656**	726	740	746	813	5 43 a	599	9 30 p	214	2
16	736	746	753	761	757	759	764	764	769	**801**	714	759	751	769	741	732	**691**	704	*709*	*714*	*722*	732	741	751	**743**	828	9 38 a	**535**	11 0 a	**293**	2
17	758	759	758	755	**752**	**752**	755	755	757	758	757	758	**752**	758	757	**752**	**782**	754	*753*	758	758	758	763	762	758	806	4 35 p	731	5 36 p	75	0
18	758	759	760	759	759	764	766	770	771	771	**773**	769	768	758	764	764	723	712	*710*	717	**709**	732	732	742	750	780	10 26 a	678	8 0 p	102	0
19	759	**768**	764	764	762	762	758	759	762	759	764	762	764	760	758	743	749	**735**	*736*	739	760	750	749	757	756	776	3 21 p	715	5 47 p	61	0
20	**766**	762	757	754	753	759	755	764	764	764	763	757	764	748	747	737	742	**695**	*721*	726	728	744	757	748	749	787	0 8 p	659	5 50 p	128	0
21	749	754	755	754	770	780	782	795	796	**799**	797	788	772	760	740	**726**	736	748	*765*	753	739	728	737	740	761	810	7 59 a	710	3 27 p	100	0
22	740	753	764	765	765	765	765	770	765	765	765	759	**773**	758	754	753	742	742	*737*	**732**	742	740	739	749	754	774	7 51 a	716	7 20 p	58	0
23	764	**765**	753	759	756	754	755	760	764	**765**	**765**	764	759	761	764	753	750	747	*750*	755	737	**736**	738	743	755	**770**	9 23 a	728	11 15 p	42	1
24	764	**774**	771	765	763	760	765	765	767	766	767	766	759	769	767	750	**723**	747	*747*	753	753	755	765	772	761	777	2 34 p	710	4 40 p	67	0
25	770	766	766	765	765	774	**783**	779	774	771	765	764	765	771	765	770	763	765	*761*	764	**760**	761	767	765	767	796	6 5 a	**753**	4 41 p	43	1
26	763	754	756	763	765	767	770	771	769	772	777	770	740	745	748	**788**	738	729	*743*	734	728	753	748	**716**	752	798	6 9 a	679	12 0 p	119	0
27	**699**	747	760	765	772	771	786	**798**	777	771	770	760	764	765	760	765	758	772	*770*	751	747	738	727	737	760	806	6 49 a	657	0 11 a	149	0
28	751	733	748	765	764	761	756	756	**766**	**766**	765	759	765	765	748	734	758	765	*748*	704	**701**	728	739	753	750	806	5 13 p	667	7 42 p	139	0
29	777	759	755	763	765	766	765	775	**783**	759	771	771	751	769	765	737	**704**	753	*756*	755	754	747	745	736	758	801	5 56 p	679	4 12 p	122	0
30	**729**	742	760	759	758	759	**779**	777	**779**	765	766	758	766	766	**729**	749	741	741	*748*	756	756	754	758	754	756	799	6 23 a	712	2 50 p	87	0
31	756	760	765	**766**	762	764	762	761	761	761	762	764	765	**766**	761	761	764	762	*761*	755	756	**750**	764	760	761	780	5 2 p	741	7 28 p	**39**	1
Mean 1	750	754	756	760	761	765	767	**774**	**774**	772	769	766	761	763	753	745	746	745	741	737	**736**	739	746	749	755	800		684		116	
» 2	752	753	754	759	760	764	768	773	**774**	770	770	765	762	762	752	744	746	743	742	**737**	739	743	748	751	755						
» 3	752	753	755	758	761	764	768	772	**773**	771	769	765	763	759	752	747	745	743	741	**739**	740	743	747	751							

January 1905.

Table CIX. — Hourly Values of Horizontal Intensity

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Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	752	757	759	757	760	760	762	777	791	776	776	773	770	765	762	759	756	751	745	740	743	750	760	751	760	796	8 8 a	738	6 42 p	58	1
2	750	754	754	754	756	764	761	760	767	772	759	757	760	761	756	735	744	762	764	755	754	752	739	739	755	784	9 53 a	718	3 41 p	66	1
2	754	749	746	755	760	764	766	777	778	778	772	766	761	760	751	749	741	754	759	758	753	753	754	753	759	789	8 8 a	728	4 30 p	61	1
4	750	765	760	754	766	765	767	770	771	765	776	755	782	710	748	728	664	695	720	677	656	673	679	705	733	799	0 34 p	630	2 4 p	169	0
5	728	747	760	777	770	783	760	770	766	765	759	740	756	761	754	764	723	593	586	616	657	717	690	661	725	808	3 36 p	545	5 54 p	263	2
6	666	738	745	759	753	753	759	770	777	776	765	763	743	728	740	759	740	740	726	728	732	742	747	728	745	788	8 21 a	578	0 1 a	210	0
7	750	758	765	758	754	755	759	761	765	771	759	775	763	765	755	755	731	698	722	738	738	744	744	739	751	791	11 31 a	683	5 18 p	108	0
8	728	744	755	754	751	760	753	753	763	765	770	760	753	740	740	738	738	747	748	745	748	753	756	753	751	777	10 16 a	718	0 9 a	59	1
9	759	760	759	755	754	754	759	759	759	759	757	759	765	761	757	745	752	737	740	726	734	761	756	750	753	776	6 5 p	711	5 36 p	65	1
10	731	734	749	764	763	759	770	765	760	759	759	765	755	753	753	750	737	724	724	743	720	736	729	740	748	777	7 15 p	711	10 18 p	66	1
11	753	765	753	729	753	776	802	818	805	794	813	778	786	766	741	713	717	694	682	668	698	716	755	765	752	828	7 37 a	645	7 0 p	183	0
12	756	766	754	755	760	759	755	757	754	764	766	755	754	750	741	755	773	794	696	678	696	702	735	757	747	846	5 54 p	656	7 12 p	190	0
13	770	757	752	756	752	730	760	766	764	764	760	765	760	756	764	739	742	747	736	751	743	739	743	751	753	793	2 19 p	713	5 19 a	80	0
14	765	766	766	765	759	759	759	760	775	772	771	748	780	759	740	728	715	680	658	648	615	618	642	655	725	796	0 21 p	578	9 1 p	218	1
15	684	704	724	710	771	772	776	776	771	771	767	754	770	774	756	759	776	750	758	758	743	740	742	754	753	801	4 15 p	660	0 10 a	141	0
16	754	760	759	759	756	758	760	761	759	759	759	758	757	761	760	761	754	744	740	730	718	729	735	748	752	772	11 59 p	714	8 9 p	58	1
17	711	723	722	741	787	766	772	791	776	787	791	793	759	752	756	752	692	683	702	730	752	724	741	729	747	821	4 9 a	669	5 3 p	152	0
18	743	754	757	759	755	761	771	772	762	780	759	754	752	754	748	741	741	767	734	737	694	716	738	751	750	803	9 2 a	666	8 20 p	137	0
19	749	754	762	760	754	757	756	766	765	760	761	759	756	765	755	760	740	689	691	692	695	710	696	710	740	780	1 33 p	671	8 5 p	109	0
20	724	735	741	754	762	783	788	778	766	778	777	778	752	780	748	733	737	762	690	716	669	689	719	740	746	799	1 18 p	642	8 24 p	157	0
21	754	751	750	751	754	762	765	772	777	767	767	767	767	739	754	749	741	711	705	728	741	719	748	711	748	789	8 0 a	691	6 16 p	98	0
22	711	730	754	761	786	793	787	778	805	771	825	800	788	784	708	730	743	699	678	683	683	703	729	729	748	852	8 38 a	557	9 5 a	295	2
23	740	762	767	759	761	762	759	757	757	759	759	759	757	754	752	752	765	761	737	740	741	752	748	743	754	797	6 3 p	710	6 54 p	87	0
24	751	760	762	762	766	765	765	766	767	767	765	783	765	765	765	777	798	784	788	776	785	700	711	737	764	825	4 43 p	680	9 17 p	145	0
25	746	754	757	760	760	784	786	778	781	787	760	764	775	754	744	735	724	707	737	752	752	738	735	717	754	814	9 45 a	680	6 54 p	134	0
26	730	760	756	755	759	766	775	771	762	767	767	765	741	760	766	760	770	780	768	722	749	749	751	759	759	821	6 6 p	691	7 21 p	130	0
27	756	754	754	752	754	756	755	753	756	756	757	765	766	765	755	756	780	797	772	707	712	727	723	729	752	858	5 57 p	668	8 7 p	190	0
28	756	754	752	752	752	754	754	766	757	765	750	759	760	755	768	728	732	762	788	713	700	728	743	748	750	826	6 17 p	678	8 35 p	148	0
29	754	765	752	729	750	760	777	791	755	768	771	782	761	730	739	771	772	781	664	674	723	728	740	732	749	862	6 21 p	642	8 47 a	220	1
30	729	749	754	755	755	746	754	760	760	765	766	776	767	751	766	780	776	772	745	750	750	748	752	760	758	813	5 29 p	710	5 4 p	103	0
31	756	752	752	752	752	754	755	755	755	766	777	754	757	741	733	754	755	744	765	737	733	729	722	735	749	818	6 20 p	661	8 39 p	157	0
Mean 1	741	751	753	754	760	763	766	769	769	769	769	765	763	755	751	749	744	736	725	720	720	725	732	735	749	806		669		137	
» 2	739	751	752	752	759	761	767	770	767	770	768	766	762	754	753	749	745	742	733	725	724	724	734	738	750						
» 3	742	748	752	754	758	762	766	768	768	769	768	765	761	756	752	749	745	740	733	727	724	727	732	737							

February 1905. Table CIX. — Hourly Values of Horizontal Intensity. Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	733	745	741	743	755	760	765	764	775	766	766	**776**	760	752	749	741	743	737	733	702	673	691	**657**	699	739	784	11 12 a	629	8 21 p	155	0
2	729	740	717	692	711	755	767	**771**	761	760	751	762	755	781	729	717	730	725	703	708	**680**	699	728	723	733	815	1 18 p	643	4 0 a	172	0
3	716	715	590	648	664	717	703	640	749	851	836	**931**	911	798	724	821	865	652	550	552	578	567	725	622	**714**	**1094**	10 39 a	465	9 19 p	629	2
4	647	673	697	716	735	752	748	752	766	786	816	770	759	705	783	**883**	848	829	684	**643**	671	689	684	718	740	979	3 57 p	582	7 4 p	397	2
5	717	741	748	752	768	772	789	**555**	**825**	823	721	764	797	712	699	733	762	708	659	674	717	686	702	696	730	913	8 47 a	**0**	7 33 a	**913**	2
6	683	711	732	737	765	778	684	762	775	773	757	**781**	748	760	739	755	**630**	714	689	712	712	712	706	719	731	814	3 43 p	508	6 40 a	306	0
7	718	735	735	737	738	741	741	751	771	**781**	768	753	742	729	731	719	682	637	645	642	644	657	706	724	718	799	9 41 a	580	5 16 p	219	0
8	709	723	755	761	742	744	774	**775**	757	772	763	767	772	742	750	714	717	713	761	746	680	**669**	700	714	738	794	7 19 p	641	8 37 p	153	0
9	728	756	744	755	761	779	782	784	**800**	729	785	778	785	726	758	734	**670**	701	696	682	671	672	679	691	735	817	8 48 a	626	6 15 p	191	0
10	700	706	710	715	721	729	735	741	747	746	742	737	734	733	734	727	717	712	708	693	709	**635**	644	693	715	770	8 30 a	582	9 17 p	188	0
11	730	730	744	757	761	757	756	757	760	757	749	762	756	757	755	781	**788**	778	756	730	**718**	723	733	741	751	810	5 3 p	708	8 31 p	102	1
12	749	757	753	753	752	755	755	755	756	757	761	762	767	752	755	**768**	745	725	703	675	**657**	693	701	725	739	785	3 51 p	630	8 16 p	155	0
13	724	724	741	736	760	**788**	785	785	773	772	756	752	749	756	744	760	722	722	738	753	726	717	**703**	713	746	798	5 48 a	693	10 17 p	105	1
14	713	735	736	744	760	755	773	778	**793**	776	779	772	747	755	752	752	670	663	690	621	665	682	**612**	700	726	847	2 19 p	564	10 29 p	283	0
15	730	756	736	718	762	775	768	784	778	**799**	778	767	760	775	754	732	708	740	723	723	673	**656**	664	738	742	820	9 29 a	617	9 9 p	203	0
16	734	740	755	766	754	756	770	791	791	**797**	756	773	745	745	768	789	738	701	681	711	**636**	670	643	693	738	828	2 16 p	617	10 20 p	211	0
17	706	735	744	730	**620**	730	**790**	778	778	782	**790**	760	744	761	756	778	739	749	730	673	690	655	688	715	734	810	2 40 p	337	4 24 a	473	2
18	765	755	750	755	766	778	779	769	773	**783**	768	756	760	756	777	760	745	761	758	734	742	**718**	730	745	758	832	3 14 p	706	9 48 p	126	0
19	753	753	749	745	749	751	755	763	762	765	760	**767**	761	**767**	744	733	742	725	730	745	756	763	757	757	752	781	11 23 a	717	5 26 p	**64**	2
20	757	756	756	757	757	757	760	**769**	768	765	760	761	756	756	742	736	735	755	738	756	736	724	**714**	717	750	783	7 44 a	698	11 32 p	85	1
21	750	762	758	760	761	761	762	767	771	777	**795**	772	767	781	773	723	766	738	750	758	**731**	752	739	744	759	809	10 32 a	669	3 33 p	140	0
22	755	755	756	756	762	761	**788**	769	767	771	773	772	767	772	757	745	749	749	702	**666**	682	749	757	719	750	804	6 28 a	627	7 26 p	177	0
23	**683**	685	730	761	775	774	786	829	789	826	764	764	759	788	790	784	730	761	811	**845**	775	757	750	743	**769**	876	7 22 p	658	1 9 a	218	0
24	737	735	726	**719**	743	756	763	773	780	780	756	757	757	762	769	810	786	791	821	791	767	759	748	761	764	872	6 3 p	687	3 5 a	185	0
25	757	757	761	758	753	756	767	779	775	790	788	780	774	745	**804**	768	786	750	753	**701**	707	745	725	745	759	845	4 24 p	648	8 20 p	197	0
26	762	757	756	758	759	757	762	770	782	789	784	779	756	759	**849**	811	748	739	784	**680**	697	718	743	759	761	892	3 5 p	663	7 38 p	229	0
27	761	756	751	762	757	780	798	810	**817**	807	804	790	775	778	743	737	804	748	702	**678**	702	720	732	742	761	844	4 42 p	649	7 24 p	195	0
28	751	746	751	759	762	769	763	768	766	767	761	762	762	764	770	788	805	825	822	775	740	**725**	731	752	766	839	5 42 p	**718**	8 58 p	121	0
Mean 1	728	736	737	741	745	759	763	760	776	**780**	771	770	765	756	757	761	745	734	722	706	**698**	700	707	722	743	838		602		235	
» 2	735	742	745	747	755	763	766	777	778	**782**	771	770	761	763	766	758	741	740	740	719	**701**	713	710	731	749						
» 3	736	741	745	749	755	762	768	774	**779**	778	773	768	764	763	763	756	745	740	735	720	**709**	**709**	716	727							

March 1905. **Table CIX. — Hourly Values of Horizontal Intensity.** γ Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	756	761	761	762	765	767	779	767	774	779	765	767	777	822	880	837	836	809	752	805	844	790	762	761	787	896	2 6 p	745	6 32 p	151	0
2	761	758	740	765	795	846	862	898	909	875	874	863	929	1009	879	963	1028	791	564	632	435	395	406	440	767	1302	3 50 p	0	9 5 p	1302	2
3	501	632	702	718	737	720	763	735	730	687	694	732	725	698	713	678	639	607	608	669	645	632	639	649	677	784	6 6 a	435	0 5 a	349	0
4	671	718	707	699	733	802	775	773	794	798	786	791	774	780	794	795	748	723	714	719	720	750	754	756	753	842	3 15 p	651	0 14 a	191	0
5	756	756	743	750	752	741	756	790	788	810	823	810	788	816	817	773	842	896	907	766	720	720	707	675	779	933	6 50 p	621	12 0 p	312	0
6	645	701	731	736	703	761	772	779	774	762	774	775	761	775	751	763	759	770	870	897	848	767	689	714	762	971	7 48 p	610	0 3 a	361	0
7	704	719	739	754	704	795	780	805	853	834	858	828	743	766	828	799	919	834	810	742	663	661	694	687	772	965	4 47 p	562	0 54 p	403	1
8	688	724	731	736	731	766	786	806	820	842	793	789	789	831	715	769	818	727	685	560	586	661	709	705	740	898	1 0 p	492	7 25 p	406	1
9	693	713	741	756	768	786	780	773	769	774	767	777	791	829	767	719	708	715	709	683	649	697	708	691	740	842	1 37 p	619	8 1 p	223	0
10	705	709	750	743	768	767	770	768	779	763	756	763	759	775	743	748	795	727	700	736	719	726	722	744	747	813	4 55 p	669	6 34 p	144	0
11	755	745	747	752	756	761	761	768	778	768	765	767	787	790	808	747	734	763	749	713	728	740	730	723	756	853	2 1 p	681	7 32 p	172	0
12	722	745	730	741	753	763	772	806	792	785	788	772	820	768	773	769	763	767	790	772	767	763	719	718	765	839	0 46 p	695	11 7 p	144	0
13	728	728	730	755	753	799	805	788	781	787	782	790	769	744	767	706	715	704	707	693	703	711	682	706	743	842	5 45 a	662	9 0 p	180	0
14	730	761	765	766	762	761	761	765	767	778	792	779	767	778	767	720	696	707	681	718	734	625	666	682	739	804	10 32 a	596	9 34 p	208	0
15	708	709	747	753	761	762	767	767	781	776	787	799	768	815	767	780	761	653	645	677	655	615	666	623	731	879	3 48 p	572	9 3 p	307	0
16	669	709	719	735	756	764	793	777	737	789	763	752	753	757	753	701	686	640	635	621	624	687	691	711	718	864	6 56 a	500	8 7 a	364	0
17	723	738	734	732	736	747	765	774	760	765	755	759	747	741	739	711	686	649	649	676	649	654	694	719	721	785	7 13 a	606	5 57 p	179	0
18	708	743	743	744	747	752	759	768	764	755	748	753	767	751	716	693	703	699	709	730	728	743	754	762	739	778	0 48 p	666	3 50 p	112	1
19	735	751	752	752	753	767	779	800	776	757	736	763	764	754	747	765	827	850	844	823	747	738	705	736	768	908	5 49 p	692	10 5 p	216	0
20	736	740	746	746	746	747	752	753	752	752	754	757	757	788	740	728	708	641	628	637	694	694	727	715	727	824	1 47 p	596	6 48 p	228	0
21	726	721	738	741	750	748	746	751	752	759	748	753	748	773	753	783	751	762	748	715	738	761	745	754	748	816	3 36 p	682	5 13 p	134	0
22	743	742	746	746	746	747	747	752	751	752	754	752	766	789	778	770	763	741	720	718	734	708	745	747	748	797	1 0 p	672	9 13 p	125	0
23	746	741	740	746	752	767	764	759	757	759	753	753	777	777	769	784	827	813	812	801	740	735	770	753	766	855	7 22 p	687	8 35 p	168	0
24	740	729	740	742	747	763	777	770	757	754	753	756	783	801	812	746	784	773	758	749	736	765	750	767	761	838	2 45 p	716	9 0 p	122	1
25	742	727	737	736	740	742	752	750	747	745	749	758	779	789	782	801	765	757	751	739	752	763	757	747	754	849	3 30 p	715	1 12 a	134	0
26	745	745	744	742	745	746	749	751	753	753	757	768	763	753	745	746	751	746	783	761	779	753	741	718	752	812	6 42 p	702	11 42 p	110	1
27	715	747	747	747	752	766	781	771	757	760	771	771	801	796	805	846	788	763	810	811	819	814	796	777	780	900	3 21 p	702	0 29 a	198	0
28	765	750	746	758	755	757	757	757	757	756	752	756	755	745	744	739	735	746	745	717	713	718	731	744	746	777	0 4 a	703	8 35 p	74	2
29	750	744	745	745	744	751	750	751	753	752	751	761	744	741	718	723	832	835	889	817	838	806	785	729	769	929	6 12 p	687	11 38 p	242	0
30	714	726	739	742	746	751	757	752	758	763	756	755	785	826	788	793	825	826	839	831	876	823	761	751	778	914	7 50 p	706	0 32 a	208	0
31	741	720	745	741	745	746	750	750	751	750	746	757	737	709	708	659	737	769	761	733	701	713	769	725	736	835	5 9 p	602	3 46 p	233	0
Mean 1	717	731	740	745	748	763	770	773	773	772	769	772	773	783	770	753	772	750	741	737	719	714	715	714	751	869		621		248	
» 2	713	728	739	743	749	760	767	767	765	765	763	767	769	776	768	762	758	745	747	740	735	726	725	721	750						
» 3	719	727	737	744	750	759	765	766	765	764	765	766	770	772	768	763	756	749	745	741	734	728	724	720							

April 1905. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.

γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	617	**309**	359	656	747	891	886	831	812	831	837	864	810	819	728	747	885	*1029*	*1032*	770	739	873	653	611	776	**1248**	6 23 p	**0**	2 3 a	**1248**	2
2	631	689	748	768	772	787	829	842	845	863	841	873	835	842	822	834	835	*874*	*896*	764	668	641	648	**559**	779	940	6 54 p	476	11 33 p	464	2
3	655	707	733	671	769	767	779	791	787	787	783	770	769	747	**821**	772	682	689	*712*	715	651	640	**639**	693	730	890	2 29 p	576	9 32 p	314	0
4	686	737	763	766	728	771	798	761	**812**	788	763	793	792	763	744	711	585	*609*	*586*	**565**	588	613	659	677	711	835	6 48 a	516	7 36 a	319	0
5	710	753	720	720	749	761	771	779	787	792	790	781	755	**798**	747	732	718	*670*	*654*	675	696	664	**630**	642	729	876	1 54 p	577	10 35 p	299	0
6	704	726	718	732	758	771	767	760	750	756	764	**782**	774	756	705	780	682	631	*632*	659	619	**617**	653	669	715	860	4 0 p	527	4 57 p	333	0
7	700	737	745	740	742	774	766	775	780	780	775	780	**781**	754	*759*	689	745	*724*	*745*	720	688	700	**661**	694	740	799	7 57 a	645	3 44 p	154	0
8	700	727	743	753	758	775	767	753	767	769	**791**	775	779	*759*	*738*	*715*	*690*	*680*	*677*	722	723	726	726	729	739	797	10 58 a	650	6 43 p	147	0
9	749	748	743	743	743	745	748	747	749	758	749	751	**760**	**760**	717	677	666	647	*623*	**621**	641	644	680	726	714	**772**	1 3 p	575	7 2 p	197	0
10	712	748	749	745	744	744	745	750	771	**772**	761	764	760	732	690	656	627	601	*596*	623	625	651	683	712	707	777	8 58 a	577	6 25 p	200	0
11	734	726	737	748	760	781	785	763	760	754	763	760	753	742	731	**789**	788	*730*	*724*	653	**619**	664	683	750	737	814	4 17 p	587	8 18 p	227	0
12	763	748	751	756	759	763	780	**786**	774	761	758	756	760	760	750	710	705	*626*	*642*	663	648	691	650	661	726	821	1 56 p	554	7 3 p	267	0
13	**700**	743	754	764	766	796	**813**	779	761	755	763	753	763	748	740	726	748	717	*731*	739	750	720	719	730	749	833	6 2 a	663	5 15 p	170	0
14	734	727	736	744	758	760	760	759	759	762	760	763	769	749	748	671	**590**	592	*766*	779	657	**836**	780	692	735	899	7 39 p	533	5 53 p	366	0
15	749	762	789	752	780	792	780	784	775	774	779	828	820	817	836	827	876	*899*	*914*	699	711	851	766	**696**	**794**	962	6 23 p	673	7 46 p	289	0
16	731	747	748	748	749	755	760	775	773	763	773	796	790	789	807	784	755	855	*886*	801	747	737	**714**	762	773	*951*	6 12 p	693	10 2 p	258	0
17	747	737	748	744	746	748	748	760	749	746	748	749	762	768	**773**	762	749	744	*733*	738	738	747	742	742	749	787	2 5 p	698	6 33 p	75	2
18	740	745	744	744	744	745	749	760	756	754	755	760	768	**798**	762	736	**725**	729	*732*	738	763	770	760	758	751	811	1 23 p	721	4 15 p	90	1
19	761	750	750	750	750	766	785	774	764	760	767	772	761	772	749	749	756	*790*	*794*	780	**794**	740	**722**	737	762	903	8 6 p	704	9 8 p	199	0
20	750	754	751	756	774	755	796	820	796	775	751	743	783	759	745	780	754	808	*807*	813	**861**	783	780	**712**	775	922	8 8 p	689	9 54 p	233	0
21	**716**	731	765	780	788	779	761	755	782	810	793	809	821	743	731	775	803	761	*823*	769	735	735	732	733	768	906	4 15 p	689	1 59 p	217	0
22	767	756	755	754	758	756	781	764	759	760	761	769	792	806	**813**	787	796	806	*763*	**728**	740	749	743	718	766	836	4 50 p	706	7 34 p	130	1
23	735	763	760	751	755	754	750	750	750	750	754	759	754	**781**	777	772	747	**731**	*731*	738	763	760	737	749	753	796	2 26 p	711	0 1 a	85	2
24	749	753	753	750	749	750	750	749	750	760	774	776	**783**	764	765	740	772	760	*732*	**729**	735	738	750	758	754	796	4 51 p	**723**	6 39 p	**73**	2
25	765	755	759	755	753	761	764	774	772	770	763	760	758	760	742	742	781	**799**	*761*	751	740	**734**	743	763	759	814	5 16 p	722	4 29 p	92	1
26	738	755	771	787	769	819	834	835	817	806	835	**851**	804	808	835	820	699	*620*	*731*	738	712	645	689	712	768	896	4 2 p	497	5 43 p	399	0
27	737	748	749	755	756	761	781	775	770	760	748	756	767	704	686	667	**559**	629	*701*	750	**776**	723	696	722	727	855	8 55 p	522	4 36 p	333	0
28	732	748	750	750	754	755	750	758	767	761	755	766	767	749	721	718	747	**782**	*753*	753	738	710	712	**690**	745	836	5 29 p	625	11 25 p	211	0
29	650	679	732	739	749	764	759	755	772	**792**	786	761	737	707	626	**566**	627	*591*	*615*	627	706	682	663	683	**699**	806	9 9 a	495	3 57 p	311	0
30	694	712	749	763	774	772	763	763	774	766	772	**786**	774	769	739	722	732	747	*742*	**592**	657	617	657	666	729	825	3 9 p	526	7 45 p	299	0
Mean 1	719	724	736	746	757	771	776	774	775	774	774	**780**	777	767	752	739	727	729	741	714	708	713	**702**	705	745	862		595		267	
» 2	719	737	748	748	758	769	774	774	775	772	771	**777**	774	758	744	730	707	701	723	702	696	**693**	694	703	740						
» 3	720	735	745	750	758	767	773	774	774	773	773	**775**	771	758	744	728	711	708	712	706	697	**694**	696	705							

May 1905. **Table CIX. — Hourly Values of Horizontal Intensity.** Gjøahavn.
γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	644	716	762	779	773	787	819	**849**	819	797	780	761	748	755	708	656	**615**	675	*630*	620	656	638	667	711	724	870	7 25 a	490	5 48 p	380	0
2	**666**	739	764	750	768	778	771	801	802	804	823	825	**831**	808	749	731	710	743	*792*	766	709	692	693	696	759	873	0 3 p	649	0 42 a	224	0
3	701	749	748	747	748	754	754	760	785	803	**808**	785	769	748	**808**	763	765	*671*	*656*	**639**	678	682	677	657	736	845	2 25 p	593	7 45 p	252	0
4	710	725	728	754	749	771	769	771	764	773	782	768	**784**	749	698	**661**	669	679	*699*	747	782	685	741	747	738	809	0 37 p	635	4 24 p	174	0
5	757	734	725	743	746	766	765	769	768	775	774	774	764	750	688	639	**629**	641	*653*	672	687	698	765	**779**	728	785	11 45 a	613	4 37 p	172	0
6	765	776	762	760	753	759	766	774	778	**784**	774	771	760	727	699	**655**	665	687	*730*	744	733	679	662	676	735	785	9 20 a	631	3 45 p	154	0
7	695	719	747	758	757	758	**765**	762	762	760	747	757	736	699	674	634	**616**	696	*691*	705	762	706	688	729	722	**778**	9 18 p	564	3 51 p	214	0
8	749	758	759	757	768	773	775	785	786	775	774	763	742	746	717	665	667	706	*767*	**589**	642	**812**	722	770	740	896	9 36 p	553	7 45 p	343	0
9	797	764	773	765	772	781	792	795	808	783	772	748	847	834	771	749	775	**900**	*824*	**711**	795	862	875	874	799	969	5 50 p	665	6 54 p	304	0
10	775	796	781	784	796	798	801	800	803	800	785	759	785	784	775	807	**814**	*781*	*786*	**723**	**723**	747	*776*	*784*	782	879	6 24 p	709	9 5 p	170	0
11	772	768	772	773	764	763	767	780	788	792	823	834	840	**860**	825	822	800	785	*759*	786	812	789	**748**	763	791	887	1 50 p	**737**	10 3 p	150	0
12	783	772	748	742	757	767	778	784	784	796	795	800	800	822	833	812	**849**	813	*825*	733	**715**	747	736	776	782	*942*	6 9 p	679	8 28 p	263	0
13	782	771	**734**	760	759	769	762	775	779	805	818	863	882	**911**	845	834	805	*813*	*817*	793	828	884	822	784	808	947	1 18 p	693	7 26 p	254	0
14	771	749	759	748	760	760	766	768	771	769	773	773	774	762	774	764	760	**816**	*771*	751	741	738	**732**	746	762	849	5 31 p	702	9 33 p	147	0
15	767	770	747	758	758	758	758	758	759	773	797	**816**	810	815	773	754	**735**	737	*769*	757	773	767	757	778	768	824	11 41 a	710	4 40 p	**114**	1
16	774	770	763	758	758	770	768	774	781	780	799	808	**826**	774	700	**677**	718	*753*	*741*	733	747	773	789	800	764	848	0 36 p	645	4 6 p	203	0
17	763	777	778	781	775	773	785	796	792	791	808	822	797	738	**699**	708	711	832	*833*	801	**885**	830	751	791	784	979	8 55 p	682	11 3 p	297	0
18	735	751	748	769	772	773	774	774	786	789	806	807	833	783	840	867	872	915	*978*	749	721	**694**	753	788	795	**1151**	6 32 p	543	7 51 p	608	2
19	797	748	725	753	773	762	772	771	784	807	821	833	833	**844**	797	740	621	**606**	*693*	702	710	757	763	784	758	871	0 58 p	560	5 12 p	311	0
20	770	769	**761**	772	777	790	796	796	794	782	802	850	857	**871**	836	822	850	779	*826*	842	820	789	744	742	802	900	1 8 p	719	10 18 p	181	0
21	**728**	757	761	757	758	764	783	812	810	822	822	833	855	832	838	842	**863**	844	*803*	784	783	782	779	778	800	895	4 40 p	719	0 19 a	176	0
22	774	771	772	783	777	784	795	807	806	807	820	826	**830**	801	798	809	732	719	*734*	745	752	718	739	**712**	775	843	0 51 p	672	9 49 p	171	0
23	757	758	763	762	773	768	767	777	783	780	794	832	842	844	845	871	886	936	*920*	**944**	850	782	814	**731**	**816**	1032	7 5 p	697	11 59 p	335	0
24	**717**	745	760	763	767	777	771	767	777	777	790	809	865	861	857	**875**	852	861	*789*	838	833	785	778	728	798	915	4 1 p	672	11 56 p	243	0
25	690	730	752	748	777	795	812	787	787	773	771	766	745	735	705	**649**	715	740	*751*	778	752	**818**	752	732	753	844	9 13 p	629	3 11 p	215	0
26	752	762	760	752	746	757	762	764	769	779	**790**	769	745	735	746	713	624	588	*617*	656	677	**583**	627	660	**714**	807	3 6 p	380	5 48 p	427	1
27	670	707	729	760	769	783	793	838	833	818	**843**	816	807	745	721	667	653	**509**	*628*	574	574	632	628	712	717	913	4 7 p	**304**	5 20 p	**609**	2
28	697	729	748	767	794	804	796	799	795	818	**825**	816	784	767	752	755	713	685	*690*	717	650	*614*	*604*	*659*	741	964	7 45 p	499	7 16 p	465	2
29	653	708	720	746	776	813	833	814	814	808	**864**	857	833	820	794	770	708	**649**	*759*	702	739	703	709	695	762	883	10 39 a	596	5 0 p	287	0
30	708	719	733	777	803	794	793	803	809	832	809	781	720	692	756	678	725	760	*863*	668	837	679	**647**	674	752	945	6 41 p	576	7 38 p	369	0
31	720	714	761	755	783	770	782	782	786	819	**829**	782	771	776	752	681	658	**643**	*666*	729	723	714	734	763	746	844	10 42 a	601	5 6 p	243	0
Mean 1	737	749	753	761	768	775	780	787	789	793	**801**	800	800	787	764	744	735	741	757	732	745	735	**731**	743	763	890		617		273	
» 2	739	750	754	761	768	775	781	787	789	792	798	799	**801**	790	763	743	**738**	751	761	740	757	750	742	747	766						
» 3	744	748	755	761	768	775	781	786	789	793	797	**799**	798	786	765	747	**742**	750	753	750	751	750	745	744							

November 1903. Table CX. — Hourly Values of Vertical Intensity.[1] Gjøahavn.
$Z = 0.60\,000 +$ γ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	454	575	566	530	633	546	585	490	541	528	524	522	517	513	509	503	484	463	448	435	430	434	437	454	505	680	1 42 a	403	10 2 p	277	0
2	462	458	463	475	478	487	574	534	531	488	486	499	547	583	539	497	468	460	418	417	399	413	418	448	481	801	6 55 a	344	8 39 p	457	2
3	451	465	496	510	461	480	649	570	508	519	550	582	541	512	495	499	499	506	442	442	546	483	494	483	508	771	6 25 a	374	7 20 p	397	2
4	484	480	473	484	491	519	516	666	569	541	534	532	555	535	591	537	532	504	530	485	440	464	484	504	519	776	7 52 a	411	7 15 p	365	1
5	487	468	463	484	499	500	496	495	501	499	484	517	501	501	514	494	435	373	398	472	507	511	494	491	483	566	2 57 p	331	6 3 p	235	0
6	474	474	486	490	494	499	501	523	525	514	545	545	538	541	534	568	542	543	542	495	479	490	470	477	512	587	3 46 p	423	9 20 p	164	0
7	478	501	483	482	492	492	502	586	509	492	508	503	512	513	511	494	474	461	464	431	443	475	488	497	491	643	7 30 a	398	7 41 p	245	0
8	493	498	501	508	518	532	563	634	568	537	526	520	507	507	521	532	490	477	456	399	374	385	398	394	493	664	7 45 a	365	8 39 p	299	0
9	396	408	415	417	429	431	433	437	441	438	441	441	436	441	447	467	422	395	391	358	491	465	424	451	430	542	8 46 p	321	7 14 p	221	0
10	440	452	462	466	476	488	538	547	610	609	610	594	617	647	603	638	545	449	424	397	342	388	415	446	508	736	3 46 p	284	8 17 p	452	2
11	437	455	461	467	543	590	545	636	574	612	593	579	581	581	529	538	488	449	408	403	486	469	461	461	514	735	4 44 a	254	5 47 a	481	2
12	469	475	475	484	507	572	565	507	524	558	563	605	593	590	658	668	563	564	532	470	482	523	456	476	537	724	3 26 p	411	7 47 p	313	0
13	494	486	494	496	522	561	684	561	538	537	532	538	554	545	566	534	463	533	526	455	445	450	454	475	518	783	6 19 a	418	7 31 p	365	1
14	476	489	496	498	505	508	506	505	515	518	529	531	529	532	530	544	547	543	520	506	483	470	472	480	510	580	5 11 p	459	9 5 p	121	0
15	480	489	497	498	507	538	524	523	532	523	514	516	512	520	525	535	549	529	518	501	490	486	490	489	512	556	5 24 a	477	0 18 a	79	1
16	493	494	498	502	505	503	503	504	502	507	502	501	515	518	525	521	493	474	472	458	426	418	426	449	488	536	2 24 p	405	9 28 p	131	0
17	468	484	486	488	500	499	496	492	538	518	556	563	566	618	638	678	687	646	478	355	413	493	464	411	522	707	4 32 p	305	7 47 p	402	2
18	418	455	472	518	546	516	519	538	552	539	536	545	545	519	490	510	539	537	543	477	465	463	460	479	508	613	0 17 p	357	8 52 p	256	0
19	485	495	550	526	514	514	528	560	616	571	560	550	552	555	555	553	537	480	466	420	383	397	419	442	509	661	8 3 a	362	8 11 p	299	0
20	448	454	459	463	468	467	471	476	481	480	477	477	477	485	487	500	520	532	528	509	485	472	478	472	482	565	5 46 p	433	0 0 a	132	0
21	469	454	461	473	487	499	519	511	517	514	517	511	504	507	507	502	494	494	491	478	480	459	470	469	491	544	5 48 p	428	9 7 p	116	1
22	464	457	463	477	485	508	565	560	575	746	717	639	588	592	595	546	540	536	508	478	447	453	460	492	537	824	9 40 a	431	8 0 p	393	2
23	498	502	501	507	507	517	552	596	580	590	568	575	574	587	578	566	588	556	509	486	458	478	496	473	535	623	4 10 p	446	8 55 p	177	0
24	486	496	503	508	514	557	573	556	540	566	585	589	584	590	556	534	553	541	493	490	479	490	494	492	532	615	5 44 a	459	7 53 p	156	0
25	490	490	489	492	495	497	502	524	524	512	517	522	527	530	538	557	550	536	523	505	488	471	472	476	509	570	4 7 p	449	9 21 p	121	0
26	485	490	493	493	498	502	521	522	512	545	534	513	540	509	512	530	501	487	471	496	488	474	483	468	503	558	9 39 a	443	6 32 p	115	1
27	459	464	473	471	477	485	487	494	498	497	499	497	504	508	502	499	499	494	487	496	506	499	491	477	490	522	8 42 p	455	0 49 a	67	2
28	478	484	485	485	487	484	486	487	487	487	488	489	489	489	491	493	496	486	482	473	474	476	478	486	485	507	4 33 p	453	8 29 p	54	2
29	481	452	466	469	491	496	507	498	493	490	493	494	495	493	496	496	514	491	483	486	477	473	480	482	487	553	4 44 p	445	1 30 a	108	1
30	481	479	474	478	491	493	498	493	495	492	504	513	524	523	516	512	498	496	486	438	441	436	434	435	485	533	1 30 p	430	9 10 p	103	1
Mean 1	469	477	483	488	501	509	530	534	530	532	533	533	534	536	535	532	517	501	481	457	458	462	462	468	503	636		399		237	
» 2	471	478	485	491	499	508	515	532	527	523	524	530	528	529	532	536	518	501	488	463	460	465	461	468	501						
» 3	472	478	485	492	499	507	514	526	527	524	525	528	529	530	532	531	518	502	485	469	462	463	464	467							

[1] Minus 200 γ according to page 158.

December 1903. Table CX. — Hourly Values of Vertical Intensity.[1] Gjøahavn.
$Z = 0.60\,000 +$ Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	444	436	432	442	447	446	449	451	447	455	466	**488**	478	468	468	463	449	457	*458*	*455*	482	*458*	437	**431**	454	497	8 44 p	401	11 57 p	96	0
2	**413**	439	451	457	481	478	543	**557**	547	507	523	540	529	510	519	535	533	539	*460*	456	446	434	443	430	490	586	6 32 a	408	0 3 a	178	0
3	440	439	450	469	484	493	525	541	529	**542**	523	500	481	490	498	501	512	506	*523*	511	478	450	429	**421**	489	578	7 8 a	411	11 20 p	167	0
4	**423**	437	451	456	464	467	483	490	**522**	513	508	*501*	*495*	*489*	*484*	*477*	470	453	*425*	**423**	427	470	464	448	468	530	8 34 a	393	6 54 p	137	0
5	445	456	447	458	465	469	473	488	480	486	527	**675**	640	592	553	511	525	465	*448*	**394**	420	429	433	428	488	738	11 47 a	367	7 47 p	**371**	2
6	435	456	465	495	486	496	**631**	540	532	529	531	551	551	523	508	505	488	434	*407*	**388**	415	416	440	464	487	670	6 32 a	**358**	7 33 p	312	2
7	459	450	463	465	482	533	518	517	533	**604**	575	553	535	536	559	572	508	473	*433*	**417**	418	436	440	443	497	635	9 17 a	367	7 53 p	268	2
8	457	462	461	475	551	536	538	**602**	527	527	523	527	531	549	532	514	496	479	*427*	470	456	450	448	462	500	675	7 23 a	409	6 17 p	266	2
9	467	461	467	547	495	502	541	**582**	556	547	530	525	526	530	510	511	520	489	*490*	488	474	466	**459**	467	506	656	7 48 a	451	10 48 p	205	0
10	464	467	471	471	474	480	**497**	482	487	477	471	475	484	486	481	478	481	496	*468*	457	**447**	448	463	448	473	510	6 30 a	434	9 4 p	76	0
11	**454**	467	470	464	463	469	472	476	476	474	471	478	491	486	490	**496**	487	489	*483*	477	472	464	464	470	475	512	3 6 p	442	0 0 a	70	0
12	467	468	468	469	469	471	472	472	477	479	476	472	474	471	478	490	**501**	494	*487*	489	479	470	**465**	466	476	511	4 45 p	463	10 12 p	48	1
13	469	468	469	**466**	467	473	480	477	479	488	498	501	518	534	**541**	532	531	521	*509*	506	511	508	504	489	497	545	2 17 p	**464**	3 27 a	81	0
14	**468**	471	484	493	498	528	**534**	509	502	499	502	504	499	504	519	507	509	508	*484*	482	484	481	477	473	497	555	6 4 a	450	0 42 a	105	0
15	472	477	475	475	477	483	481	482	484	484	483	481	480	500	500	537	**560**	509	*491*	*477*	*466*	455	458	**449**	485	571	3 59 p	435	9 27 p	136	0
16	454	450	**443**	**443**	450	457	460	463	462	472	472	463	469	481	474	475	**493**	**493**	*467*	463	467	455	458	452	464	514	4 26 p	430	11 56 p	84	0
17	**445**	452	454	456	457	461	463	484	488	**496**	485	475	475	473	472	474	479	484	*480*	485	458	460	452	455	469	502	9 9 a	439	0 0 a	63	1
18	**454**	457	457	458	458	459	459	460	460	460	460	459	460	463	469	470	471	**474**	*468*	459	458	**454**	**454**	**454**	461	477	2 43 p	446	0 44 a	**31**	2
19	452	452	**455**	448	447	447	449	450	450	449	448	448	447	449	454	453	453	454	*451*	439	430	430	428	**414**	**446**	**456**	3 15 a	406	12 0 p	50	1
20	**403**	412	418	420	432	439	445	525	486	490	503	488	482	516	**542**	505	486	460	*423*	423	437	414	418	422	458	594	7 14 a	402	0 20 a	192	0
21	**418**	420	429	445	455	470	485	487	518	554	**498**	492	**498**	492	496	*490*	*486*	*469*	*462*	459	442	454	455	453	472	577	9 8 a	415	0 26 a	162	0
22	446	450	454	453	454	456	456	462	462	474	**514**	511	513	509	*503*	*494*	*485*	*469*	*449*	**432**	438	437	443	440	468	520	0 59 p	403	6 33 p	117	0
23	440	443	445	450	476	493	491	488	**523**	511	499	497	495	485	479	483	491	480	*459*	435	**426**	433	441	444	471	539	8 36 a	419	8 30 p	120	0
24	448	448	453	454	452	456	456	457	**473**	465	461	462	466	467	469	464	465	463	*460*	448	**434**	439	445	437	456	485	8 23 a	422	8 18 p	63	1
25	**446**	453	452	450	453	454	470	**502**	472	471	468	466	475	469	482	479	474	468	*453*	451	456	454	455	453	464	534	7 41 a	437	0 0 a	97	0
26	450	453	449	448	451	451	450	**445**	448	452	455	456	453	453	457	454	460	**465**	*455*	457	456	449	450	451	453	485	4 50 p	441	9 16 p	44	2
27	451	452	448	**444**	448	451	452	455	461	464	477	475	472	467	**482**	474	464	452	*462*	458	448	447	**444**	446	458	488	2 18 p	427	10 55 p	61	1
28	446	445	450	453	451	452	462	457	455	455	459	452	452	455	457	459	464	**477**	*463*	459	453	444	434	**422**	453	486	5 7 p	412	11 33 p	74	0
29	**424**	443	444	436	436	442	445	448	451	452	451	451	450	451	454	457	453	452	*440*	445	447	**458**	456	449	447	464	3 31 p	417	0 0 a	47	1
30	433	455	455	430	425	**409**	422	509	527	517	562	**596**	571	482	476	444	436	445	*451*	457	453	475	474	461	474	624	11 46 a	362	5 59 a	262	2
31	455	463	480	556	555	**667**	631	516	617	562	525	502	502	503	501	511	484	484	*473*	**430**	433	453	463	457	**513**	**770**	5 30 a	399	7 38 p	**371**	2
Mean 1	**447**	452	455	463	468	477	488	496	495	495	495	**499**	497	493	494	491	488	477	461	455	452	451	451	448	474	557		417		140	
» 2	**447**	450	454	463	467	474	490	**501**	494	491	491	491	491	493	497	494	495	491	472	466	464	455	452	448	476						
» 3	**448**	450	455	462	468	476	489	**496**	495	492	491	491	492	493	495	495	494	487	475	467	462	457	452	449							

[1] Minus 200 γ according to page 158.

January 1904.
$Z = 0.60000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	459	474	472	489	505	742	686	642	638	567	550	547	547	551	558	556	517	535	525	472	461	469	463	480	538	904	5 51 a	442	8 23 p	462	2
2	476	477	479	517	567	508	543	523	519	577	549	526	530	523	546	553	545	543	489	525	478	456	461	461	515	690	4 9 a	404	7 35 p	286	0
3	472	471	475	479	479	484	503	492	495	511	588	576	538	516	529	515	507	496	431	424	420	419	430	430	487	644	10 42 a	402	9 33 p	242	0
4	453	467	468	468	459	472	537	591	512	509	605	558	526	540	549	539	535	470	415	425	453	469	462	445	497	696	7 25 a	380	7 5 p	316	0
5	454	454	459	464	594	538	522	522	558	542	541	532	547	549	587	556	485	476	468	467	461	440	453	458	505	866	4 59 a	359	5 26 a	507	2
6	460	462	466	479	539	504	499	500	530	543	526	509	501	511	506	502	510	545	496	473	476	478	468	465	498	667	4 14 a	456	4 30 p	211	0
7	465	458	460	462	466	468	469	466	468	470	481	515	524	498	493	488	483	482	470	466	462	460	458	458	475	536	0 8 p	446	10 44 p	90	1
8	455	457	453	459	460	463	462	463	463	466	466	466	464	470	477	485	477	469	459	461	463	458	456	459	464	548	4 0 p	442	10 8 p	106	0
9	458	455	457	454	457	458	455	456	459	459	455	457	460	460	461	466	480	480	456	472	443	386	410	415	453	494	6 23 p	360	9 8 p	134	0
10	410	421	436	443	451	459	474	487	485	484	484	483	482	483	482	478	470	457	442	429	484	502	462	420	463	538	9 49 p	381	7 33 p	157	0
11	465	459	447	462	508	480	471	468	474	480	481	544	549	557	563	566	564	559	550	545	487	460	459	451	502	606	7 0 p	431	2 35 a	175	0
12	453	459	452	452	462	473	490	505	506	508	511	512	513	516	518	517	511	501	488	478	451	442	448	439	484	521	6 38 p	423	8 44 p	98	1
13	431	428	441	449	458	469	485	500	500	500	503	503	503	506	507	504	497	486	468	442	432	426	433	433	471	523	5 21 p	410	9 32 p	113	0
14	427	432	440	447	452	453	456	467	466	501	501	499	498	498	497	493	484	471	465	460	455	452	450	450	467	521	9 23 a	408	0 35 a	113	0
15	453	451	454	452	457	458	474	487	487	486	488	488	487	489	489	486	487	447	389	417	453	437	433	444	462	568	3 18 p	374	6 37 p	194	0
16	439	465	463	474	501	518	547	597	576	572	619	608	633	643	593	547	538	503	445	426	425	456	458	462	521	666	1 12 p	410	6 56 p	256	0
17	463	464	462	469	472	472	479	484	492	510	506	493	487	487	487	486	462	437	460	469	425	454	448	454	472	526	9 48 a	400	8 15 p	126	0
18	454	455	458	459	459	457	460	463	493	464	467	491	495	491	493	480	500	483	471	445	441	440	443	448	467	521	8 15 a	423	9 37 p	98	1
19	447	451	452	453	454	458	461	460	459	459	456	457	457	457	461	463	464	467	455	459	455	452	450	451	457	472	5 26 p	445	0 16 a	27	2
20	450	451	453	451	448	450	454	455	452	460	464	468	474	480	471	465	454	463	481	484	424	408	423	428	455	484	1 11 p	395	9 5 p	89	1
21	438	454	458	466	471	514	532	536	521	520	517	504	498	506	499	506	506	509	449	452	469	468	447	457	487	550	5 48 a	427	0 2 a	123	0
22	454	446	455	459	473	502	556	619	580	554	495	491	504	493	535	525	542	526	518	502	456	456	486	472	504	708	7 47 a	430	9 12 p	278	0
23	479	474	462	469	475	475	482	484	484	485	486	488	500	499	495	502	504	523	507	480	459	459	448	454	482	546	5 43 p	431	8 34 p	115	0
24	461	464	469	470	483	478	485	497	505	505	501	510	509	513	505	541	477	486	516	503	485	484	468	468	491	589	3 53 p	411	5 9 p	178	0
25	466	459	466	470	470	476	473	475	477	483	481	507	519	523	529	537	510	493	481	459	476	469	459	425	483	559	3 48 p	408	7 50 p	151	0
26	442	449	462	474	471	475	499	484	480	478	478	488	488	479	489	495	495	490	473	468	468	467	466	468	476	515	6 39 a	421	0 0 a	94	1
27	467	469	469	471	472	479	495	530	543	502	493	488	484	489	489	492	508	505	469	453	452	442	448	443	481	574	8 15 a	427	9 33 p	147	0
28	454	454	462	463	467	467	479	485	479	488	513	499	499	484	500	471	455	452	448	442	422	428	453	441	467	523	10 30 a	410	9 3 p	113	0
29	438	442	452	473	466	509	639	615	589	591	626	683	590	551	521	525	504	488	479	488	450	468	452	463	521	869	6 44 a	427	9 0 p	469	2
30	448	466	473	476	484	490	518	526	537	566	544	559	564	522	499	481	505	500	473	470	385	445	457	473	494	713	7 26 a	357	8 11 p	356	2
31	475	475	476	483	484	485	552	680	585	539	536	542	599	575	581	549	516	485	528	492	492	487	478	476	524	762	7 1 a	453	5 35 p	309	0
Mean 1	454	457	460	466	479	488	504	515	510	509	513	516	515	512	513	509	500	491	473	466	454	453	453	451	486	626		415		211	
» 2	461	463	465	472	483	485	505	526	514	514	521	514	516	515	518	513	505	495	473	466	456	454	455	452	489						
» 3	459	463	466	473	481	490	505	518	517	516	517	516	515	516	516	512	504	492	477	465	458	455	454	455							

[1] Minus 200 γ according to page 158.

February 1904. $Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	463	478	484	501	513	488	491	462	664	626	648	597	598	591	584	567	495	498	476	464	465	445	448	466	521	796	8 34 a	403	8 42 p	393	2
2	458	482	477	487	490	489	495	578	610	642	644	668	695	641	570	565	533	556	466	449	440	446	454	471	534	720	0 30 p	411	8 9 p	309	0
3	451	474	481	486	485	492	492	490	496	492	493	494	504	502	523	509	538	530	516	514	487	456	470	478	494	573	4 43 p	440	0 28 a	123	0
4	481	475	480	485	483	485	493	492	499	494	511	516	507	495	509	544	520	504	444	378	483	555	499	479	492	602	9 38 p	349	7 55 p	253	0
5	454	462	458	485	483	477	488	537	601	544	523	526	518	520	519	554	446	455	545	496	417	477	469	477	497	644	8 9 a	379	8 8 p	265	0
6	452	475	435	447	461	464	474	480	463	477	488	481	487	515	529	614	556	482	466	500	485	447	435	443	482	668	3 48 p	341	8 41 a	327	1
7	459	450	454	474	459	466	479	485	498	510	504	502	514	518	542	533	552	488	460	515	556	446	424	449	489	625	4 2 p	390	9 56 p	235	0
8	447	449	457	460	473	475	582	564	568	530	505	558	552	590	569	590	540	549	515	486	460	434	447	446	510	690	6 40 a	393	9 11 p	297	0
9	445	454	460	458	461	460	465	582	556	512	507	531	548	597	554	586	536	494	464	440	442	456	417	431	494	816	7 34 a	398	10 15 p	418	2
10	443	448	458	455	480	462	474	522	537	488	440	520	520	509	492	506	514	503	448	432	426	396	422	419	471	591	8 48 a	334	10 26 a	257	0
11	432	441	442	447	461	465	457	461	458	462	467	461	469	465	491	508	539	543	510	472	452	441	424	417	466	557	4 42 p	413	11 32 p	144	0
12	430	427	420	446	455	457	458	468	510	491	477	476	474	470	480	492	492	481	490	455	439	454	433	440	463	526	8 49 a	415	2 18 a	111	0
13	435	423	421	432	443	450	457	459	485	488	488	499	488	479	491	471	467	452	418	435	429	447	410	433	454	668	7 21 a	316	6 34 p	352	1
14	432	440	445	452	455	466	491	531	507	486	478	474	474	485	492	483	444	401	409	458	446	452	427	422	460	574	7 38 a	368	5 25 p	206	0
15	418	415	415	417	416	414	417	452	447	449	428	460	469	479	516	523	480	433	342	409	497	524	507	450	449	587	10 46 p	297	6 45 p	290	0
16	441	422	412	460	622	635	558	547	535	514	575	539	478	509	535	508	442	517	383	243	267	339	295	322	462	797	4 21 a	170	7 33 p	627	2
17	408	388	406	424	440	451	441	440	440	447	458	474	503	526	513	534	488	425	457	474	451	433	415	423	452	553	3 26 p	364	1 36 a	189	0
18	432	431	441	449	445	446	453	444	451	449	460	493	506	476	497	558	571	507	415	425	402	372	357	359	452	610	4 12 p	329	10 59 p	281	0
19	387	405	417	430	443	433	446	447	466	449	453	463	460	515	526	512	495	490	473	471	441	415	414	429	453	550	2 55 p	371	0 3 a	179	0
20	417	434	440	443	473	472	471	486	479	477	480	477	473	491	495	487	486	477	459	427	409	412	406	416	458	512	4 47 a	396	8 14 p	116	0
21	420	420	428	429	429	438	442	445	449	469	463	460	463	473	480	472	475	476	448	442	409	382	392	407	442	489	2 35 p	372	9 6 p	117	0
22	392	390	407	429	431	434	438	440	439	439	442	444	447	454	486	474	469	486	440	429	433	424	427	435	439	498	2 48 p	385	0 31 a	113	0
23	442	439	437	441	443	451	481	527	515	489	474	471	472	465	472	462	464	456	421	451	461	458	452	448	462	560	7 49 a	406	6 57 p	154	0
24	441	450	453	455	456	463	474	475	474	471	467	464	464	464	469	471	476	484	439	436	451	458	446	445	460	499	5 10 p	411	6 57 p	88	1
25	447	449	450	451	453	455	457	460	461	460	460	462	463	462	462	464	453	443	462	451	422	460	463	455	455	480	6 59 p	406	8 28 p	74	1
26	456	457	457	459	460	461	474	483	481	478	471	472	471	469	470	471	491	483	466	465	465	462	450	451	468	530	4 54 p	441	10 26 p	89	1
27	457	457	458	461	463	466	465	471	470	476	473	468	470	471	474	478	478	479	483	480	467	471	476	474	470	489	7 5 p	456	0 11 a	33	2
28	474	471	472	472	475	476	477	478	479	484	486	483	482	483	487	491	492	489	487	492	485	485	475	472	481	501	7 29 p	470	1 43 a	31	2
29	474	470	471	471	471	464	474	477	486	492	494	501	493	491	501	496	490	485	474	454	465	450	444	445	481	511	2 52 p	444	10 6 p	67	2
Mean 1	441	444	446	455	466	467	475	489	501	493	492	498	499	504	508	515	497	485	458	450	447	445	434	438	473	594		382		212	
» 2	436	441	446	456	462	463	471	490	501	493	488	498	503	503	507	515	504	486	464	457	448	440	431	436	472						
» 3	437	441	447	455	461	465	474	488	496	494	492	497	502	504	508	510	502	485	468	457	448	440	434	435							

[1] Minus 200 γ according to page 158.

March 1904. Gjøahavn.
$Z = 0.60\,000 +$ Gr. M. T.

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	459	462	463	465	466	467	468	468	468	468	467	467	467	471	475	475	474	472	464	467	**484**	472	465	474	469	494	8 5 p	451	7 28 p	43	1
2	476	479	480	481	482	482	490	501	495	492	497	497	499	494	**503**	499	484	477	486	475	463	**455**	469	484	485	511	3 15 p	451	9 56 p	60	0
3	478	477	479	478	480	482	**511**	493	486	488	489	488	489	490	493	500	492	488	504	484	473	**472**	492	484	487	525	6 8 a	451	8 38 p	74	0
4	478	478	481	487	476	481	488	514	513	512	496	497	499	523	522	**526**	509	505	489	480	480	474	**467**	472	494	538	1 27 p	457	9 45 p	81	0
5	**477**	484	487	491	491	517	517	557	**563**	535	538	535	530	530	516	512	520	504	493	492	485	484	481	481	**509**	628	7 51 a	470	0 5 a	158	1
6	482	485	487	486	485	486	490	489	491	491	493	492	488	493	496	506	**510**	507	483	**451**	461	471	461	453	485	526	3 48 p	444	7 36 p	82	0
7	**468**	470	**468**	476	480	489	486	489	496	496	492	491	493	491	499	494	494	**504**	490	481	481	469	472	472	485	518	5 46 p	456	0 0 a	62	0
8	475	480	476	479	484	487	488	494	511	506	495	493	497	497	505	**521**	507	517	500	483	482	483	483	481	493	545	3 33 p	**471**	0 0 a	74	0
9	483	483	482	483	483	484	486	488	488	488	495	498	495	498	**499**	497	489	**499**	483	470	469	460	**453**	465	484	508	5 21 p	447	10 15 p	61	0
10	472	475	475	475	480	494	482	483	493	493	486	483	483	487	**497**	494	491	483	473	**464**	**464**	465	465	466	480	507	3 0 p	421	7 6 p	86	0
11	465	465	467	470	472	474	474	478	**485**	480	477	478	480	**485**	479	465	458	440	431	466	447	484	463	454	468	504	8 6 p	387	8 38 p	117	0
12	457	460	460	464	520	535	481	479	531	**585**	559	524	512	505	490	485	505	489	464	463	**434**	436	441	449	489	**645**	5 0 a	408	8 32 p	**237**	2
13	456	456	458	464	463	461	464	467	467	466	470	468	472	476	480	482	**493**	484	490	490	472	453	444	**439**	468	507	7 16 p	432	9 49 p	75	0
14	448	454	460	464	466	468	474	472	476	480	481	478	482	480	479	482	482	**486**	475	453	457	451	447	**445**	468	506	5 53 p	438	11 5 p	68	0
15	**456**	458	460	460	460	461	461	463	473	476	473	470	474	475	478	477	477	**480**	473	462	462	458	**456**	458	467	495	8 54 a	454	10 18 p	41	1
16	**462**	463	463	463	464	464	464	468	472	486	481	477	482	490	494	**502**	496	488	482	478	469	464	**462**	464	471	506	3 46 p	456	10 9 p	50	1
17	466	466	468	468	469	468	469	469	470	471	471	471	471	478	485	486	**491**	490	484	473	467	**461**	462	464	472	496	5 46 p	458	10 0 p	**38**	1
18	466	466	466	467	468	468	469	470	470	471	471	474	479	491	**497**	487	489	482	451	**432**	434	436	444	440	466	497	1 45 p	416	7 21 p	81	0
19	**446**	452	461	463	464	464	465	465	466	467	467	467	468	471	474	484	**494**	492	494	486	470	462	459	460	469	507	4 47 p	444	0 16 a	63	0
20	**459**	461	463	463	465	465	466	466	467	466	467	469	472	482	494	**506**	496	482	467	488	476	469	465	464	472	520	3 49 p	456	6 25 p	64	0
21	468	468	468	468	471	472	472	473	475	477	479	479	483	483	**493**	486	484	468	479	457	440	433	433	**432**	468	499	4 42 p	427	10 39 p	72	0
22	436	439	438	436	437	438	438	440	439	439	448	440	444	446	457	465	**467**	463	457	436	**425**	439	439	434	443	**478**	5 25 p	412	8 52 p	66	0
23	436	433	430	430	432	434	434	434	437	437	437	437	443	454	466	461	456	473	498	465	432	411	411	**408**	441	534	6 12 p	397	11 35 p	137	0
24	424	431	432	432	433	434	433	434	435	437	439	445	450	460	449	445	476	**481**	470	447	411	388	381	**374**	435	500	6 3 p	365	10 55 p	135	0
25	**392**	404	408	414	423	431	432	433	433	431	433	438	443	458	466	462	452	**470**	465	449	429	406	432	407	434	490	6 38 p	366	9 47 p	124	0
26	419	425	422	422	427	457	451	447	446	449	452	471	461	447	**512**	446	407	462	446	392	454	475	**376**	392	439	533	2 23 p	313	8 8 p	220	2
27	408	**397**	414	435	441	446	456	499	**512**	472	462	442	444	437	460	489	471	472	453	431	417	422	416	421	447	577	7 55 a	389	0 25 a	188	2
28	420	426	431	436	441	442	433	437	437	448	446	438	452	453	455	449	446	460	455	**479**	439	436	407	**403**	440	502	5 26 p	391	11 32 p	111	0
29	409	419	435	438	433	435	439	439	443	445	439	440	436	454	479	**480**	460	421	472	408	409	**389**	403	403	435	523	4 7 p	362	7 36 p	161	1
30	409	412	414	433	436	437	438	444	442	440	440	438	438	453	462	454	456	**464**	458	450	384	**322**	368	382	**432**	495	7 0 p	**296**	9 24 p	199	2
31	402	412	416	431	435	434	438	437	438	435	436	444	453	458	475	470	462	**496**	461	445	422	408	**400**	423	439	508	5 36 p	391	10 52 p	117	0
Mean 1	450	453	455	459	462	466	466	471	475	475	473	472	474	478	**485**	483	480	481	474	461	451	445	446	**443**	466	520		419		101	
» 2	453	456	458	461	462	465	467	469	471	471	471	471	474	479	485	**486**	484	**486**	479	466	454	446	446	**445**	467						
» 3	452	456	458	461	463	465	467	469	470	471	471	472	474	479	484	**485**	**485**	484	477	466	455	448	**446**	447							

[1] Minus 200 γ according to page 158.

April 1904.
$Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	**401**	408	457	419	465	512	477	479	527	612	566	547	541	563	**641**	604	595	561	543	536	481	455	433	420	510	674	2 8 p	379	0 45 a	295	0
2	**408**	435	528	522	505	501	516	607	558	569	533	529	621	**676**	613	598	566	565	502	479	477	465	468	444	**529**	697	1 22 p	402	0 42 a	295	0
3	432	446	450	476	478	470	489	532	533	510	**563**	553	512	521	527	531	560	530	435	528	420	**402**	412	410	488	638	10 51 a	365	8 45 p	273	0
4	434	435	468	491	462	523	557	516	508	523	509	528	544	575	**593**	509	515	477	443	410	376	**369**	409	418	483	616	5 57 a	341	9 45 p	275	0
5	420	446	446	442	450	458	456	457	469	472	472	477	492	478	493	496	**506**	486	478	435	474	470	**355**	378	457	525	3 17 p	343	10 10 p	182	0
6	**367**	416	421	438	449	453	456	457	483	517	488	497	506	518	501	**521**	489	475	450	423	400	376	373	396	453	553	4 5 p	351	0 22 a	202	0
7	402	420	433	445	452	460	468	473	477	480	483	489	496	506	511	504	493	481	462	442	425	408	387	**383**	457	550	2 30 p	376	10 50 p	174	0
8	**401**	414	426	439	450	456	466	464	465	469	484	490	497	506	511	503	492	479	459	439	405	438	432	437	459	543	7 11 p	384	0 0 a	159	0
9	455	468	492	488	482	484	491	490	489	493	504	**509**	506	506	502	485	464	442	413	**383**	407	422	396	388	465	569	6 17 p	354	7 20 p	215	0
10	420	409	442	478	479	488	487	485	484	483	484	492	501	502	**510**	489	478	424	390	418	442	461	458	431	464	532	2 14 p	368	6 54 p	164	0
11	413	430	445	465	481	498	501	496	493	488	485	478	468	454	440	433	423	**522**	476	445	481	459	421	**411**	463	649	5 6 p	346	7 30 p	303	0
12	436	452	472	476	476	478	480	486	484	485	490	506	525	540	562	544	580	**598**	592	572	539	474	**394**	445	504	643	6 12 p	377	10 24 p	266	0
13	**409**	454	467	490	481	503	512	529	520	**540**	518	514	514	518	498	490	503	502	478	472	469	445	452	453	489	558	9 18 a	396	0 15 a	162	0
14	460	471	478	478	480	481	484	484	481	483	482	490	493	505	517	515	515	**549**	512	484	492	**429**	442	461	486	578	5 26 p	402	9 48 p	176	0
15	460	470	471	474	471	481	481	484	486	497	486	504	548	562	**565**	522	517	504	487	466	454	455	**435**	448	489	602	2 10 p	409	10 25 p	193	0
16	444	455	468	476	478	478	482	493	488	489	486	478	491	504	507	516	519	**529**	469	453	432	401	**397**	421	473	542	5 30 p	386	10 20 p	156	0
17	425	444	452	461	475	475	475	475	478	480	482	484	484	490	509	506	500	**537**	528	435	**340**	344	441	425	464	601	6 46 p	300	9 2 p	301	0
18	454	461	453	460	475	521	534	490	491	486	481	481	491	531	586	738	**765**	747	609	530	466	418	**407**	413	520	854	4 42 p	405	10 51 p	449	2
19	417	451	479	494	504	505	509	516	526	554	563	**582**	557	562	570	497	385	346	286	339	448	470	448	457	478	597	11 35 a	274	6 50 p	323	0
20	467	463	450	484	501	492	494	500	494	491	500	525	509	518	528	**538**	530	496	480	467	460	443	**440**	450	488	562	4 0 p	**413**	1 52 a	**149**	0
21	443	467	473	481	481	483	481	484	486	491	494	505	483	**510**	509	494	483	470	451	432	415	**398**	428	445	470	528	2 25 p	379	9 18 p	**149**	0
22	451	456	459	456	458	464	486	473	478	476	482	493	506	524	530	**575**	564	554	524	432	425	406	371	**363**	475	630	6 38 p	351	11 27 p	279	0
23	**348**	373	414	438	453	462	465	467	466	465	468	477	490	498	509	494	504	540	559	497	485	393	388	410	461	590	6 18 p	334	9 51 p	256	0
24	**406**	419	418	440	446	461	533	**542**	526	525	525	528	533	540	542	532	519	503	481	458	437	452	439	427	485	557	6 56 a	383	0 4 a	174	0
25	415	400	440	447	453	473	473	464	463	460	477	**501**	459	421	403	372	361	403	424	454	463	**311**	326	373	**427**	**512**	8 36 p	271	9 47 p	241	0
26	**362**	387	423	453	506	493	501	595	536	511	547	579	583	627	**638**	632	590	562	525	446	415	404	393	394	504	665	3 12 p	351	0 30 a	314	0
27	**401**	445	456	457	465	468	469	473	487	491	487	494	505	**511**	510	489	458	456	511	488	485	460	437	404	471	538	6 53 p	382	0 15 a	156	0
28	**403**	409	432	443	446	467	493	485	471	462	470	492	499	518	**533**	530	510	497	490	502	434	408	411	423	468	566	2 58 p	393	0 0 a	173	0
29	441	426	449	449	448	449	475	470	468	463	466	462	438	453	468	515	488	**519**	468	372	367	412	407	**329**	446	552	5 45 p	**252**	7 56 p	300	0
30	**315**	349	358	405	427	440	446	445	452	459	457	491	517	552	641	**678**	565	443	437	452	432	392	362	363	453	751	4 2 p	296	0 12 a	**455**	2
Mean 1	417	433	451	462	469	479	488	494	492	497	498	506	510	523	**532**	528	515	507	479	456	440	421	**412**	414	476	599		359		240	
» 2	415	431	453	464	471	481	487	496	495	500	500	508	514	526	**535**	524	509	505	479	458	445	423	**412**	**412**	477						
» 3	418	433	450	463	472	480	488	493	497	499	502	508	515	525	**530**	523	512	499	480	460	443	426	415	**413**							

[1] Minus 200 γ according to page 158.

May 1904.
$Z = 0.60000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	363	357	396	429	431	442	453	516	525	510	505	549	614	640	721	745	717	630	492	418	397	441	398	380	503	782	3 0 p	342	1 39 a	440	0
2	350	371	397	403	432	466	478	476	520	509	523	551	595	643	627	554	419	444	430	376	378	332	343	346	457	678	1 57 p	304	9 13 p	374	0
3	358	399	426	434	437	485	494	481	490	490	518	542	546	555	590	628	582	537	480	420	334	319	357	357	469	677	3 41 p	300	8 5 p	377	0
4	352	346	408	426	432	440	443	450	460	488	532	541	528	519	509	525	545	484	442	393	368	389	367	365	448	574	4 23 p	325	0 30 a	249	0
5	363	355	380	417	435	442	458	460	455	464	463	452	461	463	479	468	448	439	422	389	357	318	341	352	420	505	2 33 p	296	9 3 p	209	0
6	367	391	410	428	438	441	443	443	452	465	476	537	539	507	512	492	497	481	464	383	368	369	344	353	442	551	0 2 p	315	10 45 p	236	0
7	369	383	398	421	426	432	448	451	451	457	471	486	502	506	554	557	491	458	440	407	374	353	321	300	436	579	3 44 p	292	11 27 p	287	0
8	319	357	400	424	446	512	491	485	479	467	459	534	569	569	501	459	465	498	449	451	459	380	379	389	456	591	8 30 p	314	0 15 a	277	0
9	401	408	429	440	449	448	451	451	451	453	457	455	473	487	495	470	491	490	512	487	422	410	416	419	453	532	6 18 p	361	0 2 a	171	0
10	412	429	436	437	445	446	450	447	437	433	450	466	489	484	468	471	439	413	378	328	327	350	323	363	422	499	1 17 p	295	7 45 p	204	0
11	363	378	433	442	441	447	450	461	455	460	466	487	506	527	539	515	495	481	512	461	443	394	360	350	453	553	6 20 p	294	11 0 p	259	0
12	383	404	398	417	439	447	445	449	446	462	547	552	506	471	485	457	409	468	579	437	281	383	376	273	438	613	6 44 p	229	8 18 p	384	0
13	303	404	380	509	504	509	513	538	565	587	580	589	713	804	746	757	619	573	485	456	401	351	353	378	526	855	1 27 p	237	0 9 a	618	2
14	348	381	416	491	495	486	523	560	521	550	548	524	571	596	613	507	573	585	515	455	387	400	386	410	493	639	2 40 p	335	0 15 a	304	0
15	417	406	413	429	470	473	469	480	483	452	479	491	478	512	539	537	508	495	469	428	387	400	406	406	459	556	3 0 p	364	8 47 p	192	0
16	417	432	447	455	467	467	470	478	479	467	466	482	496	501	520	520	530	535	532	535	523	516	496	453	487	585	6 57 p	408	0 21 a	177	0
17	421	408	433	448	444	451	455	455	454	453	456	462	465	465	461	451	441	430	407	370	366	331	302	362	425	485	11 15 p	248	10 35 p	237	0
18	348	398	457	472	466	465	452	461	469	472	476	486	489	481	533	541	510	530	534	497	466	454	441	393	470	604	4 8 p	314	0 2 a	290	0
19	411	435	443	452	448	497	546	533	515	522	538	551	466	452	457	502	455	433	452	402	547	487	445	431	476	612	6 8 p	137	7 13 p	475	0
20	423	434	440	459	467	462	466	481	492	496	505	503	517	511	505	497	534	544	526	472	477	430	389	394	476	594	4 57 p	363	9 42 p	231	0
21	398	399	410	423	444	452	456	476	518	487	470	461	450	418	415	451	506	492	354	382	346	314	294	360	424	559	5 32 p	269	9 24 p	290	0
22	389	417	439	450	453	453	458	463	466	467	480	488	481	485	533	571	544	576	519	448	483	345	253	295	457	627	5 0 p	247	10 8 p	380	0
23	326	386	401	439	453	491	486	497	514	502	480	481	501	515	495	518	514	567	594	615	576	486	469	418	488	672	7 30 p	303	0 0 a	369	0
24	397	426	403	431	458	481	489	499	518	548	512	518	539	515	464	395	444	518	535	550	540	515	458	421	482	609	8 26 p	366	3 47 p	243	0
25	425	422	431	462	462	460	468	474	466	461	466	457	462	514	524	533	546	561	521	497	471	429	407	421	473	586	5 17 p	394	10 17 p	192	0
26	422	429	433	438	443	471	482	486	480	471	473	474	490	505	518	535	530	521	508	555	457	429	419	417	474	594	7 20 p	399	11 29 p	195	0
27	407	424	432	446	449	447	445	450	482	488	502	498	485	475	490	486	478	578	598	517	330	273	245	254	445	697	5 35 p	235	11 14 p	462	0
28	222	303	367	428	478	452	446	597	598	556	556	560	585	669	655	673	505	509	634	478	413	428	390	364	494	765	2 7 p	205	0 15 a	560	2
29	394	385	405	435	424	451	462	461	485	491	492	526	538	500	519	569	522	540	448	481	309	194	213	287	439	620	5 57 p	134	9 37 p	486	1
30	293	312	383	416	432	447	503	475	459	454	477	507	555	597	616	603	568	522	554	533	525	479	402	399	480	643	2 20 p	271	0 30 a	372	0
31	437	419	417	428	430	440	444	459	464	464	498	517	534	507	528	468	475	460	437	427	282	334	339	401	442	553	2 27 p	210	8 30 p	343	0
Mean 1	374	393	415	440	450	461	469	480	485	485	494	507	521	529	536	531	510	509	491	453	413	388	369	371	461	613		294		319	
» 2	380	398	420	439	448	462	470	477	482	483	493	507	517	520	527	518	511	514	497	460	424	402	379	378	463						
» 3	384	399	419	437	449	460	470	476	481	485	494	506	515	521	523	518	514	509	492	460	428	402	385	379							

[1] Minus 200 γ according to page 158.

June 1904.
$Z = 0.60000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	391	375	388	391	413	443	456	458	464	477	471	483	483	476	515	596	504	437	410	320	310	287	367	382	429	633	3 54 p	211	7 12 p	422	0
2	405	401	403	435	478	466	464	473	475	478	488	504	529	497	500	482	471	451	446	408	410	381	377	368	450	542	0 38 p	359	11 32 p	183	0
3	396	417	428	431	449	460	461	469	473	481	492	506	514	531	544	562	558	509	439	443	396	381	401	418	465	570	3 48 p	301	9 54 p	269	0
4	433	423	433	443	459	465	469	468	493	496	486	514	512	510	528	512	515	487	462	429	393	398	336	372	460	563	3 8 p	270	10 52 p	293	0
5	397	397	399	424	424	441	456	468	457	466	471	489	500	478	470	435	482	520	609	596	507	496	444	329	465	641	7 8 p	286	11 54 p	355	0
6	361	408	421	434	445	453	445	452	450	466	480	560	601	503	429	310	322	204	359	500	598	630	525	462	451	726	9 8 p	31	5 10 p	695	2
7	451	413	421	463	470	458	467	486	473	543	571	565	550	567	533	515	491	466	435	462	451	414	391	398	477	608	10 17 a	376	10 39 p	232	0
8	395	392	427	443	455	462	468	482	487	490	500	510	497	514	513	472	484	481	450	438	437	368	349	372	454	528	1 37 p	331	10 1 p	197	0
9	399	407	426	442	450	459	455	458	456	463	475	472	491	500	501	505	505	499	478	457	446	421	406	418	458	518	1 47 p	386	0 0 a	132	1
10	426	429	440	435	445	445	465	508	487	479	499	477	485	493	503	481	514	430	531	472	434	412	391	310	458	583	7 2 p	281	11 33 p	302	0
11	367	406	390	396	418	443	466	467	467	465	475	492	522	566	594	537	485	481	417	419	446	433	419	471	460	614	2 14 p	311	0 12 a	303	0
12	389	407	420	425	438	449	452	468	471	473	478	473	475	493	495	533	529	504	498	436	374	388	364	364	450	567	5 20 p	336	10 12 p	231	0
13	341	353	394	418	434	451	454	463	470	477	476	482	482	486	499	469	443	446	416	385	370	344	380	382	430	522	2 21 p	324	0 51 a	198	0
14	414	424	392	408	429	437	446	454	459	462	462	442	488	512	512	507	444	402	392	394	309	294	296	302	420	535	1 38 p	235	8 27 p	300	0
15	326	378	400	408	403	420	428	439	448	466	477	516	583	665	721	690	672	624	428	452	520	371	388	364	483	762	2 42 p	276	10 39 p	486	1
16	354	388	397	448	468	488	484	496	539	578	573	581	532	607	536	505	395	261	408	590	511	164	343	282	455	641	1 24 p	32	5 40 p	609	2
17	387	406	402	431	456	501	469	460	467	457	500	554	551	528	479	460	521	493	464	444	382	362	353	356	453	608	6 24 p	292	8 35 p	316	0
18	368	379	391	405	420	431	440	447	454	459	466	476	484	490	495	494	484	468	453	436	406	393	399	403	439	540	2 30 p	322	9 8 p	218	0
19	413	413	412	436	458	454	451	454	467	482	487	478	484	483	477	495	487	441	439	440	448	418	407	385	450	523	4 0 p	364	11 9 p	159	0
20	397	409	419	432	443	449	454	457	474	467	476	532	544	475	455	451	507	508	548	497	431	426	424	427	463	601	11 57 a	385	0 12 a	216	0
21	418	411	429	456	493	491	474	493	492	478	487	512	518	512	518	585	575	459	483	519	484	430	488	412	484	619	4 6 p	389	11 17 p	230	0
22	413	416	436	445	454	461	469	482	489	500	497	505	522	557	526	481	493	496	465	458	389	400	417	429	467	562	1 40 p	367	8 50 p	195	0
23	433	436	452	468	471	474	472	476	481	475	475	475	493	517	528	539	544	525	448	431	452	416	383	370	468	579	5 23 p	343	9 41 p	236	0
24	382	417	422	449	467	478	476	478	486	479	482	493	499	486	499	519	507	463	468	481	451	371	407	414	461	527	3 27 p	319	9 15 p	208	0
25	433	448	449	454	458	471	477	481	481	480	484	486	491	506	509	515	536	534	548	556	509	405	361	352	476	616	6 48 p	348	11 37 p	268	0
26	357	384	416	441	459	472	479	478	477	470	470	473	485	506	517	515	557	473	300	223	248	346	424	430	433	634	4 20 p	99	8 8 p	535	2
27	422	414	423	438	451	477	481	502	512	521	535	545	620	625	582	520	495	505	511	446	241	373	445	430	480	649	1 18 p	55	8 34 p	594	2
28	445	445	463	466	482	501	529	501	499	501	505	504	520	528	532	529	503	491	446	413	402	402	389	388	474	544	6 3 a	370	10 32 p	174	0
29	387	419	441	447	467	470	479	479	479	488	497	521	554	576	544	486	487	471	457	440	418	399	390	393	466	608	1 45 p	352	10 43 p	256	0
30	415	429	432	444	453	460	465	465	479	477	476	478	481	480	513	511	496	459	435	428	429	424	435	439	458	547	2 48 p	391	0 0 a	156	0
Mean 1	397	408	419	435	450	461	465	472	477	483	490	503	516	522	519	507	500	466	455	447	420	392	397	387	458	590		291		299	
» 2	407	412	421	436	452	460	466	474	477	482	488	495	504	508	513	511	503	476	466	449	421	395	392	385	458						
» 3	403	413	423	436	450	459	467	473	478	482	488	496	503	508	511	509	498	480	464	446	422	401	391	392							

[1] Minus 200 γ according to page 158.

July 1904. $Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Ch.ar
1	435	436	437	441	444	444	443	450	447	447	444	447	440	461	488	444	405	402	500	**520**	432	387	388	**378**	440	638	7 11 p	319	11 6 p	319	1
2	432	443	442	441	445	449	448	455	459	456	460	469	472	475	503	516	494	517	534	518	452	402	**396**	410	462	588	6 45 p	378	10 2 p	210	0
3	419	418	427	436	441	445	451	458	461	461	448	449	457	468	479	**514**	473	448	456	445	433	**417**	422	420	448	527	3 14 p	403	0 18 a	124	0
4	421	431	438	447	452	454	452	455	457	464	469	488	505	505	502	503	**512**	508	479	466	385	385	396	**376**	456	522	5 26 p	353	8 26 p	169	0
5	**396**	444	435	437	444	452	457	466	476	473	472	476	463	484	492	497	**503**	502	442	456	454	455	442	439	461	526	5 22 p	374	0 7 a	152	0
6	433	435	436	438	450	453	455	457	463	454	473	478	478	430	369	**485**	479	418	439	469	389	415	379	**368**	439	590	7 38 p	183	7 44 p	407	2
7	369	381	431	461	456	469	494	527	487	486	513	512	510	514	527	510	**531**	486	444	**342**	377	391	402	413	460	588	7 22 a	273	7 17 p	315	1
8	439	439	435	437	461	472	468	474	475	476	481	486	494	502	**520**	509	509	485	457	459	423	**387**	422	424	464	534	4 9 p	339	9 27 p	195	0
9	**417**	423	431	442	463	477	482	479	469	475	479	480	471	481	**491**	490	473	461	449	447	454	438	468	431	461	525	2 38 p	401	11 51 p	124	0
10	418	424	421	441	485	468	482	497	484	485	485	483	486	484	483	485	**503**	471	440	416	**399**	424	431	433	460	530	4 19 a	384	8 33 p	146	0
11	**420**	438	447	452	457	460	466	471	477	481	484	479	491	480	482	501	**510**	470	473	473	454	458	437	444	467	532	4 22 p	416	0 4 a	116	0
12	448	449	462	464	461	468	470	470	480	486	488	490	501	**517**	511	496	478	462	446	428	432	441	436	**422**	467	521	1 29 p	401	11 45 p	120	0
13	433	418	433	444	454	462	464	469	468	475	483	485	492	485	478	475	**530**	529	489	491	473	460	**347**	389	464	596	4 0 p	253	10 41 p	343	1
14	407	440	446	441	440	455	463	469	474	465	458	488	495	484	446	442	383	385	439	**540**	442	257	**188**	267	**425**	582	7 27 p	**101**	10 8 p	**481**	2
15	**364**	383	408	435	444	466	499	473	489	475	465	465	482	490	480	470	**515**	500	488	502	455	394	397	395	456	526	7 40 p	351	0 0 a	175	0
16	**388**	401	419	432	445	459	464	462	467	473	473	467	464	482	484	466	484	**497**	481	424	428	424	428	412	451	**519**	4 14 p	378	0 27 a	141	0
17	424	427	429	429	442	452	454	459	490	480	472	487	492	482	477	506	474	475	510	508	480	386	**344**	355	456	531	6 51 p	330	11 2 p	201	0
18	**397**	426	442	440	453	500	483	485	476	470	473	474	487	485	486	495	492	493	471	477	**510**	444	420	432	467	552	5 44 a	375	10 10 p	177	0
19	**428**	436	447	442	452	463	469	492	480	475	477	476	479	474	462	473	510	518	536	**563**	522	486	472	442	478	581	7 39 p	417	0 0 a	164	0
20	442	451	458	466	470	469	470	470	471	471	474	457	465	476	483	454	458	497	558	**580**	519	506	474	**441**	478	620	7 2 p	416	11 31 p	204	0
21	**446**	452	457	463	467	470	472	470	473	475	478	483	485	481	472	510	**528**	518	483	501	472	474	464	468	478	559	3 42 p	427	0 10 a	132	0
22	468	460	457	463	462	469	470	470	468	473	478	490	514	535	**556**	545	489	485	472	463	475	476	465	452	481	598	3 3 p	**444**	11 27 p	154	0
23	457	457	451	460	471	477	482	483	485	488	481	476	493	499	518	572	**580**	486	451	**392**	407	427	453	443	475	632	4 9 p	351	7 20 p	281	0
24	439	442	449	468	483	480	483	492	499	500	498	493	498	502	513	521	**550**	475	457	441	**426**	442	441	450	477	574	4 39 p	404	7 48 p	170	0
25	443	448	469	471	472	477	490	484	485	483	485	485	491	512	505	519	550	**553**	527	491	445	**420**	443	435	483	568	5 36 p	388	9 29 p	180	0
26	452	455	461	466	470	475	481	489	496	494	501	508	510	510	509	585	**596**	510	444	403	391	**378**	415	408	475	628	3 50 p	346	9 46 p	282	0
27	430	427	**422**	459	466	475	513	502	498	504	518	528	544	569	634	**698**	671	606	512	540	521	483	438	456	**517**	**725**	3 11 p	392	0 3 a	333	1
28	464	474	476	501	501	490	510	512	517	519	504	506	507	524	523	524	492	500	478	468	**528**	465	465	**463**	496	567	8 45 p	437	7 30 p	130	0
29	**445**	461	464	467	482	489	498	503	504	508	507	511	512	526	537	528	**546**	530	515	517	515	480	463	471	499	568	4 15 p	396	0 10 a	172	0
30	464	472	482	492	494	497	519	**535**	504	501	519	522	515	526	532	520	506	523	519	528	478	**434**	447	442	499	585	6 57 a	418	9 12 p	167	0
31	440	446	446	469	475	486	488	493	491	492	492	495	504	509	496	505	**528**	524	505	476	467	468	458	**438**	483	537	4 53 p	431	11 14 p	**106**	0
Mean 1	428	437	444	453	461	468	475	480	480	480	482	485	490	495	498	**508**	**508**	491	480	476	453	429	421	**420**	468	570		364		206	
» 2	431	440	448	454	464	471	476	480	481	481	482	484	490	496	500	508	**510**	496	483	474	456	436	436	**430**	471						
» 3	433	440	447	455	463	471	476	479	480	481	482	485	490	496	501	**506**	**506**	496	484	472	456	441	435	**432**							

[1] Minus 200 γ according to page 158.

August 1904. Table CX. — Hourly Values of Vertical Intensity.[1] **Gjøahavn.**
$Z = 0.60\,000 +$ γ Gr.M.T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	438	449	455	466	478	483	488	489	489	494	498	503	510	509	**511**	499	496	471	*472*	445	452	**421**	**421**	437	474	517	4 15 p	402	9 5 p	115	0
2	**434**	451	458	517	514	507	508	503	500	497	510	506	496	491	499	503	535	**572**	*554*	537	*525*	*483*	446	453	500	646	3 44 a	428	10 38 p	218	0
3	465	470	475	483	493	499	496	509	517	528	515	522	545	548	532	492	571	**656**	*595*	431	**417**	512	456	467	508	*763*	5 8 p	334	10 23 p	**429**	2
4	466	467	447	455	484	492	492	505	511	566	581	596	630	**687**	653	637	611	568	*512*	470	418	407	**403**	404	**519**	733	1 33 p	382	8 38 p	351	2
5	**437**	444	479	477	487	502	516	502	497	493	496	509	511	513	509	520	**523**	506	*499*	480	485	480	484	481	493	545	6 1 a	421	0 0 a	124	0
6	484	488	493	497	499	498	501	500	502	513	519	526	550	**559**	*552*	546	531	507	*500*	439	**432**	443	454	*457*	500	570	0 59 p	406	8 50 p	164	0
7	*466*	*474*	*483*	*492*	*496*	*500*	*502*	*504*	*504*	*505*	*508*	*511*	*516*	*520*	*525*	*530*	*528*	*514*	*494*	476	423	**421**	439	446	491	*555*	3 30 p	398	9 17 p	157	0
8	453	463	463	468	474	479	481	482	480	483	485	487	495	503	519	**537**	523	493	*462*	459	457	435	438	**426**	477	544	3 43 p	416	11 14 p	128	0
9	445	450	460	465	466	468	469	471	471	472	475	478	481	484	**487**	481	475	468	*448*	440	420	420	425	**417**	460	488	4 2 p	400	9 10 p	88	0
10	419	423	432	438	444	451	458	458	459	459	459	460	460	466	470	476	**498**	483	*431*	394	384	**348**	398	409	441	534	4 50 p	**320**	9 41 p	214	0
11	**419**	426	430	434	436	439	441	441	443	445	447	449	457	467	469	476	491	**496**	*495*	474	461	452	442	445	453	507	5 56 p	416	0 0 a	91	0
12	451	456	458	461	463	464	465	466	467	467	464	468	471	472	**482**	479	475	463	*444*	432	426	416	416	**410**	456	486	2 36 p	408	11 54 p	78	1
13	409	413	417	418	420	421	426	425	426	431	432	441	444	451	**482**	468	453	447	*425*	389	368	349	**346**	365	419	491	2 38 p	339	9 53 p	152	0
14	366	372	385	392	396	397	405	408	407	406	413	416	417	422	433	**438**	433	415	*361*	347	344	**337**	348	347	**392**	444	3 28 p	332	9 2 p	112	0
15	**350**	368	373	376	377	378	378	379	386	378	379	386	393	397	394	406	377	366	*478*	**573**	542	498	469	451	411	591	7 15 p	343	0 15 a	248	1
16	468	475	481	499	507	507	517	515	518	518	523	522	535	536	542	552	**566**	564	*552*	536	538	487	**450**	451	515	581	4 56 p	**443**	10 46 p	138	0
17	453	463	472	478	485	489	498	501	501	512	504	505	513	530	548	561	**594**	533	*496*	470	477	437	417	**410**	494	627	4 36 p	399	11 27 p	228	0
18	409	410	419	438	441	443	454	458	454	460	456	457	461	463	**474**	467	471	445	*419*	400	**393**	409	422	412	439	497	4 18 p	381	7 53 p	116	0
19	409	**408**	423	432	438	440	440	443	445	446	446	447	453	458	467	**470**	468	461	*450*	435	433	428	425	420	441	474	3 40 p	405	1 14 a	**69**	1
20	425	429	432	434	438	439	441	439	439	440	440	441	443	445	451	458	**468**	433	*438*	442	426	413	**389**	399	435	491	4 12 p	379	10 14 p	112	0
21	408	422	429	428	432	434	434	437	439	441	443	448	462	461	494	**506**	491	462	*431*	396	380	**363**	365	383	433	524	3 8 p	327	8 46 p	197	0
22	394	402	413	479	447	446	458	465	460	451	452	459	467	468	466	**474**	461	429	*388*	**387**	413	389	390	413	436	525	3 24 a	360	9 42 p	165	0
23	406	409	409	412	417	425	427	427	430	429	429	437	433	430	428	428	**452**	415	*394*	383	**362**	370	372	375	412	463	4 21 p	345	8 38 p	118	0
24	382	386	395	397	400	402	404	410	409	408	413	414	413	419	418	**430**	420	410	*393*	372	**355**	361	367	359	397	**436**	3 51 p	348	8 38 p	88	0
Mean 1	427	434	441	451	456	458	462	464	465	468	470	475	481	487	492	493	**496**	482	464	442	430	420	**416**	418	458	543		380		163	
» 2	425	432	440	452	455	457	463	463	462	464	466	470	475	479	486	490	**493**	475	453	433	426	411	**410**	413	454						
» 3	424	432	441	450	454	458	461	463	463	464	467	470	475	480	485	**490**	488	474	454	436	424	414	**411**	415							

[1] Minus 200 γ according to page 158.

September 1904. $Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
20	**316**	323	325	327	329	331	336	337	339	340	339	343	343	352	**360**	353	358	338	*340*	342	333	336	332	333	**335**	**386**	4 11 p	**312**	11 22 p	**74**	1
21	431	431	436	441	439	438	438	439	436	437	437	441	441	460	475	461	**513**	509	*472*	438	399	**387**	389	394	441	534	5 23 p	359	9 57 p	175	0
22	415	441	441	446	442	442	445	449	449	451	457	483	485	509	**524**	521	483	460	*440*	438	408	**365**	388	414	450	547	2 42 p	337	9 15 p	210	0
23	430	434	434	444	458	464	483	505	483	490	503	481	470	465	**514**	473	459	456	*399*	**367**	403	397	406	403	451	546	2 49 p	343	7 44 p	203	0
24	433	430	441	445	441	441	441	441	441	445	443	452	450	456	**467**	453	462	457	*438*	435	383	347	**341**	365	431	477	2 50 p	322	10 3 p	155	0
25	404	419	437	457	456	480	**566**	523	513	520	522	522	505	484	495	477	426	392	*370*	454	443	409	407	403	462	597	6 54 a	338	6 28 p	**259**	1
26	431	436	436	454	512	500	489	480	532	521	513	496	500	**535**	499	490	497	522	*493*	474	436	**412**	416	428	**479**	**617**	8 52 a	380	9 57 p	237	0
27	434	439	439	445	454	454	454	460	456	456	465	465	468	479	492	498	494	**526**	*501*	467	446	430	413	**409**	460	571	5 39 p	396	11 42 p	175	0
28	411	428	438	453	460	467	454	465	473	465	451	462	477	483	478	461	483	**500**	*486*	442	420	410	404	**389**	452	545	5 24 p	378	11 9 p	167	0
29	**416**	429	433	439	452	456	455	455	450	450	447	466	**481**	459	457	461	458	473	*447*	438	441	441	427	418	448	510	5 56 p	**398**	11 57 p	112	0
30	413	423	424	427	428	431	435	434	431	432	440	443	442	**451**	447	445	442	425	*422*	419	**403**	412	*416*	*425*	430	471	2 52 p	376	8 59 p	95	0
Mean 1	412	421	426	434	443	446	454	453	455	455	456	459	460	467	**473**	463	461	460	437	429	410	395	**394**	398	440	527		358		169	
» 2	424	432	436	444	454	455	455	459	461	461	462	465	468	477	**484**	474	477	481	455	435	415	**400**	**400**	405	449						
» 3	421	431	437	445	452	455	456	458	461	461	462	465	470	476	**480**	477	477	473	457	435	416	404	**401**	409							

[1] Minus 200 γ according to page 158.

October 1904. $Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1] γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	*458*	458	453	457	452	455	455	467	475	471	482	499	495	508	**522**	504	468	452	*472*	450	405	**372**	402	428	461	534	2 24 p	359	9 53 p	175	0
2	433	436	439	441	450	451	470	**542**	510	467	454	460	455	468	472	534	506	466	*467*	445	**400**	416	439	419	460	575	3 11 p	376	8 40 p	199	0
3	428	446	442	444	442	448	447	452	448	445	451	458	**486**	483	483	475	455	456	*438*	442	434	**415**	417	428	448	505	1 55 p	404	9 14 p	101	0
4	441	448	443	445	451	468	466	469	459	457	465	469	468	481	484	480	488	**506**	*471*	435	415	**396**	400	424	455	513	5 34 p	385	10 36 p	128	0
5	424	435	444	453	459	515	491	472	469	467	471	466	461	479	522	**555**	536	495	*444*	400	398	398	400	**385**	460	581	3 50 p	370	10 49 p	211	0
6	420	422	430	448	465	460	458	458	471	469	465	471	495	525	529	**531**	471	450	*437*	423	**405**	409	445	455	459	538	3 14 p	383	9 2 p	155	0
7	445	437	437	467	506	501	495	503	592	577	512	482	469	562	**607**	534	463	390	*354*	420	422	355	406	418	473	656	8 30 a	325	9 32 a	331	2
8	474	440	451	595	580	543	547	**599**	558	539	541	541	515	481	468	506	468	506	*494*	482	424	436	**406**	429	**501**	715	4 3 a	380	10 39 p	335	2
9	454	457	454	468	493	488	523	500	506	517	515	**532**	**532**	519	500	498	491	503	*486*	**417**	425	428	433	433	482	618	6 15 a	378	7 34 p	240	0
10	447	449	461	468	479	**583**	521	494	485	515	496	490	483	501	506	501	512	497	*463*	462	443	437	**429**	440	482	**753**	5 27 a	396	9 8 p	357	2
11	443	448	454	459	464	485	466	464	460	462	466	462	468	476	484	495	483	**508**	*492*	474	457	433	**424**	459	466	544	5 8 a	403	10 2 p	141	0
12	452	458	460	462	464	467	473	516	516	497	499	499	486	508	**531**	528	522	511	*483*	451	**424**	431	449	452	481	538	2 14 p	410	9 13 p	128	0
13	458	451	456	456	462	466	478	497	499	507	526	525	**618**	577	512	487	506	488	*460*	363	**321**	401	412	433	473	670	0 45 p	**284**	8 8 p	**386**	2
14	429	431	435	429	438	451	453	458	456	458	456	457	458	458	**518**	505	488	450	*438*	471	516	410	**406**	443	455	611	8 6 p	350	9 15 p	261	0
15	449	442	468	457	457	463	465	461	464	462	462	462	462	**469**	458	469	456	453	*438*	412	**410**	**410**	419	434	450	496	2 45 a	389	9 58 p	107	0
16	427	449	451	440	438	445	453	477	483	472	461	480	485	485	478	498	**503**	464	*457*	431	448	430	429	**421**	459	538	4 11 p	408	9 9 p	130	0
17	451	451	451	451	451	454	455	455	455	455	457	461	470	470	485	**496**	489	*481*	459	*444*	**426**	**426**	429	437	457	515	5 0 p	411	9 26 p	104	0
18	**439**	449	448	459	461	464	463	493	467	463	469	480	469	469	**512**	485	481	472	*466*	452	447	446	448	452	465	514	7 47 a	**438**	9 37 p	**76**	1
19	453	453	457	457	461	466	473	**555**	512	486	473	471	482	473	493	486	501	495	*458*	**425**	431	448	446	446	471	581	7 14 a	407	8 24 p	174	0
20	441	443	452	452	456	458	458	460	458	458	458	465	475	486	510	**513**	504	489	*458*	437	421	**412**	447	430	460	536	2 51 p	397	9 6 p	139	0
21	428	434	431	438	451	469	552	541	515	559	535	507	486	503	512	**583**	532	500	*418*	**365**	370	403	405	411	473	623	6 29 a	330	7 56 p	293	0
22	437	**547**	474	457	498	500	481	500	515	487	474	472	477	477	497	502	507	471	*476*	**426**	446	451	441	447	477	649	1 32 a	374	5 32 p	275	0
23	455	457	461	502	506	484	488	485	485	513	495	499	488	512	506	**526**	515	496	*468*	468	457	438	**410**	433	481	556	4 53 p	392	10 12 p	164	0
24	440	440	448	451	455	459	459	461	462	467	480	466	472	474	466	**497**	488	484	*483*	465	429	418	**416**	422	458	520	6 14 p	396	9 59 p	124	0
25	432	438	443	454	456	454	454	461	463	461	466	467	463	463	471	475	490	495	*459*	478	**501**	448	**419**	429	460	535	4 47 p	394	9 53 p	141	0
26	425	**408**	428	428	435	435	435	450	448	451	451	449	449	450	452	**457**	418	427	*416*	424	443	416	418	423	**435**	**490**	3 10 p	380	9 45 p	110	0
27	427	430	428	435	433	436	453	474	466	464	470	507	508	532	540	**568**	462	419	*467*	428	428	403	**390**	409	457	622	3 24 p	353	5 24 p	269	0
28	410	**402**	411	431	433	449	456	553	506	562	**574**	555	529	531	509	455	434	432	*446*	423	413	427	430	430	467	639	7 29 a	383	8 11 p	256	0
29	434	434	439	437	439	450	446	449	446	458	456	456	450	**489**	484	466	429	444	*411*	438	**379**	444	426	426	443	506	1 48 p	366	8 34 p	140	0
30	426	435	438	438	438	449	521	524	484	490	479	498	499	**542**	488	464	*455*	453	*415*	420	446	384	**373**	402	457	588	6 57 a	340	9 45 p	248	0
31	412	421	428	435	478	496	488	501	543	565	535	525	524	**588**	504	493	*519*	471	435	*415*	406	**390**	**390**	404	474	612	9 0 a	375	10 5 p	237	0
Mean	438	440	446	455	463	471	476	490	486	488	484	485	486	498	500	**502**	485	472	453	435	425	**417**	419	429	464	577		379		198	
»	436	439	445	449	456	464	471	485	480	481	479	481	482	494	496	**502**	485	472	454	435	428	**417**	419	428	462						
»	435	440	445	450	456	464	473	480	482	481	480	481	485	491	**497**	496	486	471	453	438	427	**420**	421	428							

[1] Minus 200 γ according to page 158.

November 1904. $Z = 0.60000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	402	417	426	432	440	442	444	437	487	476	473	475	513	532	502	524	483	449	402	414	388	370	403	414	448	541	3 45 p	340	9 56 p	201	0
2	405	402	415	432	436	440	449	458	452	459	478	480	554	578	519	540	598	456	366	423	502	473	449	391	465	643	4 7 p	322	6 45 p	321	2
3	427	432	442	442	442	447	458	490	464	484	512	512	476	489	495	467	424	362	380	407	422	455	449	450	451	597	2 5 p	341	5 23 p	256	1
4	440	436	440	440	441	458	465	480	562	605	612	622	586	624	602	544	507	440	411	457	426	427	429	442	496	671	1 54 p	389	6 4 p	282	1
5	451	440	450	494	488	470	483	559	494	483	472	505	562	512	514	509	464	454	443	450	445	440	446	440	478	656	7 14 a	411	6 30 p	245	0
6	449	453	471	489	482	493	512	490	531	533	502	502	502	490	519	491	500	498	482	438	444	440	447	448	484	558	2 35 p	376	9 9 p	182	0
7	446	448	451	452	458	459	483	558	520	527	529	529	513	521	530	532	513	491	486	463	445	446	439	448	487	610	7 11 a	426	10 16 p	184	0
8	453	451	454	456	455	457	458	465	512	493	480	496	490	496	494	483	498	516	485	467	441	451	444	446	473	545	8 28 a	432	8 44 p	113	0
9	442	451	447	454	457	470	479	486	473	470	472	476	471	479	479	489	489	481	480	454	421	415	418	439	462	499	7 50 a	400	9 7 p	99	0
10	443	449	449	448	448	465	458	468	470	470	465	470	470	472	475	480	485	485	468	441	433	433	429	427	458	498	4 21 p	414	11 8 p	84	1
11	433	440	435	440	442	444	448	455	454	451	451	451	444	457	455	457	455	456	440	421	418	414	420	422	442	478	1 47 p	411	8 51 p	67	1
12	421	434	436	437	442	444	450	450	448	448	448	448	450	450	457	457	457	465	428	430	432	435	435	421	443	490	5 32 p	415	0 0 a	75	1
13	434	436	436	444	446	446	447	449	450	450	450	450	450	450	460	466	468	457	449	440	430	430	436	423	446	481	4 9 p	418	11 26 p	63	1
14	430	431	433	441	444	444	446	449	452	459	459	457	449	451	454	487	472	458	437	430	403	423	425	431	444	504	3 42 p	385	8 21 p	119	0
15	429	434	434	434	434	436	438	450	441	443	439	439	439	443	446	445	453	449	439	430	422	412	408	423	436	464	5 48 p	406	9 1 p	58	1
16	412	412	432	555	522	518	576	519	538	519	495	476	462	481	478	478	424	396	381	409	409	409	412	437	465	695	3 30 a	370	6 47 p	325	2
17	441	436	447	468	612	559	510	631	738	667	579	514	492	501	486	519	528	537	484	479	479	452	457	459	520	905	7 48 a	400	9 20 p	505	2
18	449	448	457	472	538	579	633	553	624	572	609	572	557	665	633	542	556	476	421	390	427	442	446	445	521	968	6 12 a	381	7 33 p	587	2
19	445	452	453	454	465	465	464	469	507	485	481	479	468	481	479	485	494	501	475	457	455	456	456	457	470	548	8 32 a	441	0 3 a	107	0
20	456	457	458	458	459	459	458	458	458	459	459	459	460	462	462	465	469	463	448	452	452	452	452	450	458	472	4 2 p	447	6 33 p	25	2
21	443	443	443	443	445	445	444	454	450	448	445	445	447	455	461	463	466	461	449	434	415	437	437	430	446	481	4 29 p	413	8 23 p	68	1
22	428	426	432	437	480	476	484	463	458	460	457	446	451	453	458	500	513	456	439	455	455	436	430	445	456	528	4 15 p	415	10 34 p	113	0
23	435	443	445	443	445	445	445	450	450	448	448	448	456	454	465	456	473	462	456	454	441	435	435	432	449	483	4 15 p	419	9 12 p	64	1
24	430	435	429	439	441	443	444	462	456	454	451	452	456	464	478	478	475	462	441	443	420	401	423	437	446	489	2 21 p	392	8 41 p	97	0
25	424	424	416	434	454	482	485	450	451	489	543	578	571	547	556	514	451	438	454	465	464	455	449	448	477	602	0 56 p	412	2 18 a	190	0
26	444	444	448	454	443	446	455	455	457	456	460	456	480	466	497	499	521	469	465	524	489	475	453	421	466	561	7 15 p	391	11 54 p	170	0
27	391	417	432	435	452	437	446	472	457	457	477	499	486	497	521	516	499	499	463	423	389	379	390	394	451	542	2 35 p	369	9 3 p	173	0
28	418	411	418	433	433	437	442	472	476	463	452	452	455	470	470	462	475	455	446	440	425	418	430	424	445	519	4 36 p	403	9 20 p	116	0
29	424	427	429	431	433	435	429	431	446	449	451	456	489	483	474	468	461	476	446	429	386	392	387	397	439	505	1 26 p	366	8 32 p	139	0
30	409	418	424	419	428	430	441	445	439	452	452	446	446	451	468	457	464	451	448	427	418	440	439	408	438	479	2 49 p	394	8 8 p	85	0
Mean 1	432	435	439	450	460	462	469	478	487	484	483	483	485	492	493	489	485	464	444	442	433	431	432	432	462	567		397		170	
» 2	430	434	438	447	453	455	462	473	476	475	476	481	488	487	493	493	486	472	456	449	431	427	430	431	460						
» 3	431	434	439	446	452	456	463	471	475	476	477	482	486	489	491	491	484	472	458	446	434	429	430	430							

[1] Minus 200 γ according to page 158.

December 1904.
$Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	409	411	412	423	464	454	475	458	458	459	476	470	508	521	488	493	490	439	410	410	404	395	392	393	446	554	1 2 p	384	9 50 p	170	0
2	412	436	432	414	427	432	432	456	476	459	454	445	469	456	463	459	452	462	432	428	436	425	425	420	442	493	5 23 p	399	9 58 p	94	0
3	426	414	429	422	433	434	465	473	520	539	529	519	480	486	530	447	422	358	424	408	423	455	445	445	455	561	9 30 a	345	5 32 p	216	2
4	444	435	435	444	444	449	449	455	445	445	442	451	446	454	461	456	448	439	382	391	392	370	371	374	430	509	5 5 p	338	6 24 p	171	0
5	383	402	413	394	416	444	418	438	478	456	452	471	504	470	440	453	421	397	392	400	376	375	391	393	424	526	8 8 a	363	8 56 p	163	0
6	396	400	406	404	406	413	415	432	421	421	432	433	451	488	445	423	444	428	437	441	428	410	432	430	427	527	1 29 p	390	9 17 p	137	0
7	431	431	430	430	432	433	433	436	462	462	457	459	457	468	500	485	457	453	442	431	430	432	427	422	446	518	2 57 p	421	8 21 p	97	0
8	429	427	431	431	433	438	436	448	446	446	447	443	447	449	454	456	456	456	443	432	428	420	427	431	440	475	5 30 p	416	9 15 p	59	1
9	431	429	422	420	431	422	429	431	431	431	442	453	483	496	462	462	475	470	448	450	429	430	430	411	442	518	1 8 p	398	11 57 p	120	0
10	409	431	440	432	430	434	443	454	441	445	434	457	455	477	476	450	476	454	448	444	430	406	409	427	442	497	2 10 p	399	0 0 a	98	0
11	429	431	432	432	430	433	433	433	435	442	455	435	442	433	450	445	463	452	439	413	408	406	414	407	433	476	4 31 p	388	11 32 p	88	0
12	419	431	432	432	432	434	433	435	435	435	435	436	434	436	436	436	461	448	451	438	438	437	416	421	435	490	6 15 p	397	10 57 p	93	0
13	416	419	430	426	424	428	435	435	435	437	433	434	436	438	440	440	439	439	443	438	436	428	428	417	432	452	6 40 p	414	1 11 a	38	2
14	418	419	422	424	419	425	429	468	444	440	430	439	432	432	450	443	437	466	477	393	390	452	413	422	433	507	6 33 p	345	8 22 p	162	0
15	413	396	411	435	437	457	602	498	452	450	466	469	474	459	456	452	425	429	435	436	419	418	413	424	447	721	6 27 a	392	4 27 p	329	2
16	442	434	421	431	427	425	429	434	438	484	592	586	502	528	506	463	509	501	450	441	435	443	420	418	465	679	10 50 a	410	11 27 p	269	2
17	424	428	432	432	436	438	440	440	442	442	442	442	443	443	443	439	411	421	426	430	441	433	423	421	434	465	2 5 p	402	4 14 p	63	0
18	427	425	429	430	430	432	435	440	440	443	443	436	436	443	445	448	469	477	454	421	429	423	402	392	435	493	5 6 p	390	11 35 p	103	0
19	406	421	425	425	423	426	428	428	428	428	433	450	450	439	428	446	428	450	435	427	427	428	418	407	429	476	3 26 p	393	11 45 p	83	0
20	413	413	418	426	418	426	428	428	433	445	429	430	441	439	433	450	430	452	449	428	419	409	400	389	427	463	6 0 p	387	11 16 p	76	0
21	398	408	410	419	441	461	441	469	528	485	492	500	506	517	513	521	498	457	434	426	413	420	424	415	458	565	8 12 a	389	0 0 a	176	0
22	413	414	414	418	423	426	432	434	432	430	428	434	435	437	435	437	440	446	434	431	413	401	411	416	426	459	4 56 p	393	8 53 p	66	0
23	398	407	414	414	416	423	428	425	428	425	428	426	426	426	426	435	429	435	431	425	415	424	416	403	422	442	4 56 p	396	11 24 p	46	1
24	412	415	415	415	417	423	419	425	421	421	420	420	429	431	439	447	460	436	428	418	416	416	416	416	424	475	4 41 p	404	0 16 a	71	0
25	418	420	420	420	422	425	451	432	434	436	432	430	434	436	437	435	433	433	423	425	420	415	415	405	427	482	6 4 a	396	11 18 p	86	0
26	417	419	419	419	419	421	445	434	430	434	438	443	456	504	504	484	461	444	445	415	410	411	391	406	436	525	2 6 p	372	9 59 p	153	0
27	393	389	393	407	417	419	434	462	453	438	437	431	435	433	428	433	441	428	425	420	419	414	410	408	424	466	7 2 a	378	0 48 a	88	0
28	407	413	394	400	411	413	416	413	413	424	446	459	459	453	459	455	436	436	413	412	431	403	405	404	424	479	1 2 p	392	9 47 p	87	0
29	405	411	413	415	413	427	429	431	456	474	458	456	443	463	437	434	432	402	408	411	413	399	391	400	426	498	1 21 p	376	7 11 p	122	0
30	414	414	419	436	420	424	444	437	457	481	455	437	442	451	444	460	456	438	427	419	416	405	405	416	434	492	9 44 a	394	9 45 p	98	0
31	415	415	417	417	417	418	420	420	420	420	419	419	421	419	421	421	425	432	424	416	417	417	411	416	419	440	4 41 p	397	4 48 p	43	1
Mean 1	415	418	420	422	426	431	440	442	446	448	451	452	454	459	456	452	449	441	433	423	419	417	413	412	435	507		389		118	
» 2	414	419	420	421	426	431	435	440	446	445	444	447	454	459	455	454	451	443	432	422	418	413	410	409	434						
» 3	414	418	420	422	426	431	435	440	444	445	445	448	453	457	456	453	450	442	432	424	418	414	410	411							

[1] Minus 200 γ according to page 158.

January 1905.
$Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	417	417	417	419	419	419	419	423	458	443	458	464	460	436	445	443	419	419	432	424	422	420	406	417	430	484	10 55 a	395	10 1 p	89	0
2	417	419	421	421	433	444	437	435	438	451	451	443	434	440	440	462	460	441	425	430	414	397	397	400	431	495	3 51 p	390	8 53 p	105	0
3	405	414	412	421	427	434	432	442	456	453	464	463	476	479	465	463	451	423	417	418	416	416	416	416	437	496	1 42 p	396	12 0 p	100	0
4	411	403	414	437	418	437	459	437	437	435	461	437	447	476	555	481	454	453	432	422	408	393	400	390	437	630	2 11 p	389	9 18 p	241	1
5	404	413	446	452	499	499	508	519	458	451	451	453	442	434	442	451	449	449	429	483	483	407	425	427	453	562	6 54 a	339	7 59 p	223	0
6	414	406	421	421	429	429	456	483	465	453	440	449	462	530	527	508	455	431	442	419	409	403	410	419	445	573	1 49 p	390	9 28 p	183	0
7	410	407	412	416	424	424	421	426	434	434	456	469	456	468	462	476	445	467	457	436	424	421	404	408	436	493	5 36 p	393	10 48 p	100	0
8	415	415	415	418	424	427	427	424	429	459	459	440	437	442	454	445	438	430	421	428	426	426	420	416	431	485	9 50 a	413	11 33 p	72	1
9	417	417	417	417	417	417	423	426	424	420	418	418	426	435	433	437	439	439	445	430	426	416	410	404	424	472	4 24 p	395	10 54 p	77	1
10	404	412	412	416	418	422	432	436	436	438	436	458	441	436	457	481	469	447	415	391	413	408	411	417	429	494	3 6 p	367	7 15 p	127	0
11	400	396	407	409	400	418	448	484	456	480	495	484	482	463	472	496	507	471	468	482	439	416	410	408	450	527	4 2 p	395	11 8 p	132	0
12	419	419	419	421	421	423	425	425	427	425	431	433	431	435	445	442	456	401	364	368	414	375	406	399	418	475	4 29 p	318	6 9 p	157	0
13	416	414	421	419	421	465	433	424	425	430	430	440	449	448	439	420	398	396	396	392	392	374	390	388	417	503	5 21 a	364	9 12 p	139	0
14	392	392	392	391	391	391	391	394	432	454	432	461	442	442	447	463	494	500	506	473	428	408	397	388	429	530	6 11 p	386	11 15 p	144	0
15	400	389	396	404	389	409	433	409	421	429	432	432	432	432	424	431	433	432	414	417	410	411	404	401	416	454	1 51 p	365	3 58 a	89	0
16	398	404	404	405	405	405	405	406	405	407	406	406	406	407	408	410	410	412	415	408	398	401	399	396	405	423	5 50 p	378	8 6 p	45	2
17	403	412	424	411	443	413	407	466	473	428	450	513	458	469	470	448	468	514	437	364	369	381	412	414	435	562	7 43 a	339	8 46 p	223	0
18	404	404	404	404	404	406	420	425	467	443	444	439	433	421	442	466	463	420	425	417	406	396	395	397	423	533	8 18 a	386	10 20 p	147	0
19	396	398	399	399	404	404	406	411	415	415	412	414	412	422	424	435	445	449	468	425	374	358	379	393	411	473	6 0 p	348	8 57 p	125	0
20	380	390	401	425	410	408	437	467	415	415	427	429	427	429	435	446	402	351	438	406	420	416	382	385	414	514	6 9 p	332	5 45 p	182	0
21	383	385	403	403	403	407	409	413	428	449	430	428	434	426	431	427	446	446	430	407	400	381	383	390	414	463	9 20 a	370	9 51 p	93	0
22	394	396	403	407	483	459	514	429	566	682	588	669	686	599	527	540	435	441	470	466	448	430	412	404	494	841	9 5 a	390	0 10 a	451	2
23	405	406	408	406	410	410	417	417	417	417	420	419	417	417	426	426	410	417	427	414	407	413	408	411	414	438	6 48 p	392	8 26 p	46	2
24	409	409	408	406	406	405	409	418	422	416	434	475	466	433	437	438	419	401	424	396	353	341	375	373	411	482	11 26 a	310	8 59 p	172	0
25	396	412	410	413	418	457	468	443	442	462	448	448	447	439	452	467	433	398	395	385	380	358	387	386	423	534	5 53 a	336	8 32 p	198	0
26	397	406	406	437	424	468	425	414	410	412	425	431	475	477	488	421	432	430	395	397	407	408	410	408	425	568	5 33 a	362	6 14 p	206	0
27	406	407	407	407	406	406	408	417	433	431	429	420	422	422	428	423	432	430	394	428	381	384	386	393	413	482	5 36 p	339	6 36 p	143	0
28	407	418	422	424	418	428	423	430	430	436	447	451	445	430	451	454	456	449	410	368	401	380	406	426	425	495	4 54 p	343	9 27 p	152	0
29	418	411	418	429	429	427	429	450	536	464	450	452	447	460	452	448	405	409	395	376	360	405	408	408	429	603	8 44 a	334	8 18 p	269	2
30	411	414	417	426	430	430	435	429	429	448	474	473	451	451	465	462	452	439	418	427	408	407	416	416	435	514	10 38 a	383	9 11 p	131	0
31	419	422	424	424	424	424	426	429	429	444	540	594	585	516	476	498	445	388	373	427	453	425	409	409	450	644	11 12 a	325	6 57 p	319	2
Mean 1	405	407	412	416	421	426	432	434	442	446	450	458	456	452	455	455	443	432	425	417	409	399	402	403	429	524		367		157	
» 2	404	407	412	416	419	426	430	437	438	439	443	451	447	446	452	453	447	435	426	415	407	394	400	403	427						
» 3	404	408	412	416	420	425	431	435	438	440	442	448	448	448	451	451	445	436	426	416	406	399	399	402							

[1] Minus 200 γ according to page 158.

February 1905. Table CX. — Hourly Values of Vertical Intensity.[1] Gjøahavn.

$Z = 0.60\,000 +$ γ Gr.M.T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	405	414	416	410	418	425	418	407	423	425	425	440	438	431	425	440	447	442	447	420	410	371	403	399	421	467	6 17 p	364	9 8 p	103	1
2	379	368	401	423	432	414	425	425	425	432	423	421	424	453	463	461	509	470	448	414	407	391	386	389	424	536	4 26 p	353	1 50 a	183	0
3	393	393	423	375	378	466	569	427	460	697	883	621	588	636	470	380	343	358	365	322	256	344	461	531	464	1284	9 54 a	216	8 21 p	1068	2
4	467	421	443	467	456	447	443	445	443	456	464	478	480	451	450	393	391	393	403	479	462	454	457	438	445	558	7 38 p	312	5 40 p	246	0
5	436	423	434	424	422	400	494	669	571	573	562	533	480	408	555	557	431	422	462	465	399	443	446	427	477	921	7 20 a	337	8 30 p	584	2
6	425	421	428	434	445	452	494	501	470	451	466	473	475	473	473	516	510	477	488	463	424	407	445	452	461	649	6 32 a	285	6 44 a	364	0
7	467	456	453	462	460	460	458	463	506	584	560	560	530	502	520	569	577	542	545	514	453	435	409	390	495	667	4 12 p	389	10 54 p	278	0
8	422	402	411	420	435	453	453	453	474	439	477	453	455	456	502	528	524	467	421	386	424	385	378	401	442	570	3 5 p	347	7 21 p	223	0
9	419	417	410	422	418	444	433	434	467	475	475	467	456	456	486	517	531	498	454	415	386	390	415	415	446	564	4 21 p	342	8 23 p	222	0
10	428	413	411	412	418	495	461	482	460	456	441	461	456	480	491	461	440	457	442	429	424	420	390	412	443	587	5 32 a	324	9 21 p	263	0
11	417	406	395	406	413	419	418	422	422	428	430	421	430	423	439	441	436	418	399	413	420	437	419	417	420	458	5 12 p	373	6 6 p	85	2
12	418	419	415	419	419	419	420	420	420	420	420	427	429	444	479	477	497	435	450	443	443	400	400	400	431	503	4 6 p	381	9 59 p	122	1
13	400	416	420	416	422	451	442	442	442	442	437	437	429	442	440	467	465	434	427	414	391	367	377	377	425	513	4 5 p	354	8 45 p	159	0
14	392	394	413	419	421	437	421	443	450	441	443	454	534	499	529	507	516	513	490	499	437	393	387	409	452	601	5 48 p	343	9 28 p	258	0
15	387	399	430	436	420	431	465	452	454	532	516	460	449	462	461	450	487	421	416	379	401	415	416	403	439	578	9 21 a	339	7 46 p	239	0
16	406	422	419	425	430	468	472	472	455	456	448	444	461	457	448	444	458	427	463	417	420	405	379	389	437	508	6 12 p	354	9 41 p	154	0
17	400	411	423	482	622	508	469	456	446	498	522	479	466	470	476	450	455	430	428	413	391	387	391	383	452	892	4 20 a	343	8 37 p	549	2
18	387	401	420	430	435	476	490	475	453	502	459	437	449	442	451	438	427	429	408	410	380	372	373	409	431	565	9 14 a	351	10 9 p	214	0
19	414	411	418	422	422	425	429	436	439	459	462	473	475	475	486	510	479	479	452	423	402	366	379	414	440	523	3 40 p	350	9 44 p	173	0
20	418	420	418	418	416	418	418	436	440	436	429	431	433	437	435	459	498	437	431	424	414	372	379	386	425	509	4 12 p	366	9 49 p	143	0
21	373	409	420	427	420	420	427	427	430	454	507	478	466	475	471	527	508	453	425	414	392	414	433	416	441	589	3 56 p	361	9 23 p	228	0
22	417	418	420	420	421	421	441	436	428	437	446	443	443	443	454	439	444	433	430	417	397	331	373	377	422	465	6 36 a	290	9 28 p	175	0
23	399	417	397	399	417	422	429	490	693	530	504	498	463	465	412	379	355	320	309	358	452	420	415	419	432	798	8 40 a	244	6 29 p	554	2
24	436	451	507	526	456	460	459	463	489	507	494	476	471	477	474	500	428	435	414	436	435	412	414	413	460	636	2 54 a	379	9 29 p	257	0
25	415	417	417	417	415	424	430	437	430	509	478	462	471	477	501	493	475	427	425	391	376	368	381	399	435	581	9 41 a	344	10 5 p	237	0
26	404	413	415	415	416	416	417	417	424	461	456	440	462	455	471	406	406	390	364	400	416	424	416	419	422	514	2 15 p	351	6 45 p	163	0
27	419	419	421	426	443	464	464	465	487	487	493	487	504	513	526	519	432	436	471	461	416	375	360	351	452	550	2 32 p	349	11 15 p	201	0
28	373	392	405	416	418	417	430	430	425	425	431	429	426	433	446	446	423	386	393	425	450	445	423	413	421	470	2 44 p	364	5 36 p	106	1
Mean 1	411	413	422	427	432	441	450	454	462	479	484	457	466	466	473	470	460	437	431	423	410	398	404	409	441	609		339		270	
» 2	416	417	426	432	430	445	448	452	455	473	471	464	468	467	477	481	473	451	444	430	413	395	398	404	443						
» 3	413	419	425	430	434	442	448	452	459	468	470	467	467	470	475	478	469	455	442	429	413	401	399	406							

[1] Minus 200 γ according to page 158.

March 1905. Gjøahavn.
$Z = 0.60\,000 +$ Gr. M. T.

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	417	423	426	426	426	428	428	434	426	429	422	423	428	432	378	369	366	345	311	251	273	320	329	355	386	450	7 0 a	231	7 14 p	219	0
2	384	388	409	411	431	434	473	532	582	555	494	485	479	518	586	112	204	263	183	781	838	849	761	565	488	1077	9 8 p	-343	6 36 p	1420	2
3	497	425	432	384	435	466	491	483	481	454	437	433	469	460	438	460	479	477	469	431	424	390	389	389	446	546	7 2 a	347	3 6 a	199	0
4	393	414	423	436	432	459	459	461	483	483	536	587	635	613	547	517	523	479	477	434	413	412	403	404	476	661	0 47 p	384	0 11 a	277	0
5	415	424	415	435	437	454	436	436	440	460	499	536	477	493	479	460	524	494	461	415	406	395	385	392	449	553	4 9 p	347	7 19 p	206	0
6	397	395	395	419	511	461	439	456	439	426	438	440	440	453	462	458	469	472	380	390	341	392	398	390	428	568	4 23 a	274	7 54 p	294	0
7	407	412	416	442	512	461	461	459	491	540	536	501	530	721	525	364	331	298	360	395	528	517	395	388	458	822	1 46 p	244	5 35 p	578	2
8	411	402	411	431	437	453	484	495	481	543	543	534	519	526	618	600	437	465	468	484	475	419	367	371	474	662	3 10 p	332	10 39 p	330	0
9	389	398	398	409	424	445	438	432	428	435	441	474	477	515	519	532	534	525	470	445	403	367	367	369	443	587	4 43 p	345	9 27 p	242	0
10	386	388	401	412	418	453	431	440	451	440	431	429	442	440	455	497	485	452	458	425	407	381	383	394	429	537	3 51 p	341	9 41 p	196	0
11	383	414	416	416	416	423	427	427	449	449	434	427	447	436	462	471	443	461	446	404	392	363	370	374	423	497	3 16 p	344	8 49 p	153	0
12	408	403	407	410	405	422	444	511	469	449	449	456	469	471	489	491	490	448	447	449	415	367	378	420	440	551	4 34 p	354	9 10 p	197	0
13	402	411	404	422	424	450	490	448	446	446	454	481	488	477	511	494	450	439	413	417	380	379	380	380	437	539	2 39 p	359	9 17 p	180	0
14	382	404	419	422	424	424	435	436	428	432	472	451	453	478	490	487	475	495	438	395	364	362	339	343	427	508	10 35 a	332	10 40 p	176	0
15	367	429	427	429	431	425	427	430	430	430	439	456	455	475	462	468	462	508	484	448	483	426	384	366	439	585	6 25 p	340	11 44 p	245	0
16	364	366	384	406	408	424	444	605	449	486	451	462	484	489	517	530	543	557	507	426	421	385	363	370	452	713	7 46 a	110	8 7 a	603	2
17	378	403	425	426	427	429	444	457	476	455	444	456	454	467	478	502	460	465	431	386	376	390	388	383	433	540	3 14 p	345	8 8 p	195	0
18	389	400	413	417	426	435	436	436	439	437	448	448	448	459	479	479	466	472	421	410	408	390	346	377	428	523	5 26 p	322	10 42 p	201	0
19	412	410	410	421	421	425	434	500	452	443	453	488	479	479	497	488	499	431	383	392	407	383	398	403	438	564	7 9 a	343	9 2 p	221	0
20	407	416	418	419	421	423	428	428	428	431	431	431	431	453	449	441	476	472	467	430	385	387	396	387	427	498	4 42 p	354	8 54 p	144	0
21	407	403	403	414	422	425	427	429	429	430	472	468	443	461	476	466	470	446	459	431	423	408	405	405	434	498	10 48 a	377	9 48 p	121	1
22	411	415	420	423	425	425	425	425	423	423	423	426	415	414	423	451	449	440	443	421	436	399	396	378	422	467	3 35 p	354	11 15 p	113	1
23	418	418	419	418	420	437	438	431	431	436	438	449	444	439	431	464	443	446	482	441	416	420	395	386	432	508	6 2 p	375	11 24 p	133	1
24	409	418	420	422	427	435	469	468	442	440	436	436	436	434	419	419	484	499	504	502	475	422	439	419	445	550	5 48 p	354	9 44 p	196	0
25	441	439	440	458	460	462	483	470	470	470	463	459	461	498	509	534	545	518	500	466	436	427	415	412	468	586	3 36 p	393	10 29 p	193	0
26	423	429	431	430	432	432	432	431	431	439	434	437	444	453	454	459	477	460	479	453	434	415	409	367	437	503	6 19 p	329	11 3 p	174	0
27	382	392	414	425	425	429	440	456	438	438	436	427	424	433	440	407	436	405	337	257	212	208	294	338	387	482	4 15 p	167	9 21 p	315	0
28	369	391	406	424	424	424	432	434	434	432	430	432	434	445	463	475	477	468	432	418	411	408	407	407	428	490	5 12 p	345	0 1 a	145	0
29	411	422	424	420	426	429	429	426	425	431	426	428	431	435	457	455	448	428	440	459	464	407	407	453	433	514	8 40 p	325	9 5 p	189	0
30	430	430	427	434	432	432	436	436	436	434	438	436	452	437	429	416	434	454	485	458	469	379	313	324	427	524	6 50 p	280	9 9 p	244	0
31	368	389	389	400	408	421	429	422	422	429	432	430	436	454	445	475	434	423	428	409	430	429	387	365	419	521	3 37 p	262	12 0 p	259	0
Mean 1	402	409	414	421	428	437	445	456	450	452	454	459	462	476	477	459	458	452	439	430	424	406	393	389	437	569		299		270	
» 2	403	411	416	422	426	438	445	450	446	446	451	457	461	469	473	474	471	462	441	417	403	385	379	383	435						
» 3	400	410	416	422	428	437	444	448	447	447	451	457	462	468	472	473	469	459	440	420	402	388	381	387							

[1] Minus 200 γ according to page 158.

April 1905. $Z = 0.60\,000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	299	466	408	293	335	418	451	405	396	449	462	495	493	512	**536**	516	430	*318*	*260*	282	283	277	425	403	**401**	**926**	2 0 a	**84**	6 35 p	**842**	2
2	382	393	426	467	551	554	528	585	543	620	580	**637**	521	576	506	434	408	362	*312*	338	307	**305**	**305**	371	459	746	4 51 a	261	6 54 p	485	2
3	371	402	425	**570**	502	524	513	506	521	486	479	490	499	512	516	472	455	514	*443*	375	362	**334**	346	342	457	619	3 9 a	255	9 45 p	364	0
4	410	387	413	430	474	476	494	**730**	563	511	498	490	524	568	544	592	595	*518*	*421*	441	427	410	**384**	389	**487**	915	7 35 a	366	9 59 p	549	2
5	387	385	411	450	430	437	475	512	472	464	565	577	521	516	502	**635**	569	*559*	*527*	465	**319**	369	446	431	476	681	3 36 p	275	8 57 p	406	0
6	410	412	419	420	437	479	456	454	454	456	458	458	479	523	539	503	**558**	545	*486*	429	411	**381**	390	401	457	609	4 42 p	324	9 57 p	285	0
7	379	379	391	418	440	445	456	478	**498**	469	463	476	465	465	458	491	452	455	*452*	449	401	384	**363**	382	438	522	3 15 p	339	10 6 p	183	0
8	397	396	418	433	467	519	481	447	447	498	491	490	536	555	584	**605**	536	*481*	*435*	427	393	407	387	**384**	467	618	3 45 p	350	10 54 p	268	0
9	406	417	428	432	434	441	442	442	441	445	445	454	477	523	562	**569**	545	525	*513*	461	422	431	368	**364**	458	589	3 26 p	346	11 5 p	243	0
10	**355**	394	423	434	436	436	442	442	464	468	459	469	487	524	**525**	501	483	*481*	*455*	452	395	409	413	393	447	545	2 20 p	346	0 33 a	199	0
11	394	401	415	435	437	472	499	458	449	456	460	462	478	510	**528**	500	500	*508*	*469*	480	408	386	373	**371**	452	543	5 55 a	336	11 57 p	207	0
12	**346**	377	401	421	432	434	451	466	457	446	442	442	442	455	502	542	566	*599*	*552*	492	383	381	396	385	450	652	5 15 p	321	9 17 p	331	0
13	383	406	427	427	440	482	**495**	460	445	439	437	446	445	458	478	476	440	440	*441*	420	418	385	**367**	378	435	535	5 47 a	356	10 49 p	179	0
14	394	402	427	431	428	434	434	434	434	434	445	457	474	502	519	**612**	548	506	*511*	496	387	**245**	406	410	449	634	3 26 p	147	9 51 p	487	2
15	404	413	421	452	472	450	451	456	476	480	471	**481**	450	428	411	402	419	*399*	*451*	372	474	**315**	436	436	434	527	8 40 p	226	9 34 p	301	0
16	412	412	421	425	434	434	432	439	439	439	439	439	441	430	434	442	440	**508**	*464*	466	420	409	409	**387**	434	546	5 12 p	363	9 9 p	183	0
17	**392**	421	426	430	432	433	434	441	435	437	437	436	441	450	**459**	454	**459**	441	*420*	433	416	413	393	397	430	**475**	5 2 p	371	10 45 p	104	1
18	**397**	414	421	427	432	434	433	437	437	436	437	437	433	453	456	465	462	**466**	*446*	435	418	418	401	403	433	482	4 48 p	**395**	10 14 p	**87**	2
19	395	415	415	419	421	437	463	461	438	435	437	450	450	465	443	447	441	*494*	*462*	395	414	**394**	419	414	434	548	5 42 p	346	8 5 p	202	0
20	414	399	404	416	415	418	426	**478**	458	449	442	437	439	463	444	464	441	475	*475*	418	**387**	426	411	418	434	540	7 35 a	327	8 40 p	213	0
21	382	393	404	415	429	440	433	433	431	437	457	479	484	**495**	484	480	483	425	*370*	431	390	387	389	379	430	547	4 27 p	348	6 19 p	199	0
22	401	410	412	423	432	430	**461**	444	439	434	437	429	426	435	435	443	416	**461**	*450*	417	422	387	360	**358**	423	556	6 42 a	323	10 21 p	233	0
23	**368**	386	406	416	415	426	430	430	432	431	433	433	434	452	468	**479**	**479**	455	*464*	452	421	387	401	401	429	503	4 12 p	355	0 10 a	148	0
24	409	413	416	419	425	425	425	426	426	427	419	425	436	441	462	442	464	**477**	*436*	413	404	393	**391**	**391**	425	508	5 3 p	380	10 2 p	128	1
25	393	395	411	415	418	418	424	437	436	436	436	438	445	464	465	440	463	**505**	*438*	403	376	**373**	376	**373**	424	542	5 6 p	338	8 25 p	204	0
26	402	404	403	394	431	434	435	440	436	438	443	**459**	427	418	419	425	341	*342*	*330*	406	443	436	427	389	413	509	7 45 p	*206*	6 6 p	303	0
27	393	392	415	411	411	423	421	427	435	425	437	440	438	494	526	**592**	562	416	*394*	**369**	375	454	398	373	434	684	4 5 p	323	7 11 p	361	0
28	392	394	410	411	413	413	417	425	437	437	435	419	438	438	**467**	447	419	383	*367*	384	357	346	338	**323**	405	522	2 30 p	281	11 21 p	241	0
29	365	374	388	398	407	407	417	433	469	472	479	500	500	530	**559**	544	480	*502*	*465*	409	347	321	310	**302**	432	592	2 27 p	265	9 6 p	327	0
30	**350**	363	387	409	429	431	429	429	431	423	442	456	476	535	535	**551**	455	408	*423*	409	355	353	375	386	427	557	2 8 p	288	8 33 p	269	0
Mean 1	386	400	412	425	435	447	452	462	455	456	459	467	467	486	492	**499**	477	466	438	421	391	**381**	387	384	439	592		308		284	
» 2	387	396	409	428	434	445	450	452	452	451	456	462	464	482	491	**498**	476	473	449	425	395	385	387	**381**	439						
» 3	388	397	411	425	435	443	449	451	452	453	456	461	468	480	490	**491**	481	468	449	424	400	388	385	**384**							

[1] Minus 200 γ according to page 158.

May 1905.
$Z = 0.60000 +$

Table CX. — Hourly Values of Vertical Intensity.[1]

γ

Gjøahavn.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	362	**349**	384	383	410	436	448	**550**	511	459	460	454	444	475	540	531	549	511	*463*	395	363	365	354	363	440	676	7 47 a	301	9 15 p	375	0
2	384	**358**	415	435	442	453	437	469	496	469	464	473	496	483	473	**498**	484	441	*396*	432	378	362	376	365	437	555	3 53 p	274	8 53 p	281	0
3	402	401	410	411	424	432	432	431	439	467	507	**518**	497	466	490	492	513	451	*422*	406	**342**	347	371	370	435	555	4 30 p	307	9 38 p	248	0
4	348	372	399	396	417	419	440	446	441	442	445	469	**492**	469	469	447	447	426	*413*	426	404	341	**340**	373	420	516	4 13 p	312	9 3 p	204	0
5	378	394	405	411	421	423	427	431	432	445	455	473	500	538	**545**	480	443	430	*409*	398	381	370	**335**	344	428	562	2 18 p	331	10 13 p	231	0
6	357	379	401	403	420	432	430	430	450	450	445	452	478	**498**	494	469	416	408	*397*	344	**310**	325	378	405	415	514	1 32 p	274	8 59 p	240	0
7	377	352	372	387	409	422	428	429	438	440	451	420	451	464	475	495	**517**	501	*474*	419	371	344	326	**315**	420	550	4 15 p	302	10 45 p	248	0
8	341	358	394	416	413	430	433	435	441	448	455	470	482	477	504	508	**510**	486	*466*	394	354	**246**	366	399	426	552	4 36 p	**107**	9 12 p	445	1
9	377	399	413	413	420	423	430	433	433	440	450	467	417	420	420	432	465	**516**	*439*	**295**	356	339	296	318	409	562	5 21 p	246	9 58 p	316	0
10	**329**	351	392	415	417	440	438	423	428	436	440	428	447	469	449	469	460	*493*	*443*	362	399	428	439	394	425	540	5 14 p	314	0 9 a	226	0
11	392	405	402	414	421	426	436	436	440	441	465	442	455	486	470	453	488	**508**	*446*	460	447	419	392	**379**	438	523	5 13 p	**372**	10 16 p	151	0
12	**372**	**372**	392	404	415	419	439	441	432	428	431	436	441	442	470	443	**482**	397	*442*	464	439	421	402	375	425	548	7 2 p	351	6 0 p	197	0
13	407	414	422	414	420	420	422	422	425	429	421	401	423	423	421	443	468	**477**	*429*	444	422	355	**344**	**344**	417	568	5 48 p	269	10 0 p	299	0
14	367	384	402	419	421	420	423	420	420	418	434	423	443	443	467	482	496	**500**	*460*	392	370	340	**327**	350	418	531	5 14 p	285	9 36 p	246	0
15	**352**	370	396	412	416	432	429	431	428	428	419	416	429	429	449	451	454	429	*484*	464	449	393	405	398	423	497	7 22 p	348	0 23 a	149	0
16	398	403	416	427	420	429	432	435	428	428	430	435	437	456	**478**	453	434	*447*	*445*	427	420	414	**385**	404	428	498	2 47 p	365	11 15 p	**133**	1
17	384	386	394	405	417	426	428	441	428	425	430	434	474	472	523	**598**	558	408	*492*	520	390	384	379	**343**	439	615	4 0 p	247	10 0 p	368	0
18	379	395	404	404	407	408	416	420	422	434	410	437	**460**	445	448	430	404	384	*376*	332	346	351	**321**	353	**399**	**476**	7 27 p	157	7 54 p	319	0
19	353	374	393	398	400	422	422	420	415	423	422	431	426	466	504	531	**573**	480	*393*	**298**	304	333	344	353	412	602	4 31 p	267	8 20 p	335	0
20	376	398	400	400	402	485	463	442	449	440	432	445	493	**575**	520	462	420	498	*495*	459	381	308	299	**288**	430	598	1 26 p	255	9 39 p	343	0
21	312	**305**	352	392	402	413	413	420	435	426	426	428	440	487	480	460	505	**513**	*483*	462	414	390	370	385	421	538	4 44 p	283	1 13 a	255	0
22	390	392	392	402	410	412	412	425	429	433	433	438	435	432	440	462	**471**	435	*449*	420	392	355	326	**293**	412	502	4 13 p	251	11 12 p	251	0
23	343	372	396	397	404	413	412	412	409	416	407	403	407	429	458	**463**	461	461	*430*	396	431	368	**279**	**279**	402	506	5 32 p	263	10 54 p	243	0
24	323	343	364	391	400	411	420	413	414	429	431	435	427	404	415	454	482	487	*500*	453	385	**258**	261	294	400	529	5 52 p	227	9 52 p	302	0
25	**270**	305	347	387	412	418	429	438	430	439	440	465	466	464	**516**	464	420	461	*444*	395	349	369	389	377	412	551	3 0 p	256	0 4 a	295	0
26	404	397	407	409	409	413	414	414	421	416	412	430	435	455	441	549	**616**	551	*482*	415	**367**	422	384	407	436	645	4 45 p	322	8 19 p	323	0
27	407	402	372	366	383	392	423	452	459	463	452	443	494	546	621	628	**652**	466	*415*	395	379	**290**	387	396	**445**	**723**	4 29 p	219	6 11 p	504	2
28	398	389	398	414	469	506	437	453	456	467	453	473	518	480	476	**536**	519	441	*398*	360	**292**	*359*	*330*	*378*	433	652	5 0 a	136	8 52 p	**516**	2
29	368	356	366	401	414	458	458	454	455	458	525	556	551	544	566	**585**	489	508	*442*	355	318	**290**	311	337	440	636	3 8 p	262	8 53 p	374	0
30	357	382	371	406	435	426	437	431	437	513	515	472	494	485	481	481	494	**525**	*477*	379	360	324	345	**305**	431	615	9 41 a	223	7 54 p	392	0
31	**321**	325	421	405	390	421	424	426	426	424	464	493	504	491	**517**	513	493	431	*380*	392	371	333	347	401	421	542	4 40 p	303	1 5 a	239	0
Mean 1	365	374	393	404	415	428	430	436	438	441	446	450	463	471	485	489	**490**	467	441	405	377	353	**352**	358	424	564		272		292	
» 2	362	371	393	404	414	427	430	435	436	440	446	450	460	469	479	483	**484**	468	443	407	379	357	**350**	352	422						
» 3	362	374	390	404	415	424	431	434	437	441	445	452	460	469	477	**482**	480	466	440	409	380	361	**352**	354							

[1] Minus 200 γ according to page 158.

ABSOLUTE OBSERVATIONS AT KING POINT

Table CXXXI (p. 171). **Declination.** **King Point.**

Year	Date	Gr. M. T.	D'_E	ϱ	D_E	I	Obs.	Year	Date	Gr. M. T.	D'_E	ϱ	D_E	I	Obs.
		h. m.	° ′	′	° ′					h. m.	° ′	′	° ′		
1905	Oct. 20	6 56 p	42 51.8	0.0	42 51.8	S	W	1905	Nov. 22	8 33 »	42 59.5	33.3	42 26.2	S	W
»	» 20	7 31 »	» 56.1	18.3	» 37.8	»	»	»	» 23	6 46 »	43 42.3	34.4	43 8.9	»	»
»	» 21	6 53 »	43 3.4	18.4	» 45.0	»	»	»	» 23	8 40 »	42 56.1	33.6	42 22.5	»	»
»	» 23	7 29 »	42 48.5	23.2	» 25.3	»	»	»	» 24	8 4 »	» 58.9	33.2	» 25.7	»	»
»	» 24	6 34 »	» 49.6	23.1	» 26.3	»	»	»	» 25	6 40 »	» 58.9	33.3	» 25.6	»	»
»	» 25	6 28 »	» 58.0	23.7	» 34.3	»	»	»	» 25	8 10 »	56.8	33.3	» 23.5	»	»
»	» 28	7 6 »	» 57.2	23.1	» 34.1	»	»	»	» 28	7 41 »	43 4.1	33.3	» 30.8	»	»
»	» 30	6 29 »	» 55.4	23.2	» 32.2	»	»	»	» 28	8 2 »	42 56.9	33.3	» 23.6	»	»
»	» 30	8 6 »	» 49.8	23.2	» 26.6	»	»	»	» 29	6 44 »	43 10.0	33.4	» 36.6	»	»
»	» 31	6 31 »	» 51.4	23.2	» 28.2	»	»	»	» 29	8 11 »	» 4.0	33.4	» 30.6	»	»
»	» 31	8 5 »	» 51.4	23.2	» 28.2	»	»	»	Dec. 1	8 10 »	43 0.9	33.3	42 27.6	»	»
»	Nov. 1	6 26 »	» 51.4	23.2	» 28.2	»	»	»	» 4	7 9 »	» 56.3	34.2	43 22.1	»	»
»	» 1	8 2 »	» 55.2	23.2	» 32.0	»	»	»	» 5	6 42 »	42 56.3	30.1	42 26.2	»	»
»	» 2	6 31 »	» 50.5	23.2	» 27.2	»	»	»	» 6	6 40 »	» 58.3	30.1	» 28.2	»	»
»	» 2	8 1 »	» 52.2	23.1	» 29.1	»	»	»	» 6	8 18 »	» 57.2	30.2	» 27.0	»	»
»	» 4	7 6 »	43 40.4	22.9	43 17.5	»	»	»	» 7	9 27 »	» 51.4	30.1	» 21.3	»	»
»	» 6	6 49 »	» 18.4	23.4	42 55.0	»	»	»	» 8	8 22 »	» 53.2	30.1	» 23.1	»	»
»	» 6	7 36 »	42 46.3	23.2	» 23.1	»	»	»	» 9	6 40 »	» 57.8	30.1	» 27.7	»	»
»	» 7	6 41 »	» 54.0	23.2	» 30.8	»	»	»	» 9	8 17 »	» 57.5	30.2	» 27.3	»	»
»	» 7	8 16 »	» 42.6	23.7	» 18.9	»	»	»	» 11	6 36 »	» 59.7	36.6	» 23.1	»	»
»	» 8	6 42 »	» 50.3	23.2	» 27.1	»	»	»	» 11	8 14 »	» 53.4	36.6	» 26.8	»	»
»	» 8	8 14 »	» 52.7	23.2	» 29.5	»	»	»	» 12	6 27 »	» 58.2	36.5	» 21.7	»	»
»	» 9	6 33 »	43 4.4	23.4	» 41.0	»	»	»	» 12	8 2 »	43 0.5	36.6	» 23.9	»	»
»	» 9	8 9 »	42 50.2	23.3	» 26.9	»	»	»	» 13	6 29 »	» 21.2	37.1	» 44.1	»	»
»	» 10	8 13 »	» 44.0	23.1	» 20.9	»	»	»	» 13	8 11 »	» 1.8	37.0	» 24.8	»	»
»	» 11	6 34 »	» 54.7	23.2	» 31.5	»	»	»	» 14	6 39 »	» 4.0	36.5	» 27.5	»	»
»	» 11	8 7 »	» 51.3	23.2	» 28.1	»	»	»	» 14	7 0 »	» 0.0	36.6	» 23.4	»	»
»	» 13	6 45 »	43 0.6	33.3	» 27.3	»	»	»	» 18	6 40 »	» 30.0	37.1	» 52.9	»	»
»	» 13	7 37 »	» 12.0	33.3	» 38.7	»	»	»	» 18	8 13 »	42 58.8	36.6	» 22.2	»	»
»	» 13	8 2 »	42 59.4	33.3	» 26.1	»	»	»	» 19	6 30 »	43 19.7	36.8	» 42.9	»	»
»	» 14	6 36 »	43 2.5	33.3	» 29.2	»	»	»	» 19	8 6 »	42 57.9	36.9	» 21.0	»	»
»	» 14	8 10 »	» 7.1	33.4	» 33.7	»	»	»	» 20	6 31 »	43 30.5	37.4	» 53.1	»	»
»	» 17	6 46 »	» 35.9	33.2	43 1.7	»	»	»	» 20	8 2 »	» 1.9	36.7	» 25.2	»	»
»	» 18	8 26 »	» 4.0	33.4	42 30.6	»	»	»	» 21	6 37 »	42 59.1	36.5	» 22.6	»	»
»	» 20	6 47 »	» 16.5	33.6	» 42.9	»	»	»	» 21	8 6 »	43 1.0	36.6	» 24.4	»	»
»	» 20	8 20 »	» 2.3	33.3	» 29.0	»	»	»	» 22	6 46 »	42 59.7	36.6	» 23.1	»	»
»	» 21	6 46 »	» 16.7	33.8	» 42.9	»	»	»	» 22	7 8 »	43 0.4	36.6	» 23.8	»	»
»	» 21	8 22 »	42 54.9	33.5	» 21.4	»	»	1906	Jan. 5	7 11 »	42 57.1	32.5	» 24.6	»	»
»	» 22	6 58 »	» 55.0	33.3	» 21.7	»	»	»	» 5	7 34 »	» 57.6	32.5	» 25.1	»	»

ABSOLUTE OBSERVATIONS AT KING POINT

Table CXXXI (continued). **Declination.** **King Point.**

Year	Date	Gr. M. T.	D'_E	ϱ	D_E	I	Obs.
		h. m.	° ′	′	° ′		
1906	Jan. 6	7 22 »	42 56.3	32.5	42 23.8	S	W
»	» 9	6 42 »	» 57.2	32.5	» 24.7	»	»
»	» 10	6 47 »	» 56.5	32.5	» 24.0	»	»
»	» 11	6 40 »	» 59.9	32.5	» 27.4	»	»
»	» 11	9 33 »	» 54.4	32.5	» 21.9	»	»
»	» 17	11 54 »	» 48.5	32.5	» 26.0	»	»
»	» 18	0 16 a	» 49.0	32.5	» 17.5	»	»
»	» 19	6 38 p	43 4.4	32.7	» 31.7	»	»
»	» 19	8 15 »	42 59.0	32.6	» 26.4	»	»
»	» 20	6 46 »	» 56.4	32.5	» 23.9	»	»
»	» 20	11 48 »	» 51.1	32.5	» 18.6	»	»
»	» 21	0 7 a	» 52.5	32.5	» 20.0	»	»
»	» 24	7 17 p	» 58.2	32.4	» 25.8	»	»
»	» 24	7 43 »	» 55.8	32.4	» 23.4	»	»
»	» 25	6 38 »	» 57.2	32.5	» 24.7	»	»
»	» 25	9 34 »	» 53.8	32 5	» 21.3	»	»
»	» 26	6 57 »	43 7.1	32.5	» 34.6	»	»
»	» 26	7 22 »	42 58.1	32.5	» 25.6	»	»
»	» 27	6 35 »	» 59.6	32.5	» 27.1	»	»
»	» 28	8 18 »	» 56.5	32.5	» 24.0	»	»
»	» 29	6 38 »	» 56.6	32.5	» 24.1	»	»
»	» 30	6 40 »	» 57.4	32.5	» 24.9	»	»
»	» 31	6 39 »	43 29.6	34.0	» 55.6	»	»
»	» 31	7 30 »	» 2.0	32.6	» 29.4	»	»
»	Feb. 1	6 34 »	14.0	32.7	» 41.3		»
»	» 2	9 47 »	42 49.6	32.5	» 17.1	»	»
»	» 3	6 35 »	43 24.0	33.1	» 50.9	»	»
»	» 3	11 33 »	42 52.7	32.4	» 20.3	»	»
»	» 5	7 33 »	43 4.0	32.4	» 31.6	»	»
»	» 6	6 43 »	» 9.4	42.5	» 26.9	»	»
»	» 7	6 37 »	» 5.5	42.6	» 22.9	»	»
»	» 7	11 43 »	» 7.0	42.6	» 24.4	»	»
»	» 8	6 39 »	» 24.1	42.7	» 31.4	»	»
»	» 8	11 46 »	» 7.0	42.4	» 24.6	»	»
»	» 9	9 39 »	» 3.1	42.6	» 20.5	»	»
»	» 9	9 56 »	42 57.2	42.6	» 14.6	»	»
»	» 10	6 47 »	43 24.8	43.0	» 41.6	»	»
»	» 11	8 4 »	» 10.9	42.5	» 28.6	»	»
»	» 12	6 50 »	» 16.0	42.5	» 33.5	»	»
»	» 14	6 39 »	» 10.1	42.5	» 27.6	»	»
»	» 14	9 43 »	» 6.5	42.6	» 23.9	»	»
»	» 15	6 48 »	42 59.0	44.2	» 14.8	»	»

Year	Date	Gr. M. T.	D'_E	ϱ	D_E	I	Obs.
		h. m.	° ′	°	° ′		
1906	Feb. 15	8 17 »	43 17.6	43.4	42 34.2	S	W
»	» 16	7 14 »	42 56.2	43.4	» 12.8	»	»
»	» 17	6 44 »	43 8.3	42.6	» 25.7	»	»
»	» 19	0 19 a	42 52.3	42.2	» 10.1	»	»
»	» 20	6 42 p	43 6.6	42.6	» 24.0	»	»
»	» 20	8 9 »	» 8.5	42.6	» 25.9	»	»
»	» 21	6 46 »	» 11.2	42.7	» 28.5	»	»
»	» 21	9 40 »	» 9.8	42.7	» 27.1	»	»
»	» 22	11 56 »	» 4.9	42.7	» 22.2	»	»
»	» 25	0 13 a	» 6.0	42.4	» 23.6	»	»
»	» 27	6 45 p	» 13.2	42.7	» 30.5	»	»
»	» 28	0 5 a	42 46.7	41.9	» 4.8	»	»
»	» 28	0 25 »	» 49.1	42.5	» 6.5	»	»
»	» 28	7 4 p	» 54.3	43.4	» 10.9	»	»
»	» 28	11 52 »	» 59.1	42.3	» 16.8	»	»
»	March 2	6 35 »	43 10.1	42.6	» 28.4	»	»
»	» 3	6 29 »	» 14.9	42.7	» 32.2	»	»
»	» 3	7 59 »	» 16.2	42.7	» 33.5	»	»
»	» 5	6 39 »	» 8.7	42.6	» 26.1	»	»
»	» 6	6 36 »	» 14.6	42.6	» 32.0	»	»
»	» 7	6 47 »	» 26.3	43.0	» 43.3	»	»
»	» 8	11 56 »	42 53.7	42.6	» 11.1	»	»
»	» 10	6 48 »	43 9.2	42.6	» 26.6	»	»
»	» 10	9 32 »	» 4.1	42.7	» 21.4	»	»
»	» 11	8 27 »	» 12.8	42.6	» 30.2	»	»
»	» 11	8 43 »	» 13.4	42.6	» 30.8	»	»
»	» 12	6 36 »	» 16.3	42.5	» 33.8	»	»
»	» 12	7 53 »	» 14.8	42.6	» 32.2	»	»
»	» 14	6 46 »	» 47.0	43.4	43 3.4	»	»
»	» 14	7 59 »	» 35.3	43.1	42 42.2	»	»
»	» 15	6 40 »	» 13.1	42.6	» 30.5	»	»
»	» 15	7 55 »	» 13.3	42.7	» 30.6	»	»
»	» 16	7 38 »	» 17.9	42.8	» 35.1	»	»
»	» 16	7 55 »	» 12.5	42.8	» 29.7	»	»
»	» 19	6 44 »	» 14.4	42.7	» 31.7	»	»
»	» 19	8 4 »	» 10.3	42.7	» 27.6	»	»
»	» 21	6 41 »	» 12.1	42.6	» 29.5	»	»
»	» 21	9 43 »	» 3.5	42.6	» 20.9	»	»
»	» 22	6 33 »	» 26.6	42.7	» 43.9	»	»
»	» 22	7 52 »	» 14.0	42.6	» 31.4	»	»
»	» 23	6 41 »	» 17.0	42.6	» 34.4	»	»
»	» 23	7 2 »	» 18.0	42.6	» 35.4	»	»

Table CXXXV. 1. (p. 173). **Horizontal Intensity. (Deflection).** **King Point.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1905	Oct. 21	7 47 p	0.08370 391	S	I	W	1906	Febr. 6	7 37 »	0.08432 480	S	I	W
»	» 24	7 27 »	0.08472 469	»	II	»	»	» 7	7 28 »	0.08490 508	»	II	»
»	» 25	7 20 »	0.08201 269	»	II	»	»	» 8	7 32 »	0.08423 466	»	I	»
»	» 30	7 20 »	0.08451 457	»	I	»	»	» 14	7 20 »	0.08480 483	»	II	»
»	» 31	7 20 »	0.08457 457	»	II	»	»	» 15	12 5 »	0.08370 509	»	I	»
»	Nov. 1	7 16 »	0.08447 453	»	II	»	»	» 17	7 31 »	0.08459 465	»	II	»
»	» 2	7 15 »	0.08464 460	»	II	»	»	» 20	7 26 »	0.08474 476	»	II	»
»	» 7	7 28 »	0.08415 436	»	I	»	»	» 21	7 30 »	0.08439 456	»	I	»
»	» 8	7 28 »	0.08437 439	»	I	»	»	» 27	7 36 »	0.08495 435	»	I	»
»	» 9	7 24 »	0.08435 457	»	II	»	»	March 2	7 20 »	0.08454 451	»	II	»
»	» 11	7 21 »	0.08455 461	»	I	»	»	» 3	7 14 »	0.08456 457	»	I	»
»	» 14	7 27 »	0.08430 435	»	II	»	»	» 5	7 23 »	0.08452 458	»	II	»
»	» 20	7 37 »	0.08398 443	»	II	»	»	» 6	7 18 »	0.08442 465	»	I	»
»	» 22	7 45 »	0.08429 459	»	II	»	»	» 8	7 8 »	0.08394 453	»	II	»
»	» 25	7 29 »	0.08455 466	»	I	»	»	» 10	7 32 »	0.08487 471	»	I	»
»	» 29	7 29 »	0.08480 443	»	I	»	»	» 12	7 16 »	0.08461 465	»	II	»
»	Dec. 5	7 51 »	0.08460 456	»	II	»	»	» 15	7 18 »	0.08451 462	»	I	»
»	» 6	7 32 »	0.08444 434	»	I	»	»	» 19	7 22 »	0.08459 455	»	II	»
»	» 9	7 30 »	0.08449 447	»	I	»	»	» 21	7 18 »	0.08464 463	»	I	»
»	» 11	7 32 »	0.08468 484	»	II	»	»	» 22	7 12 »	0.08420 445	»	II	»
»	» 12	7 18 »	0.08462 462	»	I	»	»	May 5	7 54 p	0.08497 493	Z	4	A
»	» 13	7 25 »	0.08328 332	»	II	»	»	» 11	0 53 a	0.08462 468	»	»	»
»	» 18	7 31 »	0.08444 484	»	I	»	»	» 12	0 56 »	0.08446 454	»	»	»
»	» 19	7 23 »	0.08387 379	»	II	»	»	» 13	0 59 »	0.08377 402	»	5	»
»	» 20	7 19 »	0.08384 544	»	I	»	»	» 13	8 5 p	0.08392 396	»	»	»
»	» 21	7 24 »	0.08464 467	»	II	»	»	» 14	7 5 »	0.08363 357	»	»	»
1906	Jan. 9	7 36 »	0.08464 464	»	I	»	»	» 15	1 2 a	0.08551 563	»	8	»
»	» 10	7 36 »	0.08472 474	»	II	»	»	» 15	2 2 »	0.08613 508	»	»	»
»	Jan. 11	7 35 p	0.08454 450	»	I	»	»	» 16	0 2 »	0.08449 478	»	»	»
»	» 19	7 30 »	0.08437 429	»	II	»	»	» 16	1 26 »	0.08408 452	»	9	»
»	» 20	7 38 »	0.08444 445	»	I	»	»	» 16	6 38 p	0.08456 454	»	6	»
»	» 25	7 33 »	0.08452 451	»	I	»	»	» 16	7 39 »	0.08424 474	»	»	»
»	» 27	7 28 »	0.08490 489	»	II	»	»	» 17	7 51 »	0.08400 407	»	»	»
»	» 29	7 21 »	0.08454 453	»	I	»	»	» 19	0 39 a	0.08313 301	»	7	»
»	Feb. 1	7 23 »	0.08355 305	»	II	»	»	» 19	6 57 p	0.08274 306	»	»	»
»	» 3	7 28 »	0.08271 489	»	I	»	»	» 20	0 30 a	0.08450 536	»	»	»

Table CXXXV 2. (p. 173). **Horizontal Intensity. (Deflection).** **King Point.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.	Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.						h. m.	C. G. S.			
1906	May 21	7 14 p	0.08377	»	2	»	1906	June 16	1 26 a	0.08457	S	II	A
			385							484			
»	» 22	0 38 a	0.08484	»	»	»	»	» 16	8 10 p	0.08471	»	»	»
			437							472			
»	» 22	6 42 p	0.08423	»	»	»	»	» 25	7 25 »	0.08395	»	I	»
			438							510			
»	» 23	1 13 a	0.08512	»	»	»	»	» 26	0 32 a	0.08445	Z	2	»
			501							457			
»	» 23	5 28 p	0.08400	Z	3	A	»	» 26	7 7 p	0.08442	»	3	»
			399							431			
»	» 24	0 45 a	0.08418	»	»	»	»	» 27	0 22 a	0.08426	»	2	»
			457							440			
»	» 24	7 35 p	0.08397	»	»	»	»	» 27	6 51 p	0.08502	»	4	»
			421							496			
»	» 25	6 46 »	0.08432	S	I	»	»	» 28	0 37 a	0.08381	»	5	»
			416							379			
»	» 26	0 45 a	0.08472	»	»	»	»	» 28	6 57 p	0.08479	»	6	»
			465							450			
»	June 12	1 0 »	0.08465	»	II	»	»	» 29	0 45 a	0.08374	»	7	»
			466							365			
»	» 12	7 35 p	0.08466	»	I	»	»	» 29	6 55 p	0.08407	S	I	»
			448							440			
»	» 13	7 48 »	0.08478	»	II	»	»	» 30	0 56 a	0.08425	»	II	»
			459							407			

Table CXXXVI 1. — **Oscillation.**

Year	Date	Gr. M. T.	*H*	I	M.	Obs.
		h. m.	C. G. S.			
1905	Oct. 25	12 2 p	0.08528	S	II	W
		12 22 »	507			
»	» 31	11 18 »	0.08465	»	»	»
		11 35 »	458			
		11 52 »	459			
»	Nov. 1	11 43 »	0.08468	»	»	»
		12 0 »	466			
		12 22 »	466			
»	» 2	11 22 »	0.08462	»	»	»
		11 42 »	459			
		12 2 »	448			
»	» 7	11 46 »	0.08491	»	I	»
		12 7 »	499			
		12 29 »	502			
»	» 8	9 29 »	0.08426	»	»	»
		11 41 »	473			
		12 2 »	480			
		12 23 »	478			
»	» 9	11 28 »	0.08461	»	II	»
		11 46 »	471			
»	» 17	7 24 »	0.08367	»	I	»
»	» 21	7 43 »	0.08381	»	»	»
		9 46 »	400			
		11 32 »	537			
»	» 22	11 48 »	0.08490	»	II	»
		12 6 »	472			
		12 25 »	487			
»	» 23	7 59 »	0.08292	»	I	»
		8 20 »	343			
		9 35 »	479			
»	» 28	11 29 »	0.08486	»	II	»
		11 46 »	543			
»	» 29	9 40 »	0.08471	»	I	»
		11 37 »	512			
		12 2 »	489			
»	Dec. 12	11 25 »	0.08463	»	II	»
		11 41 »	454			
		11 59 »	462			

Year	Date	Gr. M. T.	*H*	I	M.	Obs.
		h. m.	C. G. S.			
1905	Dec. 6	11 27 p	0.08473	S	I	W
		11 50 »	476			
		12 12 »	488			
»	» 7	11 23 »	0.08465	»	II	»
		11 40 »	465			
»	» 12	11 32 »	0.08572	»	I	»
		11 54 »	521			
»	» 12	11 30 »	0.08474	»	II	»
		11 47 »	467			
		12 4 »	465			
»	» 14	9 26 »	0.08421	»	II	»
		9 44 »	403			
		11 34 »	489			
		11 51 »	522			
»	» 18	11 34 »	0.08474	»	I	»
		11 54 »	474			
»	» 20	11 26 »	0.08504	»	I	»
		11 46 »	510			
»	» 21	11 31 »	0.08460	»	II	»
		11 59 »	455			
1906	Jan. 10	11 35 »	0.08477	»	II	»
		11 54 »	466			
»	» 11	11 48 »	0.08457	»	I	»
		12 10 »	475			
»	» 24	11 41 »	0.08461	»	II	»
		11 52 »	471			
»	» 25	11 39 »	0.08493	»	I	»
		12 1 »	492			
»	Feb. 14	11 53 »	0.08459	»	II	»
		12 13 »	461			
»	Mar. 21	8 1 »	0.08498	»	I	»
		12 20 »	464			
		12 47 »	502			
»	» 22	11 39 »	0.08513	»	II	»
		12 5 »	532			

Table CXXXVI 2. (p. 173). **Horizontal Intersity. (Oscillation).** **King Point.**

Year	Date	Gr. M. T.	*H*	I	M	Obs.
		h. m.	C. G. S.			
1906	May 6	0 52 a	0.08474	S	4	A
»	» 6	1 8 »	488	»	»	»
»	» 6	1 31 »	489	»	»	»
»	» 11	1 46 »	0.08493	»	4	»
»	» 11	2 3 »	515	»	»	»
»	» 12	1 43 »	0.08452	»	4	»
»	» 12	2 1 »	436	»	»	»
»	» 13	1 44 »	0.08439	»	5	»
»	» 13	2 1 »	457	»	»	»
»	» 13	9 10 p	0.08419	»	5	»
»	» 13	9 25 »	426	»	»	»
»	» 14	7 51 »	0.08498	»	5	»
»	» 14	8 54 »	477	»	»	»
»	» 16	8 6 »	0.08466	»	6	»
»	» 16	8 21 »	475	»	»	»
»	» 17	1 37 a	0.08372	»	6	»
»	» 17	1 58 »	424	»	»	»
»	» 17	8 47 p	0.08477	»	6	»
»	» 18	2 1 a	0.08508	»	6	»
»	» 18	2 12 »	497	»	»	»
»	» 19	1 36 »	0.08282	»	7	»
»	» 19	2 1 »	286	»	»	»
»	» 19	2 13 »	322	»	»	»
»	» 19	7 45 p	0.08457	»	7	»
»	» 19	7 54 »	482	»	»	»
»	» 19	8 10 »	467	»	»	»
»	» 20	1 19 a	0.08547	»	7	»
»	» 20	1 30 »	545	»	»	»
»	» 20	1 42 »	481	»	»	»
»	» 21	8 24 p	0.08402	»	2	»
»	» 21	8 40 »	400	»	»	»
»	» 21	8 45 »	432	»	»	»
»	» 22	1 23 a	0.08405	»	2	»
»	» 22	1 38 »	444	»	»	»
»	» 22	1 53 »	431	»	»	»
»	» 22	7 28 p	0.08395	»	2	»
»	» 22	7 42 »	388	»	»	»
»	» 22	7 57 »	370	»	»	»
»	» 23	1 59 a	0.08397	»	2	»
»	» 23	2 28 »	416	»	»	»
»	» 23	7 33 p	0.08454	»	3	»
»	» 23	7 49 »	457	»	»	»
»	» 23	8 16 »	443	»	»	»
»	» 24	1 31 a	0.08505	»	3	»
»	» 24	1 46 »	495	»	»	»
»	» 24	2 6 »	475	»	»	»
»	» 24	8 36 p	0.08414	»	3	»
»	» 24	8 53 »	427	»	»	»
»	» 24	9 16 »	431	»	»	»
1906	May 25	7 39 p	0.08473	S	I	A
»	» 25	7 58 »	492	»	»	»
»	» 25	8 18 »	484	»	»	»
»	» 26	1 33 a	0.08421	»	I	»
»	» 26	1 54 »	453	»	»	»
»	» 26	2 14 »	464	»	»	»
»	June 12	1 46 »	0.08509	»	II	»
»	» 12	2 2 »	529	»	»	»
»	» 12	2 18 »	518	»	»	»
»	» 12	8 22 p	0.08452	»	I	»
»	» 12	8 42 »	457	»	»	»
»	» 12	9 2 »	446	»	»	»
»	» 13	8 37 »	0.08440	»	II	»
»	» 13	8 53 »	455	»	»	»
»	» 13	9 9 »	453	»	»	»
»	» 16	2 2 a	0.08455	»	II	»
»	» 16	2 30 »	486	»	»	»
»	» 16	2 46 »	458	»	»	»
»	» 16	8 55 p	0.08457	»	I	»
»	» 16	9 11 »	454	»	»	»
»	» 16	9 27 »	499	»	»	»
»	» 25	8 15 »	0.08453	»	I	»
»	» 25	8 36 »	431	»	»	»
»	» 26	1 58 a	0.08400	»	2	»
»	» 26	2 16 »	385	»	»	»
»	» 26	7 52 p	0.08509	»	3	»
»	» 26	8 8 »	405	»	»	»
»	» 26	9 24 »	400	»	»	»
»	» 27	1 26 a	0.08474	»	2	»
»	» 27	1 42 »	476	»	»	»
»	» 27	1 59 »	473	»	»	»
»	» 27	7 39 p	0.08449	»	4	»
»	» 27	7 59 »	445	»	»	»
»	» 27	8 15 »	439	»	»	»
»	» 28	1 25 a	0.08348	»	5	»
»	» 28	1 45 »	371	»	»	»
»	» 28	2 0 »	348	»	»	»
»	» 28	7 43 p	0.08406	»	6	»
»	» 28	8 2 »	429	»	»	»
»	» 28	8 15 »	434	»	»	»
»	» 29	2 3 »	0.08475	»	7	»
»	» 29	2 15 »	469	»	»	»
»	» 29	2 26 »	474	»	»	»
»	» 29	7 46 »	0.08499	»	I	»
»	» 29	8 9 »	478	»	»	»
»	» 29	8 29 »	499	»	»	»
»	» 30	1 39 a	0.08426	»	II	»
»	» 30	1 56 »	436	»	»	»
»	» 30	2 13 »	457	»	»	»

Table CXXXVIII. — Inclination (p. 175).

Year	Date	Dover No. 154		Obs.
		I	II	
		° ′	° ′	
1905	Oct. 19	81 51.0	81 51.0	A
»	Nov. 3	51.4	49.8	»
»	» 10	49.4	48.9	»
»	» 18	51.7	51.2	»
»	» 24	54.5	50.5	»
»	Dec. 1	52.0	51.1	»
»	» 8	51.4	51.1	»
»	» 15	48.8	50.0	»
1906	Jan. 17	50.5	51.4	»
»	Feb. 2	50.8	50.5	»
»	» 9	49.0	49.8	»
»	» 20	50.2	50.4	»
»	March 3	49.7	49.2	»
»	» 14	51.6	49.5	»
»	» 16	(37.2)	(39.2)	»
Mean		81° 50′.8	81° 50′.3	

Table CXXXIX. — Inclination (p 175).

Year	Date	Fox Circle No. 21, Needle A			Obs.
		Free	Defl. N.	Defl. S.	
		° ′	° ′	° ′	
1906	June 13	81 57.8	81 43.1	81 (24.4)	A
»	» 15	(69.8)	48.8	42.8	»
»	» 16	52.5	43.9	50.6	»
»	» 16	54.4	—	—	»
	Mean . .	81° 55′.0	81° 45′.3	81° 46′.7	

Table CXLI. — Total Intensity (p. 175).

Year	Date	Gr. M. T.	*F*	Defl.	M	Obs.
		h. m.	C. G. S.			
1906	June 13	1 50 p	0.59314	N+S	A	A
		2 2 »	274			
»	» 15	8 19 p	0.59553	»	»	»
		8 30 »	548			
»	» 16	3 24 p	0.59175	»	»	»
		3 34 »	366			

HOURLY VALUES OF RECORDS FROM THE REGISTER INSTRUMENTS AT KING POINT OCTOBER 18, 1905, TO MARCH 31, 1906

(pp. 179, 181, 186).

October 1905. **Table CXLIX. — Hourly Values of Declination, East.** **King Point.**

40° + Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
17																							2°20′	2°23′							
18	2°25′	2°21′	2°19′	2°19′	2°21′	2°24′	2°20′	2°20′	2° 7′	2°11′	2°16′	2°26′	2°16′	2°51′	2°37′	2°32′	2°34′	2°35′	2°34′	2°33′	2°32′	2°27′	26	25	2°25′	3°28′	1 5 p	1° 5′	0 18 p	2°23′	0
19	25	25	26	26	26	26	27	27	27	27	27	27	29	29	30	31	33	37	39	42	34	30	26	26	29	2 48	7 35 p	2 24	11 13 p	0 24	2
20	26	25	24	24	24	24	24	20	32	25	27	22	29	29	31	33	35	42	49	42	33	22	23	22	29	2 58	8 33 a	2 6	9 24 a	0 52	0
21	25	25	25	25	25	25	23	24	25	25	25	25	23	29	26	26	50	53	58	33	29	29	22	25	29	3 25	6 15 p	2 13	10 30 p	1 12	0
22	21	23	19	23	19	23	16	18	22	21	23	25	26	26	27	25	26	27	30	27	26	23	22	23	23	2 33	6 35 p	2 11	7 42 a	0 22	2
23	24	22	23	22	22	23	20	20	15	12	22	28	32	33	27	26	27	28	29	28	26	26	24	21	24	2 52	7 33 a	1 40	7 45 a	1 12	0
24	21	21	20	21	20	21	20	17	13	11	25	20	30	38	30	29	28	30	29	27	25	23	23	21	23	3 54	8 14 a	1 15	9 48 a	2 39	1
25	20	19	20	21	22	22	20	19	5	8	24	8	52	39	34	41	46	39	39	42	39	24	19	21	27	4 12	11 45 a	0 14	9 47 a	3 58	2
26	20	21	9	13	13	12	5	12	26	25	24	21	33	35	37	55	57	3 0	35	33	25	31	16	19	27	3 37	6 15 a	0 52	6 37 a	2 45	1
27	20	17	11	15	14	19	18	15	1 55	0	23	31	28	25	25	26	26	2 27	26	26	23	23	23	23	20	2 37	11 54 a	1 30	8 57 a	1 7	0
28	21	23	23	20	19	17	18	20	2 18	12	12	27	34	51	54	3 10	3 20	41	3 9	34	31	26	22	24	32	6 45	3 20 p	0 57	3 3 p	5 48	2
29	21	22	22	23	24	25	25	25	25	24	24	24	25	26	26	2 27	2 29	33	2 32	29	27	25	24	24	25	2 35	6 21 p	2 18	0 41 a	0 17	2
30	24	23	22	22	23	26	26	25	24	25	25	26	26	26	26	27	29	30	32	29	27	25	24	23	26	2 35	6 29 p	2 19	3 12 a	0 16	2
31	24	23	23	24	24	23	24	24	24	25	25	25	25	26	27	27	28	30	30	30	27	27	27	26	26	2 35	10 28 p	2 21	10 44 p	0 14	2
Mean 1	2°23′	2°22′	2°20′	2°21′	2°21′	2°22′	2°20′	2°20′	2°18′	2°18′	2°23′	2°24′	2°29′	2°33′	2°31′	2°34′	2°38′	2°37′	2°38′	2°33′	2°29′	2°26′	2°23′	2°23′	2°26′	3°21′		1°40′		1°41′	
» 2	24	22	20	21	21	23	21	20	15	15	23	26	26	33	29	29	34	37	39	32	29	25	24	23	25						
» 3	23	22	21	21	21	22	21	19	16	17	22	25	28	30	30	30	34	37	37	33	29	26	24	24							

November 1905.

Table CXLIX. — Hourly Values of Declination, East.

40° +

King Point.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	2°24′	2°24′	2°24′	2°23′	2°24′	2°24′	2°24′	2°24′	2°24′	2°24′	2°24′	2°26′	2°28′	2°28′	2°28′	2°28′	2°28′	2°29′	2°33′	2°33′	2°32′	2°29′	2°28′	2°25′	2°27′	2°36′	6 53 p	2°22′	11 4 p	0°14′	2
2	25	25	25	23	24	24	25	24	24	25	25	25	26	26	27	28	28	29	30	30	28	28	23	23	26	2 37	7 42 p	2 21	11 12 p	0 16	2
3	22	22	22	22	22	22	23	22	22	21	20	23	24	25	27	28	29	30	31	26	28	22	23	23	24	2 35	4 45 p	2 3	10 58 a	0 32	2
4	22	19	16	15	19	23	21	11	8	8	16	23	35	48	49	3 13	3 8	56	3 12	3 14	3 3	52	37	23	35	3 46	6 9 p	1 31	8 41 a	2 15	0
5	20	24	24	12	16	9	8	1 44	8	14	20	27	28	34	35	2 29	2 39	49	2 36	2 27	2 29	25	21	22	22	2 57	5 58 p	0 40	7 8 a	2 17	0
6	17	21	21	23	17	22	18	2 16	21	37	30	21	37	34	44	52	54	48	46	32	28	20	23	21	29	3 47	9 12 a	1 43	11 28 a	2 4	0
7	18	24	22	15	23	30	25	18	13	17	27	26	27	36	35	35	32	34	39	34	27	26	24	23	26	2 50	9 36 a	1 22	9 30 a	1 28	0
8	23	23	24	22	25	24	22	25	23	23	23	23	26	27	31	30	31	31	34	30	30	24	16	23	26	2 40	6 13 p	2 15	1 14 a	0 25	2
9	25	24	26	26	26	25	24	23	28	15	23	25	27	30	31	40	43	48	42	39	28	22	24	23	29	3 28	8 32 a	1 32	9 16 a	1 56	0
10	23	24	26	24	23	20	19	11	14	12	24	40	38	36	35	28	34	30	30	28	26	24	24	24	26	3 44	10 36 a	0 28	10 0 a	3 16	0
11	24	24	24	25	26	25	24	21	19	14	18	28	30	37	35	34	32	34	31	31	28	25	26	26	27	2 40	0 42 p	1 0	9 22 a	1 40	0
12	26	24	24	20	18	26	25	5	1 54	1 49	3 13	32	56	54	53	4 2	3 20	3 20	3 29	3 9	50	42	20	21	41	5 6	10 23 a	1 4	8 37 a	4 2	0
13	21	22	23	22	26	25	21	14	2 20	59	1 56	28	15	42	3 17	2 50	42	11	2 36	2 24	24	16	18	18	30	4 44	4 21 p	0 24	10 14 a	4 20	1
14	19	20	20	19	18	9	11	10	24	2 5	2 35	36	38	36	2 36	29	2 27	2 28	29	29	34	30	29	30	25	3 38	7 33 a	1 14	9 1 a	2 24	0
15	27	38	27	2	31	16	23	24	18	15	18	26	18	28	29	42	4 59	45	3 35	57	5 39	3 16	1 49	1 59	43	7 54	6 23 p	0 35	6 11 p	7 19	2
16	16	46	29	24	21	15	28	21	1 17	1 50	1 49	1 58	2	4 7	3 23	3 13	2 56	3 1	32	3 3	2 42	2 24	2 18	2 23	33	7 54	1 20 p	−2 8	1 6 p	10 2	2
17	23	18	17	20	21	15	22	24	2 1	2 40	−0 14	2 16	48	2 37	2 41	2 49	57	2 43	15	2 30	16	35	21	21	23	4 28	8 14 a	−2 16	10 31 a	6 44	2
18	17	19	26	22	25	23	14	1	1 56	12	2 1	1 47	23	31	29	30	33	33	2 27	25	24	20	24	20	19	4 21	7 18 a	0 32	7 53 a	3 49	0
19	22	19	19	23	22	22	22	22	2 21	20	17	2 13	33	43	39	38	37	36	33	25	27	25	21	22	26	3 4	1 43 p	1 1	11 19 a	2 3	0
20	21	23	23	23	22	22	23	23	24	33	17	24	29	28	28	27	29	40	37	30	26	25	26	23	26	4 23	9 2 a	1 44	11 9 a	2 39	0
21	22	23	24	21	21	26	23	11	22	24	12	14	47	49	50	49	57	3 11	48	35	21	20	20	19	30	4 14	8 42 a	1 13	11 54 a	3 1	0
22	23	21	24	24	21	21	16	12	2	1 56	13	40	35	28	33	31	28	2 30	27	30	29	24	24	22	23	3 59	11 2 a	0 42	8 46 a	3 17	0
23	22	25	25	22	24	21	16	16	27	2 42	27	25	50	52	3 1	3 12	3 22	59	3 15	45	25	21	22	23	37	5 1	5 8 p	1 42	8 26 a	3 19	0
24	23	21	24	23	23	22	17	26	21	21	9	1 34	46	41	2 41	1	17	55	2 45	25	24	25	23	22	29	3 49	10 51 a	−0 3	11 3 a	3 52	0
25	23	25	24	25	24	22	21	25	19	45	17	2 25	25	29	32	2 33	2 35	46	28	25	25	25	21	23	27	3 38	9 3 a	1 49	10 3 a	1 49	0
26	24	25	23	23	23	23	21	18	26	24	24	24	24	25	35	49	56	53	39	59	57	39	25	23	32	3 43	7 20 p	2 11	7 51 a	1 32	0
27	19	17	24	23	16	19	14	16	1 41	11	30	24	27	27	30	47	3 24	3 7	34	31	26	25	21	21	26	4 46	5 5 p	0 18	8 47 a	4 28	1
28	19	21	23	21	15	23	24	12	2 3	20	25	26	30	41	40	41	2 50	6	56	32	16	25	24	23	28	3 52	8 37 a	0 23	8 54 a	3 29	0
29	23	21	23	24	25	22	24	23	23	26	24	24	26	38	49	43	45	2 59	43	29	24	24	21	22	29	3 27	5 48 p	2 11	8 9 p	1 16	1
30	21	20	21	22	23	23	24	24	24	24	21	24	26	29	33	33	39	33	35	27	26	27	22	22	26	2 43	4 3 p	2 16	10 47 a	0 27	2
Mean 1	2°22′	2°23′	2°23′	2°21′	2°22′	2°21′	2°21′	2°17′	2°14′	2°18′	2°15′	2°22′	2°31′	2°38′	2°40′	2°44′	2°52′	2°46′	2°46′	2°36′	2°36′	2°28′	2°22′	2°22′	2°28′	3°57′		1° 4′		2°53′	
» 2	22	22	23	21	21	22	20	14	15	18	23	22	35	37	39	46	47	47	44	37	31	27	24	23	28						
» 3	22	22	22	22	21	21	19	16	16	18	22	26	32	37	40	44	47	46	43	37	32	27	25	23							

December 1905. **Table CXLIX. — Hourly Values of Declination, East.** King Point.

40° + Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	2°23′	2°23′	2°23′	2°22′	2°21′	2°24′	2°23′	2°24′	2°23′	2°24′	2°24′	2°15′	2°23′	2°25′	2°25′	2°25′	2°25′	2°27′	2°27′	2°27′	2°28′	2°24′	2°23′	2°22′	2°24′	2°41′	11 38 a	1°51′	11 47 a	0°50′	0
2	21	23	23	23	23	24	24	24	23	23	23	24	25	26	27	32	46	59	45	37	28	23	14	17	27	3 11	5 46 p	2 8	10 19 p	1 3	0
3	22	21	20	19	16	22	21	21	22	22	24	25	24	29	28	32	51	37	28	25	25	28	22	23	25	3 13	4 39 p	2 13	10 14 p	1 0	0
4	23	16	11	23	21	17	17	9	1 54	22	25	32	41	49	45	45	3 33	3 52	3 38	3 9	3 1	38	21	23	38	6 48	5 30 p	1 23	8 12 a	5 25	2
5	22	21	21	19	21	22	23	23	2 22	26	20	22	27	30	24	25	2 27	2 26	2 25	2 25	2 25	25	24	24	24	2 36	1 10 p	2 9	3 32 a	0 27	2
6	25	24	23	23	24	24	24	23	21	23	23	23	21	27	26	28	29	39	30	30	29	21	23	21	25	2 53	5 40 p	2 9	0 35 p	0 44	1
7	23	22	20	22	22	23	24	24	24	23	18	26	25	28	29	30	29	28	27	27	27	24	23	25	25	2 37	3 50 p	1 53	10 47 a	0 44	1
8	22	22	24	24	24	23	25	24	22	25	25	25	25	27	32	45	45	41	31	26	24	25	23	22	27	3 2	3 54 p	2 14	1 28 a	0 48	0
9	23	21	22	23	23	24	23	24	24	24	24	24	25	25	27	29	31	30	30	30	25	21	21	19	25	2 37	4 39 p	2 9	11 31 p	0 28	2
10	14	19	19	19	19	21	21	21	17	17	21	22	24	25	25	30	27	27	25	22	19	19	19	19	21	4 5	10 3 a	2 7	0 10 a	1 58	0
11	19	19	19	21	21	21	21	21	21	19	19	21	22	24	28	37	30	26	25	22	18	19	19	19	22	2 43	3 27 p	2 15	11 40 p	0 28	2
12	19	19	21	22	16	17	14	17	11	5	14	7	13	36	49	39	36	25	23	23	20	19	17	15	21	3 25	2 24 p	1 33	11 51 p	1 52	0
13	17	14	23	13	17	11	14	1 45	41	1 47	28	37	19	32	31	45	57	54	46	51	29	30	21	19	26	5 1	8 54 a	0 45	9 31 a	4 16	2
14	21	16	18	16	23	23	22	2 19	32	49	17	19	25	48	41	44	47	35	25	25	24	17	13	17	24	3 37	8 28 a	0 15	9 3 a	3 22	2
15	18	20	19	21	21	21	21	21	21	2 21	22	22	24	24	31	54	3 0	31	25	23	21	21	21	18	25	3 42	4 10 p	2 10	0 1 a	1 32	0
16	19	21	21	20	20	19	19	21	18	17	21	19	32	23	21	21	2 23	25	27	26	22	19	19	20	21	2 54	11 32 a	1 36	11 37 a	1 18	0
17	20	21	21	21	19	17	19	15	13	1 52	24	25	28	40	45	48	39	32	25	21	22	19	21	21	24	3 17	1 38 p	0 57	9 47 a	2 20	0
18	19	19	20	19	20	21	19	15	9	2 13	9	22	27	27	27	35	53	48	42	27	21	21	19	20	24	3 9	4 35 p	1 17	8 5 a	1 52	0
19	19	23	23	20	16	17	18	13	1 57	1 59	25	31	29	37	38	42	45	45	40	33	24	13	23	17	24	3 9	5 32 p	1 2	8 28 a	2 7	0
20	20	19	18	16	14	17	15	0	51	2 16	30	21	30	38	30	3 31	3 53	3 25	3 0	41	26	25	16	17	31	5 20	4 27 p	0 25	8 33 a	4 55	2
21	16	17	18	21	16	23	22	22	2 22	21	21	23	23	23	23	2 24	2 24	2 23	2 23	23	22	23	21	21	21	2 30	9 20 p	2 5	4 17 a	0 25	2
22	21	19	20	21	21	21	19	17	28	38	22	27	30	32	25	22	24	27	23	24	25	22	22	22	24	2 56	9 41 a	2 1	11 49 a	0 55	0
23	21	21	21	21	21	22	22	22	22	23	23	22	22	22	22	22	22	22	22	21	21	25	23	23	22	2 26	9 23 p	2 19	0 42 a	0 7	2
24	22	22	22	22	23	23	23	22	22	22	22	23	23	25	25	27	27	27	27	25	25	22	22	22	24	2 29	3 10 p	2 20	12 0 p	0 9	2
25	21	21	21	21	21	21	21	21	21	21	21	20	20	23	23	23	30	41	47	33	29	19	17	17	24	3 2	6 6 p	2 11	11 23 p	0 51	0
26	22	16	17	17	17	22	22	22	23	21	18	17	21	27	24	25	25	25	27	28	25	21	19	19	22	2 35	0 16 p	1 49	11 54 a	0 46	1
27	21	21	21	21	21	21	21	21	19	20	20	21	22	22	23	25	24	25	25	25	23	20	19	19	22	2 45	10 17 a	2 6	10 26 a	0 39	1
28	20	20	20	21	21	21	21	21	21	21	20	26	35	42	36	26	37	50	57	53	45	33	10	11	29	3 26	6 29 p	1 55	10 51 p	1 31	0
29	21	22	20	18	17	16	15	13	17	16	20	22	25	36	3 2	3 55	57	39	36	31	23	19	19	19	27	3 42	2 51 p	2 0	7 26 a	1 42	0
30	20	18	13	19	20	20	21	21	16	13	28	36	35	32	2 25	2 25	26	29	37	41	32	27	24	21	25	4 1	10 11 a	0 37	10 44 a	3 24	2
31	21	21	21	20	21	23	22	22	22	23	22	23	23	25	27	32	32	28	28	25	23	24	22	21	24	2 37	3 38 p	2 13	1 48 a	0 24	2
Mean 1	2°20′	2°20′	2°20′	2°20′	2°20′	2°21′	2°21′	2°18′	2°19′	2°17′	2°22′	2°23′	2°25′	2°30′	2°30′	2°35′	2°40′	2°38′	2°34′	2°30′	2°26′	2°23′	2°20′	2°20′	2°25′	3°18′		1°45′		1°34′	
» 2	20	21	21	21	20	20	20	19	18	17	21	22	26	30	33	36	40	37	33	29	25	22	19	19	25						
» 3	20	21	21	21	20	20	20	19	18	18	20	23	26	30	33	36	38	37	33	29	25	22	20	19							

January 1906. **Table CXLIX. — Hourly Values of Declination, East.** King Point.

40° + Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	2°21′	2°21′	2°17′	2°22′	2°25′	2°25′	2°24′	2°23′	2°23′	2°25′	2°22′	2°15′	2°25′	2°25′	2°27′	2°27′	2°29′	2°29′	2°28′	2°29′	2°25′	2°25′	2°22′	2°20′	2°24′	2°38′	9 56 a	1°57′	11 30 a	0°41′	0
2	22	21	21	21	22	23	23	24	24	21	15	6	35	30	25	29	27	29	31	29	24	*23*	20	21	24	3 21	10 32 a	0 45	11 17 a	2 36	2
3	21	21	21	24	24	24	24	24	24	21	17	9	42	31	31	27	25	28	29	26	24	*18*	17	18	24	3 28	11 5 a	1 13	11 30 a	2 15	2
4	18	17	17	17	18	18	17	16	12	19	17	19	18	19	22	25	28	31	32	31	24	*17*	16	19	20	3 6	7 44 a	1 46	7 53 a	1 20	0
5	19	18	16	17	18	19	18	16	19	20	14	20	20	20	20	23	20	22	22	23	21	*22*	23	20	20	2 40	9 28 a	2 6	10 11 a	0 34	1
6	16	16	11	12	20	20	21	21	21	20	20	20	20	23	24	24	23	23	23	22	21	*20*	19	19	20	2 28	3 19 p	2 4	4 18 a	0 24	2
7	19	19	19	20	20	20	20	20	21	19	18	16	20	23	22	23	25	26	25	24	24	*19*	16	16	21	2 44	11 8 a	1 32	11 15 a	1 12	0
8	20	16	16	14	18	19	19	19	18	17	18	24	26	25	27	30	32	28	26	26	24	*20*	15	16	21	2 48	11 42 a	1 52	11 21 a	0 56	0
9	19	17	16	18	19	20	20	20	20	15	0	34	27	26	25	31	27	26	26	25	19	*18*	20	20	21	2 59	11 41 a	0 0	10 59 a	2 59	2
10	19	19	22	21	21	20	20	19	19	9	20	23	28	26	32	28	25	27	24	25	22	*17*	18	19	22	2 40	11 3 a	1 39	9 29 a	1 1	0
11	20	20	21	21	21	20	20	21	20	21	18	22	24	22	24	27	34	30	25	24	23	*22*	22	17	22	2 40	4 28 p	2 3	10 15 a	0 37	1
12	19	18	19	19	19	18	18	20	22	20	16	19	35	35	28	32	40	31	26	24	22	*20*	20	20	23	2 57	4 6 p	1 40	11 12 a	1 17	0
13	21	19	21	19	20	18	9	14	22	20	17	10	34	51	40	38	50	40	33	28	24	*17*	18	20	25	3 37	0 54 p	1 5	11 36 a	2 32	2
14	20	19	20	20	21	20	24	18	28	10	3	32	35	30	29	45	3 3	3 13	48	22	18	*19*	16	17	27	3 45	5 42 p	1 21	10 23 a	2 24	2
15	19	18	16	17	20	22	19	23	22	27	12	28	30	34	44	41	2 42	2 38	26	24	18	*19*	18	20	25	3 37	11 36 a	1 5	10 51 a	2 32	2
16	22	24	23	22	21	20	23	24	22	22	22	23	28	33	40	42	32	26	25	24	20	*22*	24	23	25	2 49	0 48 p	2 8	11 55 a	0 41	0
17	22	22	21	22	22	22	22	21	20	20	20	23	24	23	24	24	26	24	24	24	23	*21*	21	21	22	2 33	4 9 p	2 16	0 8 a	0 17	2
18	21	20	20	20	20	20	20	20	19	18	18	19	24	23	20	24	24	25	25	19	19	*19*	19	19	21	2 40	11 15 a	1 58	11 21 a	0 42	0
19	20	19	18	17	19	19	22	5	8	3	16	17	20	39	40	36	41	40	33	28	30	*25*	24	25	24	4 2	7 1 a	0 27	8 58 a	3 35	2
20	20	20	19	20	19	18	22	23	23	22	23	23	20	21	22	26	28	28	25	25	25	*24*	24	22	23	2 32	5 0 p	2 16	0 14 p	0 16	2
21	21	20	20	20	18	19	16	16	19	22	18	12	24	25	25	27	42	49	53	40	23	*23*	23	19	25	3 8	5 9 p	1 42	11 10 a	1 26	0
22	20	20	20	20	20	20	20	19	16	15	16	22	22	26	30	24	28	28	27	24	25	*22*	20	19	22	3 7	9 29 a	1 40	10 2 a	1 27	0
23	20	20	20	20	20	22	22	21	20	19	19	25	26	22	24	24	29	28	27	24	23	*24*	24	23	23	2 36	4 50 p	2 16	10 24 a	0 20	2
24	21	20	21	22	22	22	21	21	21	20	26	24	24	25	27	28	31	29	26	27	24	*22*	22	22	24	2 39	10 6 a	2 16	10 49 a	0 23	2
25	22	21	21	20	20	20	20	19	17	14	19	25	27	25	24	24	24	24	24	24	24	*23*	24	20	22	2 43	9 42 a	1 29	9 45 a	1 14	0
26	21	19	19	19	19	19	19	19	19	18	19	27	29	28	28	28	33	43	40	28	*29*	*26*	24	18	25	2 47	5 9 p	2 10	10 40 a	0 37	1
27	19	18	16	14	14	12	8	24	24	21	21	21	23	24	24	28	28	33	28	27	*24*	*24*	24	20	22	2 46	5 48 p	1 48	6 34 a	0 58	0
28	22	20	17	12	16	18	18	10	16	18	20	25	29	34	32	25	25	27	27	28	*27*	*25*	25	25	23	2 46	9 33 a	1 24	9 47 a	1 22	0
29	25	24	24	24	24	24	24	25	24	24	24	25	25	25	25	25	26	27	27	27	27	*25*	24	24	25	2 30	6 55 p	2 23	11 54 a	0 7	2
30	24	24	24	24	25	24	24	24	24	24	24	24	24	24	24	25	26	26	27	27	26	*25*	24	24	25	2 28	7 13 p	2 23	11 59 p	0 5	2
31	23	22	22	22	19	19	19	25	24	23	16	18	54	3 0	3 4	3 7	4 4	3 34	3 16	40	24	*30*	24	18	39	5 46	4 41 p	1 39	10 31 a	4 7	2
Mean 1	2°21′	2°20′	2°19′	2°19′	2°20′	2°20′	2°20′	2°20′	2°20′	2°19′	2°18′	2°21′	2°27′	2°28′	2°29′	2°30′	2°34′	2°33′	2°30′	2°26′	2°23′	2°22′	2°21′	2°20′	2°23′	3° 1′		1°42′		1°19′	
» 2	20	19	19	19	19	19	19	19	19	18	19	20	25	26	27	28	29	30	28	27	23	21	20	20	22						
» 3	20	19	19	19	19	19	19	19	19	19	19	21	24	26	27	28	29	29	28	26	24	21	20	20							

February 1906. **Table CXLIX. — Hourly Values of Declination, East.** King Point.

40° + Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	2°24′	2°25′	2°24′	2°15′	2° 0′	2°22′	2°13′	2°26′	2°24′	2°22′	2°12′	2°20′	2°45′	2°34′	2°27′	2°21′	2°34′	2°32′	2°40′	2°48′	2°40′	2°28′	2°24′	2°25′	2°26′	3°50′	11 52 a	−0°20′	11 18 a	4°10′	0
2	25	21	17	18	16	21	20	20	20	13	15	29	34	32	26	28	30	36	40	32	23	23	16	24	24	3 34	10 37 a	2 1	10 8 a	1 33	0
3	20	24	22	24	24	23	28	23	19	26	23	16	24	33	29	28	32	43	51	43	25	22	20	21	27	3 14	6 57 a	1 54	10 36 a	1 20	1
4	21	19	20	19	16	19	24	24	16	22	24	24	24	38	42	38	38	51	44	33	28	24	24	25	27	3 7	7 51 a	1 42	8 22 a	1 25	0
5	26	24	22	17	20	19	20	16	20	20	8	16	32	38	42	36	34	32	34	30	27	17	16	20	24	3 10	10 3 a	0 40	10 3 a	2 30	0
6	16	8	12	17	19	17	4	27	23	21	13	1 58	56	48	3 0	58	56	41	33	25	20	21	20	22	26	4 16	3 54 p	1 8	11 51 a	3 8	0
7	20	21	23	24	19	19	23	23	20	19	1 20	2 39	32	32	2 41	42	44	3 6	32	23	20	19	15	20	25	4 0	9 59 a	−0 41	10 32 a	4 41	1
8	19	20	23	23	21	20	19	12	19	24	2 23	20	28	45	41	36	48	2 44	42	27	24	22	20	22	27	3 30	0 41 p	1 8	0 6 p	2 22	0
9	22	20	19	20	20	20	20	18	17	1 38	1	26	26	27	34	41	35	30	33	26	20	19	17	20	21	3 1	9 33 a	−0 34	9 39 a	3 35	0
10	19	20	19	20	17	16	14	24	23	2 16	1 46	28	35	34	26	28	28	40	48	30	21	20	17	18	23	3 21	10 38 a	0 1	10 6 a	3 20	0
11	20	20	20	21	20	20	21	23	20	19	2 19	22	33	32	28	27	26	25	25	26	26	22	21	22	23	3 18	11 2 a	1 53	11 37 a	1 25	0
12	22	21	20	19	20	23	22	20	23	40	16	16	27	32	36	34	38	36	32	27	25	22	19	19	25	3 6	9 12 a	1 50	11 36 a	1 16	1
13	20	19	19	20	20	19	19	19	19	16	21	26	27	26	24	24	31	36	27	26	25	21	19	18	23	2 42	10 45 a	1 20	10 43 a	1 22	1
14	19	17	17	17	17	18	18	17	16	22	11	17	24	23	24	22	24	27	27	24	23	22	19	16	20	2 48	9 4 a	1 57	11 12 a	0 51	2
15	17	18	18	16	17	16	12	2	1 54	1 47	6	19	24	32	3 4	43	3 3	3 52	3 31	52	33	36	30	25	30	5 6	5 25 p	0 55	8 59 a	4 11	0
16	13	16	16	19	15	12	24	20	2 20	2 16	4	0	15	21	2 48	32	2 56	12	16	55	36	17	19	19	27	4 51	10 32 a	0 17	10 49 a	4 34	1
17	22	18	15	17	17	16	18	21	12	1	15	20	25	28	33	23	24	2 25	2 26	28	24	23	20	18	20	2 39	9 36 p	0 34	8 59 a	2 5	0
18	17	17	15	13	19	19	19	19	20	21	19	21	23	25	25	36	43	29	28	28	27	23	25	21	23	3 9	4 4 p	2 9	10 35 p	1 0	1
19	10	14	13	16	2	9	6	13	9	13	9	4	1 57	40	56	5 20	3 12	3 27	3 16	53	22	15	16	18	32	8 3	3 12 p	0 2	2 50 p	8 1	2
20	21	21	21	20	19	19	20	19	20	20	20	25	2 27	25	24	2 21	2 22	2 25	2 25	23	23	21	23	23	22	2 33	0 28 p	2 10	10 20 a	0 23	2
21	22	21	21	21	20	18	18	20	20	18	20	25	25	25	25	26	30	29	29	29	25	25	20	18	23	2 34	5 48 p	2 13	10 59 p	0 21	2
22	19	15	16	18	18	21	21	21	20	17	9	23	25	26	28	29	26	29	31	33	29	22	17	21	22	2 37	10 7 a	1 35	11 20 a	1 2	1
23	19	17	10	13	13	12	10	13	16	11	4	28	29	28	35	40	57	37	29	29	25	21	18	20	22	3 6	4 14 p	1 1	10 17 a	2 5	0
24	17	20	19	20	20	19	19	18	9	10	4	49	31	45	3 32	3 16	4 13	54	3 25	3 0	51	48	44	35	41	6 21	4 17 p	−0 21	10 24 a	6 42	2
25	25	17	21	21	14	5	13	15	6	11	25	1 59	31	25	2 27	2 28	2 33	3 7	17	33	3 25	59	29	29	31	5 43	10 18 a	0 47	10 42 a	4 56	2
26	28	21	25	16	1 47	1 30	1 59	4	15	21	16	2 20	25	26	23	21	25	2 33	2 36	2 35	2 34	35	38	18	20	3 39	6 21 a	−0 6	6 40 a	3 45	0
27	19	23	23	22	2 22	2 22	2 20	19	18	21	9	24	25	25	26	26	33	27	29	31	29	24	31	19	24	2 50	7 18 p	1 29	10 45 a	1 21	1
28	13	23	21	21	20	15	9	1 59	1 37	8	35	12	20	46	54	3 5	3 17	3 14	3 11	3 9	3 3	39	33	17	33	6 12	4 6 p	−0 35	8 14 a	6 47	2
Mean 1	2°20′	2°19′	2°19′	2°19′	2°16′	2°16′	2°17′	2°18′	2°16′	2°15′	2°12′	2°20	2°27′	2°32′	2°37′	2°40′	2°43′	2°44′	2°43′	2°37′	2°30′	2°25′	2°23′	2°21′	2°25′	3°48′		0°56′		2°52′	
» 2	21	19	18	18	16	18	16	19	17	11	10	21	33	35	38	35	39	42	40	32	26	23	20	22	24						
» 3	21	19	18	18	17	17	17	18	16	12	13	21	30	35	36	37	39	41	39	33	27	23	21	21							

March 1906.

Table CXLIX. — Hourly Values of Declination, East.

40° +

King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	2°19′	2° 2′	2°13′	2 4′	2°29′	2°28′	2°19′	2°14′	2°31′	2° 0′	1°49′	2°13′	2°23′	2°33′	2°33′	2°28′	2°44′	2°40′	2°50′	2°48′	2°37′	2°35′	2°35′	2°21′	2°25′	3°25′	6 57 p	1° 7′	9 44 a	2°18′	0
2	15	19	23	21	21	19	19	28	18	19	2 19	23	25	29	27	25	28	28	29	33	33	29	23	20	24	2 47	6 9 p	2 5	0 44 a	0 42	1
3	20	20	21	22	22	23	23	23	23	24	19	13	29	33	25	29	29	31	32	33	32	24	23	22	25	2 48	1 45 a	1 25	1 47 a	1 23	0
4	19	7	4	5	32	25	15	13	12	17	25	20	21	28	35	35	44	57	51	53	43	35	18	15	26	3 15	6 45 p	1 24	2 24 a	1 51	0
5	19	9	9	9	21	17	1 57	3 1	21	29	17	7	47	45	41	48	47	33	28	29	21	17	20	20	26	4 52	7 13 a	1 6	7 56 a	3 46	2
6	21	21	19	21	21	21	2 18	2 9	1	28	13	31	36	39	31	33	37	28	30	33	23	23	23	23	24	3 33	9 10 a	-0 31	8 26 a	4 4	2
7	17	9	12	5	1 51	1 58	35	25	21	6	19	26	27	46	40	28	44	53	43	34	43	25	24	24	25	4 10	6 14 p	-1 43	5 6 a	5 53	2
8	20	20	17	17	2 27	2 21	21	17	11	1 51	7	10	25	31	23	42	46	58	32	33	35	19	17	14	23	3 16	5 29 p	0 42	9 44 a	2 34	0
9	17	21	19	20	16	20	25	1	31	2 16	1 27	6	41	32	26	29	45	44	37	29	28	29	28	19	23	3 7	10 9 a	-0 6	10 29 a	3 13	1
10	18	11	17	19	28	23	20	12	14	18	2 2	11	37	28	26	28	29	32	33	29	25	23	23	22	22	4 32	7 26 a	0 10	7 53 a	4 22	2
11	21	20	21	21	25	22	20	23	9	12	10	18	27	31	27	29	47	51	37	28	29	25	25	21	25	3 9	7 46 a	1 17	8 42 a	1 52	0
12	22	22	21	21	21	21	21	21	22	37	22	27	27	27	27	27	29	29	33	32	33	29	19	21	25	4 2	8 54 a	1 7	9 1 a	2 55	0
13	16	7	13	20	21	19	17	20	21	17	17	23	28	27	23	26	41	41	37	38	28	29	22	18	24	2 53	4 34 p	1 56	1 48 a	0 57	1
14	11	15	6	10	19	19	18	16	10	1 48	5	23	25	25	27	27	33	33	52	3 5	53	30	36	28	24	3 23	7 26 p	0 15	9 20 a	3 8	1
15	15	13	13	17	18	17	11	22	26	2 21	23	25	25	27	33	29	33	33	32	2 29	28	26	24	22	23	3 1	7 32 a	1 57	7 20 a	1 4	0
16	21	21	21	22	23	22	23	24	23	21	22	29	43	37	29	45	53	3 2	51	38	31	23	25	18	30	3 25	6 0 p	1 56	0 17 p	1 29	0
17	17	12	12	16	10	10	21	20	13	10	8	15	29	26	25	33	37	2 47	44	33	25	29	21	21	22	3 9	5 24 p	0 57	10 42 a	2 12	0
18	20	19	20	20	19	21	13	1	16	13	19	26	29	46	41	36	34	35	39	29	29	29	23	24	25	3 26	0 26 p	1 25	0 45 p	2 1	0
19	20	20	20	22	22	22	22	22	21	27	25	26	28	29	26	39	37	37	34	29	27	24	20	21	26	2 44	5 4 p	2 17	0 45 a	0 27	2
20	20	20	20	19	17	25	17	21	21	20	23	24	24	25	25	28	31	33	34	33	33	22	21	18	24	2 43	8 8 p	2 14	4 40 a	0 29	2
21	17	17	19	20	21	20	18	19	13	26	25	25	25	24	25	28	29	33	32	31	27	25	21	20	23	2 36	5 37 p	1 45	8 47 a	0 51	1
22	20	17	18	19	20	20	19	18	17	14	1 59	22	29	27	26	33	36	37	37	33	29	28	25	18	23	2 43	4 14 p	1 5	10 0 a	1 38	0
23	20	19	18	19	17	18	19	19	20	19	2 19	20	20	25	28	31	28	32	33	33	28	22	20	18	23	2 39	6 21 p	2 16	8 39 a	0 23	2
24	14	11	9	10	14	10	12	17	17	16	14	16	10	28	35	36	47	3 9	49	37	33	55	37	34	26	3 40	5 8 p	1 24	0 28 p	2 16	0
25	18	10	9	21	19	19	3	9	1	1 58	11	14	21	31	43	52	33	2 35	3 7	3 5	42	25	18	20	24	3 21	7 36 p	1 25	11 1 a	1 56	0
26	20	12	5	8	14	10	20	17	12	2 14	17	20	24	28	28	29	33	33	2 35	2 39	49	29	22	30	23	2 59	8 6 p	1 47	2 55 a	1 12	0
27	13	21	23	25	25	20	16	17	10	16	22	19	26	28	36	37	52	57	47	35	27	29	26	28	27	3 3	5 42 p	1 29	8 45 a	1 34	0
28	20	12	9	16	25	26	25	25	26	25	25	25	26	25	28	38	36	35	37	37	35	19	19	20	26	2 43	7 40 p	1 48	2 47 a	0 55	1
29	19	12	17	12	20	15	10	1 58	9	1 51	3	20	23	31	36	45	55	57	51	43	27	27	21	17	23	3 7	4 47 p	0 23	9 18 a	2 44	0
30	19	17	12	11	17	19	22	2 19	16	2 11	21	23	27	28	27	32	38	44	44	44	33	29	21	19	25	2 49	10 34 a	1 37	9 12 a	1 12	0
31	17	11	11	17	21	16	13	15	12	16	19	20	21	28	26	35	51	46	37	26	23	25	21	17	23	2 51	4 50 p	1 55	0 46 p	0 56	1
Mean 1	2°18′	2°15′	2°15′	2°16′	2°20′	2°19′	2°18′	2°18′	2°17′	2°15′	2°14′	2°20′	2°27′	2°31′	2°30′	2°34′	2°39′	2°41′	2°40′	2°36′	2°32′	2°27′	2°23′	2°21′	2°24′	3°16′		1°15′		2° 1′	
» 2	19	15	15	16	21	19	17	16	16	12	14	19	26	30	31	35	41	46	43	38	33	29	24	21	25						
» 3	18	16	15	17	19	19	17	16	15	14	15	20	25	29	32	36	41	44	42	38	33	29	25	21							

October 1905. $H = 0.08000 +$

Table CLII. — Hourly Values of Horizontal Intensity.

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King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
17																							509	483							
18	535	500	493	483	510	524	520	481	382	429	474	464	105	459	463	481	477	480	471	459	*456*	*455*	453	*463*	459	661	9 28 a	−264	0 26 p	925	2
19	*467*	*471*	471	473	474	475	475	475	476	475	474	474	475	477	480	482	469	454	460	453	455	*458*	457	456	469	495	4 9 p	419	6 10 p	76	2
20	458	468	470	472	475	489	499	464	429	454	480	473	454	474	478	474	483	467	474	465	*449*	*437*	453	463	467	514	4 23 p	382	8 40 a	132	1
21	466	468	469	469	476	479	487	490	480	475	473	474	471	464	473	422	289	225	356	408	*455*	*467*	453	455	444	*552*	8 57 p	86	4 58 p	466	0
22	475	470	503	498	487	476	492	447	449	438	468	461	452	457	447	469	467	468	463	460	455	*452*	449	450	465	545	2 12 a	366	7 57 a	179	1
23	451	456	460	464	468	473	433	436	443	438	540	408	399	391	477	469	468	453	467	468	*463*	*461*	466	461	451	599	7 36 a	276	11 55 a	323	0
24	467	471	474	482	484	493	501	437	341	370	350	347	412	449	453	456	472	479	477	471	*471*	*459*	464	462	448	583	8 58 a	81	8 18 a	502	0
25	478	467	468	472	473	477	492	471	300	384	386	345	287	434	424	390	380	385	241	256	*341*	*429*	438	499	405	523	9 19 a	−118	11 43 a	641	1
26	522	489	578	575	499	459	397	507	481	471	466	456	329	426	398	335	336	314	435	450	*423*	*469*	469	470	448	652	2 59 a	− 36	0 46 p	688	2
27	498	507	532	522	480	537	466	434	358	411	450	432	480	467	458	470	468	463	457	448	*460*	456	458	460	465	560	5 21 a	218	8 26 a	342	0
28	481	475	481	488	507	505	486	478	479	463	458	504	468	390	167	39	203	−58	412	446	*449*	*462*	475	450	405	602	0 36 a	−397	3 18 p	999	2
29	483	481	470	469	468	467	468	469	474	473	470	469	464	469	468	468	461	465	460	458	*457*	*455*	458	459	467	498	0 32 a	434	4 44 p	64	2
30	463	468	475	476	481	481	475	468	467	466	467	466	461	466	465	458	456	448	450	450	*445*	*446*	447	452	462	499	5 41 a	435	7 17 p	64	2
31	452	454	460	463	466	469	470	466	466	467	467	465	461	465	465	462	462	463	454	454	*453*	454	454	454	461	475	5 14 a	447	10 24 p	28	2
Mean 1	478	475	468	486	482	486	476	466	430	444	452	446	408	449	437	420	421	393	434	439	445	454	457	461	451	554		166		388	
» 2	471	475	484	484	477	495	472	449	406	424	428	415	440	443	465	454	424	405	439	449	462	461	460	460	452						
» 3	469	476	482	482	483	485	472	444	421	420	424	425	435	448	457	449	427	418	433	450	458	461	460	462							

November 1905. $H = 0.08\,000 +$

Table CLII. — Hourly Values of Horizontal Intensity.

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King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	456	458	462	464	469	469	468	469	469	469	472	471	472	474	474	473	469	464	459	453	*455*	*458*	463	462	465	482	2 36 p	440	9 12 p	42	2
2	463	461	464	465	469	472	472	472	475	475	468	471	473	468	468	467	464	465	460	460	*467*	457	456	459	466	487	7 45 p	432	7 41 p	55	2
3	461	459	464	466	469	469	465	471	466	479	468	460	464	463	458	459	457	452	453	459	469	*456*	444	457	462	489	9 54 a	401	10 55 a	88	2
4	469	474	497	495	500	503	543	553	508	453	428	438	356	376	364	303	349	391	262	207	*207*	402	449	463	416	606	7 8 a	87	8 28 p	519	0
5	468	447	481	452	427	403	354	328	426	445	457	459	447	451	441	443	407	379	355	394	431	*446*	448	478	428	513	11 30 p	9	7 4 a	504	0
6	469	494	519	466	479	465	481	451	329	376	379	396	426	443	295	354	349	405	381	*408*	461	*444*	462	476	425	567	11 4 p	37	2 41 p	530	0
7	453	458	490	515	518	504	460	444	430	254	462	449	464	377	439	434	460	434	429	427	447	*440*	442	484	446	621	3 2 a	70	9 19 a	551	0
8	492	496	516	538	540	528	506	480	455	471	457	460	463	444	453	443	437	440	435	442	*433*	407	381	455	466	593	3 58 a	331	10 5 p	262	1
9	470	450	455	460	464	466	471	472	382	382	477	473	458	459	441	404	373	294	363	417	423	*406*	445	463	432	522	8 47 a	210	8 18 a	312	1
10	469	482	492	478	487	470	420	467	419	324	221	452	393	454	471	475	462	462	459	461	*458*	457	462	462	444	554	0 47 p	0	9 52 a	554	0
11	465	465	465	463	469	468	474	449	417	407	462	434	401	438	437	458	446	455	456	456	457	*458*	461	465	451	542	9 23 a	54	9 19 a	488	0
12	471	472	505	549	565	517	483	396	272	258	-288	454	558	486	517	167	558	414	329	523	*328*	387	443	493	411	724	4 6 p	*-591*	10 23 a	1315	2
13	527	512	497	492	497	486	524	410	388	152	395	466	449	462	294	49	212	353	450	*468*	455	*471*	480	505	416	658	8 49 p	-319	3 2 p	977	1
14	497	481	490	500	486	464	461	329	138	285	422	470	420	431	460	440	434	440	452	454	*435*	440	444	474	431	577	11 24 a	-133	8 22 a	710	0
15	466	453	504	404	496	574	607	536	477	492	473	472	451	465	382	484	265	138	376	120	*401*	*737*	423	425	443	1305	9 17 p	*-460*	8 3 p	1765	2
16	396	469	499	481	494	497	322	212	354	172	338	396	-142	-448	279	473	117	97	281	340	365	*438*	497	521	310	967	4 39 a	*-697*	0 45 p	1664	2
17	518	526	508	520	503	521	382	284	210	332	- 11	451	497	504	474	480	355	247	164	366	391	*425*	504	535	404	952	1 36 a	-366	10 17 a	1318	2
18	477	497	558	542	529	556	465	369	420	451	417	324	445	492	452	446	425	445	457	457	450	*455*	482	456	461	726	0 32 a	- 31	7 14 a	757	0
19	484	488	505	477	463	479	472	473	473	464	452	359	279	289	433	444	436	447	432	436	*439*	443	455	482	442	655	4 14 a	68	0 37 p	587	0
20	472	472	471	472	491	479	469	473	432	311	393	382	476	451	464	467	444	380	366	422	*457*	*448*	464	468	443	527	4 14 a	72	9 0 a	455	0
21	457	481	483	524	502	509	471	477	217	321	447	172	516	353	331	355	328	273	316	400	406	*411*	456	512	405	592	11 36 p	-255	8 42 a	847	0
22	482	504	513	483	483	482	467	376	375	359	357	408	462	457	452	443	462	462	469	456	*462*	*458*	453	479	450	608	8 37 a	- 81	8 15 a	689	0
23	482	483	488	468	468	497	461	387	361	454	433	440	128	331	266	241	191	159	223	243	*377*	*481*	503	496	378	584	9 0 a	- 21	0 21 p	605	0
24	501	536	500	507	502	487	476	466	492	474	327	240	393	426	402	290	287	287	353	482	*495*	495	493	487	433	589	1 31 a	-170	10 36 a	759	0
25	491	489	488	495	491	491	495	477	448	357	465	484	477	467	423	457	445	456	472	467	*478*	*477*	479	*481*	469	524	7 35 a	230	9 1 a	294	1
26	*482*	484	488	484	481	486	494	475	478	489	489	484	475	469	365	330	374	328	167	208	*280*	329	454	486	420	552	11 10 p	87	6 48 p	465	0
27	512	539	519	517	527	467	454	438	382	480	486	481	488	481	464	296	148	258	472	457	*460*	*477*	472	484	448	587	9 17 a	22	4 45 p	565	0
28	499	497	498	515	523	470	482	463	235	485	512	465	403	331	386	439	378	304	300	433	*443*	471	475	495	438	580	9 15 a	- 97	8 44 a	677	0
29	505	484	484	501	505	508	485	503	505	497	483	483	476	333	353	417	395	324	396	473	471	*474*	476	497	459	554	11 46 p	199	1 22 p	355	0
30	472	497	542	506	507	507	502	499	494	494	483	481	472	456	429	435	445	470	448	456	*472*	472	467	476	478	583	2 30 a	381	2 23 p	202	2
Mean 1	478	484	495	490	493	490	470	437	398	395	394	429	418	403	412	396	379	364	381	408	426	454	461	479	435	627		- 3		630	
» 2	480	487	497	492	491	483	466	440	391	407	424	408	414	410	404	393	376	369	375	404	424	446	464	480	434						
» 3	482	488	493	493	489	481	464	434	407	407	416	414	412	409	403	391	378	372	381	402	424	445	464	476							

December 1905. $H = 0.08000 +$

Table CLII. — Hourly Values of Horizontal Intensity

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King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	478	482	482	482	491	492	511	514	497	482	478	448	465	486	480	478	478	474	473	470	468	467	466	464	479	528	7 56 a	365	11 6 a	163	1
2	475	483	480	480	483	484	484	483	485	478	482	480	483	480	469	438	349	348	401	457	430	398	450	465	456	531	11 54 p	293	4 26 p	238	0
3	495	468	474	474	503	478	470	467	466	466	466	478	472	466	459	443	366	438	464	466	465	461	460	456	463	567	0 20 a	291	4 37 p	276	0
4	459	494	545	507	493	504	468	324	325	400	483	379	436	257	404	378	77	-100	160	249	326	367	448	476	369	665	2 35 a	-356	5 18 p	1021	2
5	468	460	467	467	466	460	466	463	457	457	475	453	455	452	454	455	457	454	453	449	450	452	451	452	458	543	3 8 a	349	3 29 a	194	0
6	454	455	460	462	464	461	463	468	476	472	467	455	426	457	452	446	441	395	440	434	436	426	464	470	452	505	11 20 p	322	0 32 p	183	1
7	478	464	485	459	469	468	459	469	466	458	436	466	451	434	440	434	453	448	447	440	440	441	452	469	455	524	2 39 a	376	10 42 a	148	1
8	471	466	467	466	468	468	461	461	444	430	440	453	454	449	366	331	367	413	418	440	449	444	449	466	439	494	0 36 a	225	2 38 p	269	0
9	454	467	472	471	463	463	457	456	455	454	454	456	460	449	448	434	428	449	441	434	429	433	440	479	452	549	11 28 p	399	11 57 p	150	1
10	464	483	485	479	485	478	477	482	478	450	419	438	451	447	451	430	470	458	456	456	458	460	460	465	462	549	1 21 a	307	9 59 a	242	0
11	480	484	482	483	486	485	486	486	481	476	475	475	472	454	429	398	452	471	457	468	466	463	466	471	469	503	3 49 a	347	3 21 p	156	1
12	471	476	498	566	536	531	518	507	522	427	420	506	496	360	303	486	440	440	471	455	454	404	364	497	464	697	2 59 a	94	9 52 a	603	1
13	530	575	458	397	398	332	344	203	172	314	391	350	515	462	452	349	250	356	316	306	389	362	431	457	380	667	1 5 a	-157	8 33 a	824	2
14	530	515	489	509	487	504	495	450	409	362	417	366	283	317	367	381	365	423	466	467	471	429	447	507	436	697	8 54 a	- 56	11 54 a	753	2
15	486	492	490	482	483	481	478	479	471	464	456	465	461	458	409	237	312	451	479	472	472	470	477	475	454	560	0 38 a	167	4 17 p	393	0
16	462	479	480	478	484	480	476	482	474	441	452	343	404	468	474	465	458	417	443	460	462	460	459	458	457	500	7 5 a	128	11 30 a	372	0
17	460	467	473	475	494	503	518	505	417	332	390	421	451	245	304	313	404	433	443	421	446	462	460	468	429	551	7 8 a	7	1 33 p	544	0
18	470	475	467	476	480	483	472	405	470	444	368	430	439	436	438	376	325	329	365	457	457	457	456	458	435	524	8 30 a	144	7 51 a	380	0
19	481	512	492	486	505	495	471	429	434	388	367	436	458	350	331	380	406	411	405	351	417	413	480	489	433	554	9 10 p	137	10 18 a	417	0
20	477	475	508	515	521	535	508	382	244	281	357	431	475	282	-21	161	141	267	282	436	459	489	462	500	382	591	11 54 p	-241	9 45 a	832	2
21	509	482	503	492	522	482	465	462	460	463	458	460	461	466	465	461	465	464	464	462	460	457	459	457	471	576	0 2 a	447	7 53 a	129	1
22	459	460	466	463	465	468	464	444	369	354	388	377	368	371	457	470	458	458	466	458	464	462	462	461	439	501	5 57 p	95	11 44 a	406	0
23	462	461	463	467	467	467	467	465	466	468	469	469	470	468	468	468	467	467	467	467	467	464	464	463	466	472	11 35 a	459	9 21 p	13	2
24	465	464	467	469	473	473	474	474	472	472	472	472	468	463	438	453	469	466	464	459	454	454	455	461	465	487	6 9 a	422	2 51 p	65	2
25	462	462	463	466	476	478	481	478	470	471	470	472	464	464	464	444	433	383	330	411	464	450	447	486	454	543	11 21 p	284	6 16 p	259	0
26	488	513	496	499	513	527	527	503	470	464	464	438	432	446	460	460	460	453	431	428	453	459	462	467	471	568	5 18 a	236	11 50 a	332	0
27	479	476	472	472	484	484	491	496	466	372	427	488	476	471	469	461	459	457	457	454	454	451	454	458	464	528	10 55 a	199	9 25 a	329	0
28	465	465	467	467	472	477	475	465	470	473	473	456	345	338	426	458	437	340	187	191	267	312	349	476	406	556	11 59 p	111	7 17 p	445	0
29	527	524	535	513	505	512	460	484	451	406	459	450	467	146	270	333	369	436	424	421	441	442	440	462	437	604	0 25 a	- 42	1 29 p	646	2
30	497	489	538	501	487	482	484	467	454	417	117	263	370	446	478	472	462	436	402	339	296	366	464	483	425	559	3 10 a	-149	10 31 a	708	2
31	464	468	475	478	475	473	467	466	466	466	461	466	467	456	468	438	453	464	464	458	462	460	460	461	464	489	3 30 a	420	3 30 p	69	2
Mean 1	478	482	484	481	484	481	475	455	441	429	431	437	445	411	412	411	399	406	414	424	436	437	450	470	445	554		181		373	
» 2	472	477	476	475	484	483	481	470	456	432	436	442	441	423	429	411	411	416	413	425	441	441	452	467	448						
» 3	472	475	476	478	481	483	479	469	454	439	436	440	437	429	423	416	412	414	417	426	437	444	453	464							

January 1906
$H = 0.0800 +$

Table CLII. — Hourly Values of Horizontal Intensity.

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King Point.
Gr.M.T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	469	484	494	491	487	483	472	481	474	443	441	431	459	455	453	453	454	460	460	445	454	456	461	459	463	508	2 3 a	365	11 12 a	143	1
2	463	476	476	473	480	481	486	482	478	457	316	193	440	483	488	470	470	461	442	434	467	465	459	459	450	518	1 30 p	- 67	11 15 a	585	2
2	477	487	483	500	493	483	483	487	496	477	357	274	356	460	436	482	473	462	442	453	457	470	474	466	455	515	3 32 p	102	10 38 a	413	0
4	466	460	468	464	470	479	486	468	538	475	473	453	468	454	440	422	400	440	436	430	447	456	444	446	458	665	8 36 a	322	7 41 a	343	0
5	473	467	481	471	470	469	475	472	467	479	475	471	466	464	460	454	465	468	470	471	467	462	457	452	468	526	9 28 a	435	3 37 a	91	2
6	457	496	562	511	542	492	477	469	466	466	466	461	466	454	441	457	464	464	463	461	455	451	455	455	473	579	2 21 a	400	2 42 p	179	0
7	459	464	464	464	465	466	464	465	470	467	457	422	417	455	460	448	422	452	461	469	459	442	433	450	454	498	11 41 a	339	11 5 a	159	1
8	490	529	538	508	496	495	484	470	470	469	458	370	425	412	412	383	419	426	421	448	463	456	453	455	456	581	2 35 a	267	11 11 a	314	0
9	466	480	479	480	481	482	476	477	484	441	330	372	439	453	450	420	464	454	454	465	464	448	440	475	453	529	11 18 a	-172	10 53 a	701	2
10	480	468	477	479	466	466	466	466	452	445	404	375	426	430	400	451	455	454	457	461	458	471	465	463	451	520	9 19 a	219	10 59 a	301	0
11	470	472	482	486	485	486	490	480	480	465	469	435	461	467	458	439	430	451	460	453	471	469	463	445	465	538	10 11 a	395	11 22 a	143	1
12	475	509	494	479	487	493	480	472	473	465	401	331	343	373	438	366	419	501	480	462	462	463	465	464	450	576	1 33 a	216	3 54 p	360	0
13	464	467	473	491	486	482	459	455	442	460	398	363	332	176	431	391	392	430	434	436	465	478	470	487	432	534	2 44 a	-131	0 47 p	665	2
14	496	488	477	477	482	488	476	474	425	387	280	451	462	438	436	359	148	250	437	471	478	469	474	477	429	526	0 6 a	- 81	10 22 a	607	2
15	473	481	479	504	507	490	422	420	390	408	279	361	423	428	419	378	429	460	466	467	468	465	466	478	440	550	3 42 a	- 25	10 51 a	575	2
16	488	508	494	508	510	511	491	487	477	473	469	450	432	423	391	421	475	475	472	472	461	470	471	473	471	533	2 3 a	230	0 54 p	303	0
17	476	482	483	482	477	474	476	474	481	473	470	470	464	467	464	458	467	470	466	465	465	466	467	466	471	509	2 6 a	436	3 48 p	73	2
18	466	472	467	471	471	472	470	469	471	471	459	393	434	463	462	460	465	462	455	445	444	445	447	463	462	484	5 52 a	266	11 18 a	218	0
19	468	482	485	495	496	502	442	398	381	422	458	291	318	417	339	441	385	374	413	437	436	444	433	443	425	577	9 39 a	- 95	11 23 a	672	2
20	458	470	477	480	486	482	498	483	476	465	477	477	470	465	464	464	451	463	464	459	457	457	455	456	469	533	6 33 a	426	4 39 p	107	2
21	461	466	473	480	494	490	504	518	497	476	479	455	474	454	464	444	335	284	355	418	456	446	452	463	452	604	6 45 a	142	4 53 p	462	0
22	459	466	474	478	475	477	495	485	462	403	461	464	453	435	436	461	445	470	470	466	468	461	477	484	464	548	9 51 a	242	1 59 p	306	0
23	478	488	475	478	483	499	488	474	476	476	458	455	467	475	464	468	451	448	466	478	473	471	467	467	472	505	5 41 a	415	11 34 a	90	2
24	467	470	473	474	473	473	476	480	476	468	466	449	470	462	457	457	447	464	487	482	473	468	468	465	469	508	6 27 p	408	11 37 a	100	2
25	468	472	474	477	473	476	477	476	463	432	469	468	442	463	472	473	468	471	468	461	461	462	464	463	466	503	10 33 a	190	9 41 a	313	0
26	464	467	471	471	470	477	483	493	483	464	465	384	459	446	454	459	433	405	432	452	461	460	455	438	456	501	7 27 a	294	11 24 a	207	0
27	463	494	517	504	501	529	594	490	473	467	457	457	465	463	468	441	445	422	457	475	471	457	455	453	476	660	6 43 a	366	5 48 p	294	0
28	449	462	541	509	580	555	522	438	448	483	465	457	434	409	428	483	482	480	476	467	462	458	457	459	475	636	4 53 a	257	8 0 a	379	0
29	461	461	463	465	467	468	467	469	466	465	469	466	464	465	460	469	470	471	470	465	460	460	461	461	465	474	5 20 p	447	2 8 p	27	2
30	461	463	466	466	466	466	466	466	466	463	455	456	465	470	470	470	470	470	468	464	460	461	461	460	465	480	4 29 p	446	10 27 a	34	2
31	460	464	466	475	488	517	533	488	483	478	337	261	291	300	258	307	142	46	129	432	471	439	342	482	379	729	11 53 p	-149	5 54 p	878	2
Mean 1	469	478	485	484	487	487	483	472	467	458	430	407	432	435	438	437	424	429	443	457	462	460	455	462	456	547		223		324	
» 2	469	483	495	489	495	492	494	478	476	462	449	414	434	438	439	443	441	444	449	455	459	459	460	460	462						
» 3	470	482	490	492	493	493	490	481	473	462	444	428	430	438	440	441	442	445	449	455	458	459	460	462							

February 1906.
$H_{,} = 0.08\,000 +$

Table CLII. — Hourly Values of Horizontal Intensity.

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King Point.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	515	496	482	526	459	498	580	472	464	465	402	182	386	477	480	463	444	464	411	304	430	*477*	460	481	451	660	0 0 a	-104	11 17 a	764	0
2	487	484	487	522	560	534	517	524	482	460	309	395	431	448	476	462	450	386	421	457	453	*462*	473	482	465	584	4 57 a	36	10 35 a	548	0
3	486	483	472	479	496	496	485	523	493	392	431	394	422	485	441	486	452	401	313	395	498	*471*	468	477	456	678	6 57 a	258	7 15 p	420	0
4	484	487	519	514	525	529	522	493	568	528	478	476	470	414	387	436	430	396	406	461	476	*464*	487	486	476	676	7 48 a	334	1 43 p	342	0
5	492	489	481	495	513	510	513	472	450	415	190	441	462	349	436	472	473	473	478	484	485	*468*	465	465	457	596	11 8 a	-116	9 58 a	712	0
6	547	544	600	529	516	488	448	501	479	485	441	253	284	296	292	315	446	406	490	500	486	*493*	497	492	451	812	0 56 a	- 43	11 51 a	855	0
7	494	482	488	499	524	493	517	511	485	339	180	338	456	430	405	418	379	290	474	501	506	*486*	470	481	444	614	1 37 a	-247	10 35 a	861	0
8	479	490	506	506	501	512	499	440	464	508	465	427	176	373	472	431	327	390	449	476	496	*490*	480	503	453	683	8 15 a	- 89	0 26 p	772	0
9	502	498	515	519	543	518	539	492	452	278	375	387	498	479	460	397	477	488	486	483	*467*	*459*	476	491	470	680	10 1 a	-218	9 28 a	898	0
10	514	517	518	505	521	513	490	453	479	337	268	336	370	516	488	505	493	406	345	486	*503*	*493*	482	494	460	614	0 14 a	7	9 46 a	607	0
11	494	497	507	503	502	508	512	505	467	457	439	367	378	445	480	457	482	495	487	489	*480*	*483*	481	483	475	554	11 43 a	- 8	10 58 a	562	0
12	483	484	490	495	501	507	508	504	470	477	479	462	478	368	426	445	436	410	485	487	485	*481*	485	487	472	569	9 41 a	265	1 27 p	304	1
13	487	486	495	496	495	498	495	494	500	465	405	492	444	484	486	478	413	420	466	479	475	*470*	470	473	474	541	11 10 a	63	10 42 a	478	0
14	474	479	481	480	480	479	480	489	464	485	426	423	463	476	475	480	492	471	488	486	475	*475*	464	450	472	551	9 14 a	356	11 6 a	195	2
15	460	479	512	532	527	536	515	456	364	462	420	498	296	200	351	413	187	101	188	309	328	*453*	422	378	391	572	9 29 a	-202	0 49 p	774	0
16	507	525	506	526	564	522	530	498	518	488	186	431	431	438	433	371	294	265	227	360	421	*387*	427	512	432	610	2 42 p	-281	10 41 a	891	0
17	510	521	492	501	499	517	517	483	418	505	500	478	479	424	413	500	478	479	477	462	468	*475*	479	484	482	639	10 3 a	302	9 16 a	337	0
18	486	529	494	499	542	502	500	500	494	501	475	482	476	474	454	363	391	456	457	466	466	*467*	471	505	477	620	10 39 p	256	3 51 p	364	0
19	542	470	461	468	443	325	497	521	467	364	429	237	127	494	-105	-161	66	304	465	470	372	*499*	486	481	363	663	6 47 a	*-623*	2 26 p	1286	2
20	485	474	474	470	467	465	470	466	465	466	451	455	436	446	462	471	466	458	472	481	484	*476*	470	469	467	517	5 17 a	364	10 19 a	153	2
21	464	471	477	474	470	481	461	462	465	458	466	467	482	481	479	459	456	458	460	458	468	*459*	458	468	467	497	8 13 a	406	10 41 a	91	2
22	478	485	483	485	500	506	499	498	489	461	399	455	472	470	455	446	462	458	445	454	463	*458*	450	460	468	516	5 5 a	285	10 34 a	231	1
23	488	511	523	538	568	587	566	519	495	434	193	447	472	453	442	346	375	457	459	456	466	*463*	467	485	467	605	5 41 a	-101	10 4 a	706	0
24	478	473	479	482	486	483	478	475	443	422	96	348	562	375	250	224	108	- 5	364	395	444	*475*	484	442	386	616	0 6 p	-305	5 23 p	921	0
25	417	383	435	453	476	429	400	474	413	205	105	413	468	471	479	459	410	271	-24	27	220	*162*	337	485	349	562	11 41 p	-422	10 8 a	984	1
26	448	413	514	506	545	301	179	363	485	466	431	247	446	450	485	488	469	426	350	272	*308*	*328*	444	412	407	702	4 13 a	-167	6 36 a	869	0
27	441	474	484	486	489	483	477	484	438	439	365	443	441	473	471	449	445	469	460	454	439	*460*	460	476	458	660	12 0 p	119	10 36 a	541	0
28	477	519	485	469	484	499	446	367	48	390	355	253	201	314	321	65	410	24	149	252	*393*	*436*	487	498	348	700	1 41 a	-440	8 19 a	1140	2
Mean 1	486	487	495	498	507	490	487	480	454	434	363	394	411	429	414	398	400	376	398	422	445	453	464	475	444	618		- 11		629	
» 2	490	494	504	508	519	501	494	483	472	442	352	393	419	424	430	424	401	383	410	434	455	461	468	475	452						
» 3	487	495	503	510	512	504	493	483	467	427	385	389	414	424	427	420	402	394	409	433	451	461	468	477							

March 1906. $H = 0.08\,000 +$

Table CLII. — Hourly Values of Horizontal Intensity.

γ

King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	546	538	551	449	448	519	494	460	350	413	341	458	476	469	475	432	388	407	241	367	389	370	474	498	440	653	9 37 a	173	6 16 p	480	0
2	438	481	490	488	493	499	481	505	510	492	459	460	465	446	454	459	450	465	469	454	441	442	453	458	469	612	1 17 a	391	11 38 a	221	1
3	474	471	471	473	479	478	480	488	478	457	452	394	348	444	475	459	465	465	465	456	454	451	457	498	460	645	11 30 p	116	11 41 a	529	0
4	479	528	507	523	542	511	465	452	453	420	467	478	495	471	464	429	418	348	353	349	429	396	396	479	452	690	1 50 a	256	6 56 p	434	0
5	567	534	554	597	563	522	441	233	431	356	399	366	341	295	404	425	385	476	476	459	447	447	477	462	444	661	3 29 a	-113	7 6 a	774	1
6	474	474	498	472	479	493	475	423	384	472	336	236	475	484	470	456	460	516	467	447	491	453	473	462	453	585	8 44 a	- 61	11 23 a	646	0
7	468	537	573	485	290	418	525	493	468	429	482	469	260	454	478	438	410	353	381	447	444	408	511	475	446	689	5 24 a	- 49	4 48 a	738	0
8	508	497	506	536	533	521	498	486	367	367	473	476	507	480	461	392	365	387	435	448	428	415	530	454	461	727	10 39 p	- 30	9 37 a	757	1
9	494	526	553	501	513	446	422	293	488	439	69	146	471	477	433	451	389	367	437	463	474	460	444	459	426	669	2 11 a	-283	11 5 a	952	2
10	546	535	514	520	511	495	489	339	440	468	323	142	447	471	469	467	455	449	461	481	459	455	477	472	454	745	0 38 a	-162	8 1 a	907	2
11	472	476	474	489	497	488	500	453	438	433	465	454	501	445	481	439	355	385	449	486	473	463	470	468	461	704	8 14 a	209	7 41 a	495	0
12	488	485	493	481	491	499	500	493	442	356	394	462	484	479	485	485	489	498	483	473	453	447	448	511	472	566	11 54 p	- 28	9 1 a	594	0
13	522	603	555	557	516	515	517	479	474	464	486	500	488	488	488	433	382	465	442	417	401	424	485	509	484	719	1 48 a	302	4 23 p	417	0
14	505	534	544	590	570	570	517	456	454	221	392	482	485	481	479	487	469	470	366	263	296	265	471	523	454	638	3 35 a	-330	9 10 a	968	2
15	491	506	504	503	504	530	470	389	475	466	469	472	451	466	427	485	471	486	479	469	464	466	462	464	474	581	5 55 a	198	7 21 a	383	0
16	469	472	474	482	489	495	487	489	482	453	466	437	235	402	369	311	365	352	392	414	403	401	430	473	427	514	3 18 a	86	0 37 p	428	0
17	528	549	569	541	602	583	509	494	472	465	343	399	478	473	475	451	441	396	387	430	487	474	451	437	476	633	4 21 a	176	10 19 a	457	0
18	483	481	488	502	522	529	482	390	432	404	334	484	228	396	489	474	484	472	475	480	477	460	455	502	455	568	4 57 a	-188	0 47 p	756	1
19	469	476	480	496	488	486	476	484	481	453	478	453	447	404	446	414	459	472	459	459	455	456	464	465	463	531	3 17 a	345	1 8 p	186	1
20	463	468	474	495	509	521	535	515	508	487	486	483	481	485	479	480	479	476	469	469	446	451	442	445	481	553	5 57 a	439	8 35 p	114	2
21	454	460	465	467	476	487	495	441	451	491	487	471	469	480	480	486	490	486	474	472	468	464	462	459	472	532	8 51 a	292	8 33 a	240	1
22	458	466	471	477	484	487	494	493	472	450	405	426	478	477	483	453	459	438	433	449	473	472	476	461	464	508	10 14 a	191	9 58 a	317	0
23	461	465	471	476	492	482	492	496	474	486	480	480	481	444	394	475	496	488	480	474	462	448	455	458	471	510	7 17 a	354	2 17 p	156	2
24	468	475	482	523	560	593	567	513	494	481	481	490	244	312	404	410	341	289	458	470	431	448	492	567	458	641	11 59 p	- 22	0 3 p	663	0
25	619	585	551	520	616	558	545	450	393	442	412	424	528	466	421	443	528	467	261	296	371	413	429	453	466	710	4 26 a	172	6 17 p	538	0
26	491	549	547	493	583	575	539	523	456	462	485	435	455	486	492	502	487	487	479	450	427	397	461	517	491	654	4 53 a	350	11 29 a	304	0
27	423	460	466	477	514	514	450	414	393	425	389	440	460	474	461	438	422	397	410	445	460	460	466	507	449	548	9 9 a	230	8 38 a	318	0
28	527	574	605	549	481	472	476	480	479	485	480	480	477	465	448	448	473	479	458	443	417	409	430	444	478	655	2 37 a	379	11 9 p	276	0
29	480	538	505	518	519	561	493	425	445	245	438	449	472	383	430	389	369	387	386	423	420	444	450	447	442	589	5 10 a	-369	9 16 a	948	2
30	473	469	539	547	522	511	510	470	434	419	445	481	482	483	471	446	414	404	436	438	468	452	456	462	468	563	2 59 a	321	8 48 a	242	1
31	496	510	510	494	484	516	487	464	458	445	459	474	416	440	454	419	380	444	440	464	462	459	460	455	462	541	2 21 a	236	0 32 p	305	0
Mean 1	491	507	512	507	509	512	494	451	451	431	422	429	436	449	456	444	433	435	429	437	441	435	462	476	460	617		116		501	
» 2	494	514	517	499	503	514	499	469	448	445	434	440	431	455	458	441	430	426	415	432	440	434	459	482	462						
» 3	496	510	512	504	505	507	495	471	453	443	438	436	439	450	453	443	432	424	422	430	437	442	459	479							

October 1905.
$Z = 0.58\,500 +$

Table CLIV. — Hourly Values of Vertical Intensity.

γ

King Point.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
18	525	521	515	537	525	506	503	521	441	**429**	482	542	**861**	616	532	525	532	537	542	542	*542*	537	537	536	537	1081	0 32 p	299	9 32 a	782	2
19	*537*	537	537	535	534	533	532	532	534	536	535	540	540	539	539	539	540	**545**	534	**519**	525	*530*	539	544	536	**559**	5 53 p	504	7 7 p	55	2
20	545	544	543	542	540	537	524	517	501	**481**	496	540	**567**	528	529	538	536	540	533	537	*537*	*533*	533	542	**532**	596	0 30 p	455	9 36 a	141	1
21	541	547	543	539	546	540	530	508	533	535	541	527	543	553	542	564	**725**	594	**422**	466	*506*	*521*	532	549	539	839	4 48 p	361	6 36 a	478	0
22	551	551	543	543	541	543	**524**	537	551	529	526	553	**574**	558	548	541	545	548	548	549	552	*555*	560	562	547	585	0 31 p	505	9 30 a	80	2
23	558	558	555	555	554	551	525	**459**	471	525	570	**634**	633	622	532	541	550	557	549	545	*551*	*549*	564	565	553	700	11 53 a	347	7 39 p	353	0
24	566	564	566	561	558	555	541	539	**446**	464	**631**	629	610	**631**	592	551	529	531	538	545	*542*	*544*	558	560	557	739	10 52 a	329	8 29 a	410	0
25	567	565	557	557	558	557	553	550	**671**	536	479	620	639	538	554	551	527	480	513	503	*463*	*456*	493	527	542	831	8 40 a	344	10 28 a	487	0
26	530	565	497	463	484	508	**420**	440	529	553	556	574	662	**726**	650	686	700	629	496	528	551	*548*	567	558	559	911	0 49 p	**173**	6 35 a	738	2
27	564	563	551	545	503	**487**	494	512	579	605	609	**616**	572	549	556	556	557	558	556	554	*549*	560	563	561	555	665	11 47 a	470	6 8 a	195	0
28	544	562	560	554	544	534	530	537	542	552	581	577	701	858	**941**	880	813	804	**449**	492	*512*	*533*	538	556	**612**	**1244**	2 40 p	341	6 11 p	**903**	2
29	555	548	555	555	**557**	**557**	553	553	548	544	546	548	554	549	546	548	550	543	541	**539**	*539*	546	545	543	548	561	4 47 p	537	7 9 p	**24**	2
30	539	541	542	546	548	540	**538**	544	544	545	543	542	544	540	541	544	544	546	545	545	544	*544*	**549**	547	544	576	8 2 p	535	5 44 a	41	2
31	549	549	548	549	549	551	553	552	552	552	553	553	**546**	549	548	549	550	551	**557**	**557**	*552*	552	**557**	556	551	566	5 45 a	**542**	3 3 a	**24**	2
Mean 1	548	551	544	541	539	536	523	**522**	532	528	546	571	**610**	597	582	580	586	569	523	530	533	536	545	550	551	747		410		337	
» 2	559	559	554	551	544	538	529	**514**	540	533	566	*605*	599	579	555	553	578	544	516	523	522	526	542	552	549						
» 3	557	558	554	550	544	537	528	**524**	532	543	568	594	**595**	578	561	560	563	546	525	521	523	529	541	551							

November 1905. $Z = 0.58\,500 +$

Table CLVI. — Hourly Values of Vertical Intensity.

γ

King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	557	557	552	550	550	551	551	551	551	547	547	547	547	551	551	551	551	553	558	553	556	555	551	553	552	567	7 0 p	546	0 27 p	21	2
2	555	553	553	549	549	548	548	547	548	547	547	545	548	549	547	546	551	550	554	550	545	547	550	548	549	564	7 41 p	543	11 3 a	21	2
3	551	550	548	552	550	551	548	547	551	546	544	548	557	555	553	548	552	541	537	536	545	530	560	565	549	576	11 51 p	522	10 56 a	54	2
4	571	571	571	579	561	543	517	501	473	497	550	585	683	635	702	718	724	606	686	728	577	464	476	486	584	869	3 41 p	413	8 27 a	456	0
5	465	473	431	416	454	452	442	473	547	569	587	596	602	590	589	562	576	614	595	510	521	541	560	570	531	632	5 59 p	383	7 3 a	249	1
6	577	539	530	582	571	569	551	544	626	504	486	548	605	610	737	625	595	563	565	518	540	550	563	566	569	926	2 47 p	309	10 8 a	617	1
7	574	558	537	535	479	512	535	545	572	659	505	558	551	641	584	549	543	547	529	536	543	564	569	563	554	750	9 5 a	463	10 6 a	287	0
8	540	503	505	499	517	554	552	551	550	542	542	550	561	581	572	565	564	561	557	547	561	575	592	548	550	616	10 37 p	471	4 8 a	145	2
9	551	564	564	565	564	560	556	549	516	482	485	548	566	575	583	594	597	564	479	508	523	553	553	552	548	648	8 20 a	369	8 51 a	279	0
10	553	553	553	566	555	543	552	454	520	702	715	693	653	569	561	552	552	556	556	555	556	561	568	568	573	899	9 53 a	392	7 23 a	507	0
11	568	568	564	562	561	556	557	553	586	548	523	583	608	568	564	551	558	552	547	549	554	560	564	567	561	880	9 20 a	445	10 4 a	435	0
12	570	578	576	565	520	518	494	575	508	663	1207	640	628	710	745	1024	791	801	869	588	752	663	596	571	673	1370	10 11 a	369	8 33 a	1001	2
13	550	566	555	544	556	565	472	501	552	811	574	569	546	644	790	1012	724	645	556	537	557	558	563	576	605	1350	3 3 p	414	7 3 a	936	2
14	578	576	565	560	556	534	524	603	612	612	683	723	688	693	578	560	560	563	552	552	539	530	541	543	584	901	0 49 a	415	8 54 a	486	0
15	513	463	407	444	253	365	379	507	551	540	567	539	568	592	639	761	1018	1269	1072	1426	1067	341	551	562	641	2024	8 7 p	−14	9 51 p	2038	2
16	539	424	488	519	527	447	580	547	589	714	706	676	1189	1084	706	635	909	746	531	573	524	531	539	554	637	1636	0 36 p	255	1 20 a	1381	2
17	555	549	565	548	568	482	528	271	267	475	634	538	600	626	659	655	819	854	727	482	469	493	547	546	560	967	5 51 p	−72	8 10 a	1039	2
18	578	572	535	539	546	503	525	363	361	473	475	522	611	572	602	585	587	558	567	563	563	558	539	566	536	717	11 55 a	155	7 59 a	562	0
19	569	582	569	557	571	555	557	564	553	555	597	675	744	684	557	535	529	531	535	529	529	545	563	558	573	861	11 28 a	509	7 30 p	352	0
20	570	556	563	558	552	554	563	550	563	532	632	640	538	553	551	551	557	569	531	518	518	540	554	562	557	796	10 52 a	421	9 15 a	375	0
21	568	558	562	541	525	547	573	547	650	656	656	906	676	679	700	661	661	648	529	488	512	538	553	549	603	1133	11 44 a	440	6 44 p	693	0
22	574	547	552	570	566	546	553	611	568	541	662	611	601	574	583	584	556	558	556	553	558	560	567	571	572	706	10 10 a	384	9 2 a	322	0
23	575	577	565	573	567	550	538	569	494	461	525	608	870	683	738	780	729	652	561	569	515	558	535	557	595	977	0 19 p	372	8 12 a	605	0
24	576	568	577	562	578	566	548	535	503	549	647	680	565	597	668	749	677	613	503	490	519	553	563	567	581	820	3 20 p	401	6 32 a	419	0
25	570	570	570	556	558	560	545	525	556	487	513	548	567	577	584	568	543	520	526	545	563	573	566	569	553	647	9 1 a	389	9 30 a	258	0
26	577	574	569	567	566	566	556	550	520	541	558	564	571	589	707	661	558	593	748	630	603	566	546	561	585	813	6 32 p	496	5 3 p	317	0
27	552	574	555	556	523	517	513	597	540	446	484	566	569	583	599	784	789	630	618	537	537	537	566	565	567	899	3 55 p	311	8 48 a	588	0
28	568	573	583	558	538	550	524	521	495	500	533	588	670	704	658	557	639	590	537	517	538	536	554	553	566	839	0 59 p	319	8 54 a	520	0
29	569	569	562	547	547	538	515	503	502	537	547	546	564	688	649	573	562	554	505	506	545	535	555	551	553	756	1 24 p	480	8 51 a	296	0
30	578	549	522	548	543	548	541	538	536	536	540	545	560	583	582	558	533	525	530	533	529	542	552	554	546	608	2 15 p	500	2 33 a	108	2
Mean 1	560	550	545	546	536	532	531	527	532	559	593	600	627	628	628	639	637	621	587	574	565	540	555	558	574	892		380		512	
» 2	569	564	560	560	551	546	542	536	537	541	567	615	626	620	627	618	606	577	554	547	544	543	552	557	569						
» 3	565	564	561	558	552	546	542	538	538	546	573	606	622	623	623	617	602	578	558	548	544	546	551	559							

December 1905. $Z = 0.58\,500 +$

Table CLIV. — Hourly Values of Vertical Intensity.

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King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	555	555	554	557	557	552	531	530	552	548	549	546	547	547	557	557	557	557	557	557	551	546	557	556	552	587	11 7 a	486	11 40 a	101	1
2	556	556	553	551	549	547	547	547	542	541	543	546	547	547	556	583	610	613	497	469	465	531	517	564	545	658	4 28 p	448	7 39 p	210	0
3	533	558	555	560	544	559	551	547	548	548	560	560	562	565	573	580	595	541	541	544	548	557	555	553	556	629	4 39 p	455	0 24 a	174	0
4	561	562	528	565	558	550	559	626	584	572	615	801	748	989	734	719	818	809	629	538	473	542	538	551	636	1168	1 22 p	434	8 18 p	734	2
5	557	578	574	583	581	587	579	577	571	556	559	570	580	587	581	586	583	575	574	574	573	585	578	586	576	631	3 32 a	530	10 3 a	101	1
6	586	587	584	584	581	579	579	577	566	585	581	577	601	579	581	584	579	572	557	554	551	575	565	584	577	647	0 34 p	536	8 12 p	111	1
7	589	589	578	593	582	585	584	572	575	574	601	585	578	584	587	584	576	582	580	582	580	580	583	582	583	699	10 43 a	564	2 14 a	135	1
8	584	582	585	585	585	584	586	584	588	599	581	581	586	585	668	624	586	559	559	557	579	588	578	585	587	715	2 41 p	549	5 32 p	166	0
9	590	589	580	577	579	578	577	583	583	584	587	584	586	587	587	592	584	572	576	575	574	572	577	569	581	613	3 51 p	553	9 24 p	60	2
10	556	559	563	560	557	560	562	559	549	556	503	525	580	561	554	562	543	544	544	545	545	549	551	554	551	609	0 26 p	467	10 16 a	142	1
11	557	557	558	551	555	553	553	552	552	549	549	551	551	567	599	599	523	533	540	542	547	546	551	547	553	638	3 2 p	339	4 18 p	299	0
12	544	548	552	542	558	547	537	539	509	543	451	463	509	630	632	548	562	542	527	519	505	536	558	470	536	782	1 41 p	332	11 38 p	450	1
13	471	443	465	486	426	432	395	420	479	548	494	768	606	558	589	691	757	509	494	548	545	541	494	517	528	952	11 51 a	276	5 29 a	676	2
14	522	536	551	537	499	515	534	524	454	493	509	618	751	656	620	579	601	540	511	532	531	555	541	540	552	886	11 57 a	282	8 57 a	604	2
15	548	550	559	550	545	548	549	544	548	550	553	553	558	557	609	793	670	488	509	517	535	546	549	553	562	856	3 37 p	467	5 43 p	389	0
16	558	554	546	550	547	546	547	521	525	552	575	643	561	528	541	550	553	550	535	535	542	547	551	557	551	747	11 43 a	514	8 2 a	233	0
17	555	557	554	555	553	525	502	526	563	529	565	625	606	788	699	585	535	537	533	534	531	539	557	558	567	950	1 47 p	378	9 35 a	572	2
18	564	556	558	550	543	542	528	543	491	515	485	535	544	559	560	647	633	617	504	482	524	524	542	553	546	700	4 5 p	356	10 14 a	344	0
19	559	563	569	544	541	510	536	553	585	556	607	607	588	679	633	574	571	500	476	505	462	505	527	553	554	780	1 46 p	406	9 12 a	374	0
20	563	556	531	531	517	516	503	590	599	627	730	656	599	755	1028	862	751	641	683	603	533	506	562	533	624	1154	2 9 p	401	8 57 a	753	2
21	540	562	546	556	536	557	554	545	550	550	558	567	557	549	548	551	547	546	545	546	545	554	556	564	551	577	1 27 a	485	0 0 a	92	2
22	562	556	555	555	556	554	548	555	503	524	603	651	661	609	541	548	559	554	558	561	559	566	570	571	566	799	11 56 a	445	8 45 a	354	0
23	564	562	561	561	559	557	557	557	558	559	560	561	557	558	559	560	560	563	565	565	563	551	554	556	559	567	1 15 a	546	9 35 p	21	2
24	558	551	554	553	553	553	553	552	551	553	553	553	552	555	554	538	553	555	555	555	556	552	553	551	553	559	2 49 p	533	3 27 p	26	2
25	553	552	554	554	552	551	551	551	552	554	555	555	562	560	561	558	546	538	535	526	531	544	555	553	550	587	11 41 p	503	6 3 p	84	2
26	561	580	575	567	534	488	547	548	560	554	551	577	586	572	554	557	558	534	532	547	540	551	559	558	556	638	11 59 a	447	5 21 a	191	0
27	557	562	561	561	560	560	549	539	532	566	484	530	559	559	560	560	560	558	556	555	555	555	565	563	553	609	9 27 a	404	10 29 a	205	0
28	563	570	570	570	569	568	561	563	564	561	559	587	707	650	567	549	569	597	604	516	535	563	562	523	573	765	0 33 p	443	7 27 p	322	0
29	521	552	540	554	557	517	523	475	520	559	565	593	626	850	765	684	623	541	538	529	527	558	570	569	577	1029	1 49 p	433	7 20 a	596	2
30	572	575	553	581	569	571	563	564	562	596	691	597	652	571	554	567	573	574	575	568	537	473	513	556	571	827	10 15 a	461	9 37 p	366	0
31	568	576	573	573	571	569	568	570	571	572	574	575	575	583	583	601	571	556	560	564	565	568	575	575	572	618	3 39 p	551	5 0 p	67	2
Mean 1	556	560	557	558	551	548	546	550	548	558	563	589	593	614	608	603	597	566	551	544	539	549	554	555	565	742		453		289	
» 2	560	563	561	560	554	549	551	551	546	555	565	578	590	581	578	595	582	557	539	531	533	543	549	556	560						
» 3	560	562	561	559	554	551	550	550	549	555	566	578	585	583	583	588	579	559	541	533	535	542	549	555							

January 1906.
$Z = 0.58\,500 +$

Table CLIV. — Hourly Values of Vertical Intensity.

King Point.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	572	571	571	571	564	565	564	556	564	575	555	**548**	566	573	570	572	**576**	550	552	552	559	*572*	573	573	566	601	11 15 a	514	11 51 a	87	1
2	575	576	581	584	580	573	576	574	568	569	645	**807**	586	**543**	554	573	578	575	567	562	558	*557*	569	577	584	899	11 23 a	531	10 31 a	368	1
3	579	582	579	562	558	565	570	570	556	552	555	**631**	572	546	573	551	564	569	555	552	**542**	*548*	564	579	566	735	11 29 a	465	10 53 a	270	0
4	572	574	567	567	566	562	554	487	**433**	552	550	569	555	572	592	**602**	585	544	549	550	537	*520*	550	581	554	621	3 44 p	**273**	7 51 a	348	0
5	566	574	567	**576**	**576**	575	570	551	535	**523**	561	571	574	574	**576**	575	575	569	564	573	573	*573*	573	573	567	584	4 33 a	482	9 32 a	102	1
6	590	581	**542**	581	554	**594**	584	581	574	577	571	569	571	591	591	571	571	571	570	575	578	*578*	579	578	576	604	5 20 a	522	2 24 a	82	1
7	577	577	575	575	577	579	578	578	573	572	571	**585**	**585**	555	565	576	565	**543**	562	571	571	*567*	563	568	571	636	11 24 a	498	11 11 a	138	0
8	570	565	550	585	584	576	578	578	572	572	577	583	589	582	586	**604**	573	572	571	**547**	556	*557*	570	579	574	628	3 36 p	518	2 44 a	110	1
9	582	584	585	585	586	592	586	584	578	569	637	**696**	600	608	599	598	**555**	575	566	560	561	*567*	578	560	587	855	10 57 a	536	11 15 p	319	0
10	578	593	580	576	575	574	573	563	569	**503**	578	**630**	621	604	621	567	548	566	566	567	563	*571*	567	571	576	691	11 21 a	403	9 21 a	288	0
11	573	574	564	561	561	566	555	548	536	536	**509**	554	574	568	**582**	568	555	534	533	552	554	*568*	570	581	557	584	11 39 p	434	10 13 a	150	0
12	580	560	571	570	560	575	549	545	562	562	630	650	622	627	580	**658**	584	**532**	569	569	568	*574*	574	575	581	744	3 55 p	519	4 47 p	225	0
13	578	584	572	574	578	572	556	546	529	549	640	651	638	**856**	576	617	613	545	544	553	536	*522*	553	555	585	**1038**	1 0 p	509	5 42 p	529	2
14	566	568	563	562	561	551	539	532	482	538	711	634	662	583	582	706	**792**	558	**454**	502	530	*548*	554	544	576	923	4 6 p	416	8 54 a	507	2
15	564	574	581	564	530	539	535	497	**483**	533	**731**	659	658	635	684	670	568	498	517	525	531	*540*	557	564	572	801	10 22 a	364	8 51 a	437	2
16	555	557	558	557	558	547	545	542	544	543	554	569	595	**636**	632	557	**514**	529	530	534	537	*538*	543	543	554	751	0 56 p	501	4 5 p	250	0
17	545	545	542	542	543	541	543	545	**538**	**538**	543	550	552	**553**	552	547	539	549	547	547	544	*548*	550	549	546	572	2 9 p	530	8 53 a	42	2
18	550	548	552	550	548	549	551	551	550	548	553	**572**	548	538	551	548	550	542	531	532	**507**	*511*	535	555	545	645	11 21 a	502	8 27 p	143	0
19	561	559	559	575	571	554	539	**385**	424	485	544	688	743	655	**717**	606	660	603	548	538	540	*545*	561	563	572	838	0 9 p	288	7 8 a	550	2
20	557	555	555	551	541	534	**526**	542	548	546	543	543	546	549	549	558	563	551	556	556	560	*564*	**570**	565	551	568	2 56 p	504	6 27 a	64	2
21	560	560	558	553	551	566	502	514	524	532	527	564	548	570	553	573	**666**	612	499	**494**	496	*522*	540	548	547	759	4 53 p	453	6 34 p	306	0
22	554	554	548	547	545	546	541	538	536	**479**	493	544	561	587	**605**	546	534	528	534	535	539	*550*	543	541	543	744	2 2 p	376	9 53 a	368	1
23	562	557	563	561	561	550	546	554	549	550	557	**581**	565	550	552	551	543	544	**535**	536	546	*548*	551	551	553	606	11 39 a	522	6 36 p	84	1
24	549	553	550	550	549	552	550	541	531	536	**506**	552	550	556	**558**	**558**	551	526	523	534	533	*537*	542	544	543	579	11 41 a	481	10 23 a	98	1
25	542	544	542	545	549	548	547	546	550	**573**	**540**	544	564	550	545	549	548	548	545	545	542	*550*	553	556	549	658	9 46 a	518	10 6 a	140	0
26	554	553	553	555	556	558	553	535	530	536	581	**694**	590	571	566	556	575	547	491	**482**	*504*	*520*	544	558	553	742	11 45 a	470	7 3 p	272	0
27	551	549	549	565	526	445	**366**	514	546	553	563	563	564	557	561	**572**	565	561	526	533	*541*	*559*	563	564	**540**	585	3 49 p	303	6 22 a	282	0
28	564	566	498	560	546	555	546	544	451	**400**	531	565	591	**614**	567	521	541	548	550	549	*546*	*549*	553	551	542	712	1 3 p	338	8 26 a	374	1
29	551	**552**	551	550	548	548	547	547	546	546	545	545	545	550	547	**544**	546	546	549	549	546	*548*	549	549	548	557	2 7 p	**541**	1 54 p	16	2
30	**550**	**550**	**550**	**550**	**550**	**550**	547	547	547	546	546	545	540	543	543	542	542	544	549	549	**539**	*546*	548	547	546	**551**	10 30 a	538	8 51 p	**13**	2
31	545	545	544	547	543	536	486	530	535	535	537	655	782	762	825	794	**843**	724	768	498	522	*496*	545	**468**	**607**	953	4 36 p	345	11 18 p	**608**	2
Mean 1	563	564	558	563	558	556	545	540	**534**	539	570	**600**	592	592	589	585	583	558	549	542	543	548	557	558	562	702		458		244	
» 2	566	566	564	563	559	556	541	545	543	549	565	**602**	580	577	579	575	567	554	540	542	**540**	547	557	565	560						
» 3	566	565	564	562	559	553	546	544	545	552	570	**587**	585	578	577	574	566	554	544	**541**	542	548	557	563							

February 1906.
$Z = 0.58\,500 +$

Table CLIV. — Hourly Values of Vertical Intensity.

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King. Point.
Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	516	544	561	529	518	439	**437**	517	543	553	649	**873**	635	549	545	550	562	555	544	575	487	*522*	531	536	553	1062	11 19 a	346	5 46 a	716	1
2	555	559	562	537	**518**	556	551	524	538	553	**683**	617	571	554	539	557	563	592	538	522	534	*541*	534	544	556	884	10 42 a	511	4 30 a	373	0
3	558	556	563	551	548	550	497	**438**	546	550	550	555	578	571	579	542	555	559	**591**	549	502	*536*	522	540	544	630	6 17 p	279	7 0 a	351	0
4	551	563	546	543	543	531	510	461	**358**	480	539	541	556	**624**	607	556	541	532	536	503	508	*536*	534	547	531	682	1 44 p	270	7 59 a	412	0
5	552	552	554	558	552	542	524	**513**	533	587	**716**	516	580	713	595	519	514	**513**	515	519	520	*534*	548	533	554	794	10 12 a	442	11 10 a	352	0
6	557	503	396	444	444	490	**388**	450	526	483	599	741	766	732	764	**782**	618	552	490	502	514	*528*	534	546	556	1011	11 36 a	304	6 25 a	707	0
7	541	536	540	539	532	511	506	517	529	651	**803**	631	574	591	626	635	677	595	514	**503**	519	*537*	553	548	571	1092	10 39 a	483	4 43 a	609	0
8	545	548	534	537	544	535	534	546	**398**	461	557	680	**857**	708	537	551	684	549	463	468	510	*514*	530	540	555	994	0 29 p	234	8 21 a	760	1
9	543	542	540	542	514	514	488	495	515	657	**446**	527	541	554	591	**662**	515	506	500	517	534	*534*	536	535	535	966	9 32 a	317	10 5 a	649	0
10	540	547	539	550	537	529	494	479	483	663	**739**	638	635	545	545	532	527	555	540	**460**	*504*	*530*	543	546	550	964	9 51 a	435	6 58 p	529	0
11	553	550	553	547	534	532	**527**	**527**	533	538	555	538	**614**	572	534	554	531	533	533	533	533	*532*	535	535	543	729	0 45 p	376	11 44 a	353	0
12	540	539	539	538	538	531	528	526	531	477	**464**	506	550	**658**	578	528	530	560	516	509	518	*524*	530	539	533	732	1 30 p	410	10 29 a	322	0
13	543	538	537	539	536	532	532	531	532	538	**596**	552	543	523	523	529	546	512	**490**	498	519	*529*	533	536	532	763	10 49 a	485	6 57 p	278	0
14	545	545	544	540	539	537	535	534	531	525	**554**	540	552	533	537	535	530	525	**520**	525	526	*524*	529	547	534	598	10 51 a	412	9 15 a	186	1
15	548	538	530	522	542	527	501	511	553	**434**	561	538	746	**826**	660	657	817	728	581	539	473	*509*	531	464	577	1001	4 36 p	375	9 10 a	626	0
16	486	472	501	505	500	489	504	519	**452**	477	619	483	551	641	626	**666**	647	580	581	455	457	*522*	474	470	**528**	872	10 51 a	377	11 24 a	495	0
17	507	520	538	536	538	536	526	485	487	**430**	494	538	540	596	**635**	524	533	537	542	544	532	*527*	536	545	530	709	1 54 p	357	9 16 a	352	0
18	534	527	538	535	499	551	545	521	506	**498**	521	538	548	550	568	**622**	563	536	529	519	505	*509*	510	527	533	647	3 29 p	455	4 33 a	192	1
19	500	475	445	431	453	420	**343**	429	502	521	550	834	664	594	**987**	713	843	864	733	626	646	*505*	517	553	589	**1348**	2 39 p	224	3 5 p	**1124**	2
20	561	563	558	560	556	558	554	556	557	556	578	585	**601**	562	556	553	558	556	**544**	545	546	*546*	555	558	559	630	10 21 a	**533**	5 18 a	**97**	2
21	560	560	560	560	560	552	531	516	**503**	545	555	**569**	546	548	559	562	564	551	543	526	521	*536*	545	562	547	**594**	11 48 a	489	7 56 a	105	2
22	553	554	562	558	549	539	546	540	534	548	**599**	580	543	565	567	567	541	543	543	524	**517**	*524*	544	536	549	641	11 20 a	513	8 42 p	128	2
23	557	546	548	551	558	531	527	523	536	561	612	589	548	567	597	**653**	580	**503**	517	526	539	*548*	551	546	556	714	10 16 a	410	10 27 a	304	0
24	560	559	555	548	545	546	550	546	563	586	848	842	633	833	953	925	925	**984**	851	806	698	*587*	509	**487**	**706**	1145	4 23 p	424	10 8 p	721	1
25	489	421	**411**	439	470	484	421	465	556	745	585	531	632	590	567	573	589	714	**828**	595	656	*662*	547	475	560	1027	6 38 p	366	10 33 a	661	0
26	469	440	518	569	454	593	585	**435**	464	546	711	**800**	698	629	606	567	564	584	682	773	624	*571*	492	512	577	908	5 41 a	320	6 59 a	588	0
27	541	566	562	564	566	560	563	544	564	**503**	**637**	579	561	559	557	564	575	552	553	554	551	*551*	554	570	560	839	10 42 a	459	9 21 a	380	0
28	502	549	550	573	569	549	546	605	704	**357**	577	761	933	821	858	988	749	**1063**	*932*	844	*487*	*462*	501	521	667	1142	5 8 p	**212**	9 13 a	930	2
Mean 1	535	532	531	533	526	527	510	**509**	520	536	603	615	617	618	**621**	613	605	604	580	555	534	535	530	532	560	861		386		475	
» 2	535	527	526	532	523	530	510	**497**	513	548	606	577	599	**614**	596	589	579	567	558	533	530	542	533	529	550						
» 3	532	529	528	528	527	523	511	**504**	518	554	585	591	598	**606**	599	588	579	568	554	538	534	537	534	531							

March 1906. $Z = 0.58\,500 +$

Table CLIV. — Hourly Values of Vertical Intensity.

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King Point. Gr. M. T.

Day	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midt.	Mean	Max.	Hour	Min.	Hour	Range	Char.
1	535	477	428	448	479	481	554	553	534	**371**	623	555	573	613	605	603	**662**	604	557	460	501	545	460	495	530	721	4 34 p	258	9 42 a	463	0
2	565	573	569	559	558	555	529	**515**	521	555	556	579	590	**610**	584	563	565	559	560	558	559	550	545	565	560	654	1 33 p	483	7 59 a	171	1
3	564	564	556	556	556	561	561	546	546	540	**532**	585	**649**	558	542	562	554	542	537	537	533	544	546	550	555	726	0 32 p	496	10 42 a	230	0
4	546	516	449	**367**	402	478	498	533	529	531	547	564	548	570	577	**633**	626	621	567	471	479	515	556	523	527	692	4 8 p	276	3 30 a	416	0
5	456	473	429	425	402	525	535	**313**	372	537	670	539	719	**852**	729	724	700	495	506	521	536	548	545	554	554	1008	1 15 p	− 65	7 27 a	**1073**	2
6	555	555	554	566	554	546	524	550	718	**400**	747	**855**	666	641	648	617	573	525	544	534	528	549	549	567	**586**	1068	8 27 a	304	9 34 a	764	2
7	581	573	458	461	528	**27**	362	532	545	602	578	610	**788**	672	605	647	677	653	530	494	536	414	529	561	540	857	0 38 p	**−175**	5 22 a	1032	2
8	545	557	558	541	502	536	541	516	628	653	**451**	514	556	585	590	**679**	634	607	533	523	535	610	557	562	563	919	9 36 a	406	10 51 a	513	0
9	566	546	536	556	512	512	518	527	**475**	574	633	**688**	518	548	605	606	655	583	509	513	540	552	569	572	559	960	11 4 a	345	10 29 a	615	1
10	546	541	566	546	495	551	538	387	**344**	483	636	**700**	528	535	572	560	540	552	544	533	541	554	549	563	539	806	11 39 a	143	7 58 a	663	2
11	565	554	550	550	562	553	546	478	**350**	423	487	553	544	592	558	592	**607**	546	496	519	542	543	547	554	534	649	4 0 p	248	8 16 a	401	0
12	559	560	555	557	551	549	543	539	526	**426**	550	**578**	574	560	550	537	542	540	539	540	545	544	557	518	543	626	10 58 a	327	9 50 a	299	0
13	508	**481**	550	524	554	548	525	528	540	552	553	547	568	571	548	629	**649**	555	538	537	534	550	526	536	548	710	4 25 p	436	1 52 a	274	0
14	543	538	530	491	452	468	513	540	563	655	631	512	534	542	546	551	549	543	580	**708**	664	543	**426**	489	546	979	9 10 a	408	10 36 p	571	0
15	539	541	550	566	556	538	524	514	**459**	521	556	570	617	593	**631**	536	541	541	545	545	546	549	551	550	548	692	0 9 p	386	7 52 a	306	0
16	549	552	558	553	553	553	549	546	546	548	559	608	**824**	694	728	691	591	552	489	**487**	512	532	527	560	578	866	0 14 p	465	6 33 p	401	0
17	560	542	**509**	538	511	510	531	549	549	557	579	550	569	572	572	**597**	585	589	577	553	533	539	563	586	555	650	10 41 a	488	5 18 a	162	1
18	562	557	555	553	543	516	508	540	**499**	624	709	642	**845**	783	613	594	565	549	534	524	541	551	565	571	585	**1161**	0 49 p	449	8 31 a	712	2
19	582	567	559	550	553	548	553	547	542	547	540	560	577	**631**	583	593	539	**525**	533	541	546	548	548	551	556	693	1 6 p	**515**	9 39 a	178	1
20	553	555	549	547	541	**500**	530	535	531	549	549	550	552	554	553	552	551	550	547	546	551	543	559	**561**	547	**563**	11 32 p	478	5 24 a	**85**	2
21	560	552	547	548	546	546	536	516	**477**	482	519	**563**	**563**	543	546	551	553	556	548	543	542	546	551	550	541	576	0 15 p	393	8 42 a	183	1
22	551	549	548	547	546	545	543	533	528	560	558	**607**	582	568	558	581	560	542	537	523	**521**	535	551	556	551	689	9 59 a	498	10 16 a	191	1
23	551	551	551	551	549	552	548	**526**	**526**	540	549	551	550	598	**600**	543	535	548	547	547	546	547	542	546	550	635	1 45 p	506	8 37 a	129	2
24	553	556	556	543	523	522	519	544	539	542	541	542	690	688	616	668	**728**	655	496	493	488	490	534	**470**	562	778	4 43 p	433	11 29 p	345	0
25	509	534	479	**413**	419	535	484	522	555	578	639	609	638	737	752	**819**	713	725	762	537	476	489	554	548	584	941	2 57 p	262	3 59 a	679	2
26	548	548	522	433	**306**	396	438	479	533	**562**	546	551	530	546	546	547	553	555	555	552	545	546	504	523	**515**	643	11 24 a	277	4 26 a	366	0
27	602	579	562	558	535	511	**482**	491	511	562	539	533	548	579	564	581	**606**	547	498	498	511	511	533	542	537	643	4 21 p	345	6 48 a	298	0
28	567	513	**441**	525	577	561	550	548	547	546	545	546	554	559	**580**	562	532	532	544	551	556	540	531	538	544	597	2 38 p	414	2 40 a	183	1
29	539	531	548	552	559	535	475	**460**	504	600	538	578	603	**632**	600	610	587	535	510	496	522	509	531	551	542	823	9 17 a	430	6 56 a	393	0
30	553	556	536	535	547	555	541	539	560	544	**593**	551	545	548	554	562	580	553	536	533	518	547	549	550	549	618	9 18 a	475	9 3 a	143	1
31	551	568	567	568	566	539	530	**511**	518	553	567	584	619	605	608	**631**	**631**	577	624	618	545	560	564	575	574	703	0 32 p	459	7 54 a	244	0
Mean 1	551	544	530	524	518	**512**	521	515	520	536	575	583	606	**609**	596	604	597	567	546	534	535	537	540	547	552	757		361		396	
» 2	550	542	536	521	**511**	518	520	519	522	529	548	558	599	595	587	**604**	**604**	568	538	532	534	540	529	533	547						
» 3	544	542	534	522	**515**	517	519	520	523	532	546	566	588	592	593	**600**	595	570	544	534	535	536	533	536							

ABSOLUTE OBSERVATIONS AT THE FIELDSTATIONS NEAR GJØAHAVN AND IN THE NEIGHBOURHOOD OF THE MAGNETIC POLE

Table CLXX. — Horizontal Intensity. **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation			Gjøahavn			St.	I	M	r	Obs.
			H	*X*	*Y*	*H*	*X*	*Y*					
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1904	April 12	23 14	0.00430	+ 0.00361	− 0.00234	0.00798	+ 0.00791	− 0.00104	I	*Z*	8	l_e	A
		24 24	434	364	236	789	782	103					
»	» 13	17 24	0.00402	+ 0.00337	− 0.00219	0.00748	+ 0.00742	− 0.00098	»	»	9	k_E	»
		18 35	399	335	217	739	733	096					
»	» 13	21 13	0.00391	+ 0.00328	− 0.00213	0.00758	+ 0.00752	− 0.00099	»	»	10	k_E	»
		21 45	409	343	223	748	742	098					
»	» 13	22 23	0.00396	+ 0.00332	− 0.00216	0.00748	+ 0.00742	− 0.00098	»	»	11	k_E	»
		22 56	395	331	215	752	746	098					
»	» 14	13 5	0.00425	+ 0.00356	− 0.00231	0.00798	+ 0.00791	− 0.00104	»	»	12	k_e	»
		13 41	390	327	212	812	805	106					
»	» 14	14 26	0.00445	+ 0.00373	− 0.00242	0.00793	+ 0.00786	− 0.00104	»	»	13	k_e	»
		15 2	399	335	217	760	756	099					
»	» 29	15 16	0.00553	+ 0.00325	+ 0.00447	0.00808	+ 0.00801	− 0.00105	II	»	8	l_e	»
		16 16	587	345	445	840	833	110					
»	» 29	17 43	0.00592	+ 0.00348	+ 0.00479	0.00821	+ 0.00814	− 0.00107	»	»	9	k_E	»
		18 38	565	332	457	774	767	101					
»	» 29	20 5	0.00374	+ 0.00220	+ 0.00303	0.00621	+ 0.00616	− 0.00081	»	»	10	k_E	»
		21 6	437	257	354	636	631	083					
»	» 29	0 47	0.00344	+ 0.00202	+ 0.00278	0.00710	+ 0.00704	− 0.00093	»	»	11	k_E	»
		1 26	417	245	337	724	718	095					
»	» 30	0 30	0.00416	+ 0.00245	+ 0.00337	0.00728	+ 0.00722	− 0.00095	»	»	12	k_e	»
		1 8	436	256	353	744	738	097					
»	» 30	1 52	0.00384	+ 0.00226	+ 0.00311	0.00749	+ 0.00743	− 0.00098	»	»	13	k_e	»
		2 23	393	231	318	751	745	098					
»	May 5	22 43	0.00298	− 0.00021	− 0.00297	0.00730	+ 0.00724	− 0.00095	IV	»	8	l_E	»
		23 27	287	020	286	740	734	097					
»	» 5	0 16	0.00292	− 0.00020	− 0.00291	0.00747	+ 0.00741	− 0.00098	»	»	9	l_e	»
		0 58	280	020	279	742	736	097					
»	» 6	14 12	0.00347	− 0.00024	− 0.00346	0.00701	+ 0.00695	− 0.00092	»	»	10	k_E	»
		15 9	383	027	382	712	706	093					
»	» 6	16 26	0.00347	− 0.00024	− 0.00346	0.00712	+ 0.00706	− 0.00093	»	»	11	k_E	»
		17 18	293	020	292	711	705	093					
»	» 6	22 26	0.00293	− 0.00020	− 0.00292	0.00721	+ 0.00715	− 0.00094	»	»	12	k_e	»
		23 8	290	020	289	718	712	094					
»	June 6	23 9	0.00819	+ 0.00609	+ 0.00548	0.00804	+ 0.00797	− 0.00105	1	»	4	l_E	»
		23 50	854	655	571	817	808	106					
»	» 6	0 36	0.00785	+ 0.00583	+ 0.00525	0.00750	+ 0.00744	− 0.00098	»	»	5	l_E	»
		1 8	842	626	563	828	821	101					
»	» 7	19 2	0.00773	+ 0.00574	+ 0.00517	0.00764	+ 0.00757	− 0.00100	»	»	8	k_E	»
		19 39	810	602	542	783	776	102					

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation			Gjøahavn			St.	I	M	r	Obs.
			H	X	Y	H	X	Y					
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1904	June 8	16 32	0.00796	+ 0.00592	+ 0.00533	0.00740	+ 0.00734	− 0.00097	I	Z	9	k_E	A
		17 12	779	579	521	731	725	095					
»	» 8	17 56	0.00750	+ 0.00555	+ 0.00502	0.00741	+ 0.00735	− 0.00097	»	»	10	k_e	»
		18 27	758	563	507	740	734	097					
»	» 8	22 58	0.00734	+ 0.00545	+ 0.00491	0.00732	+ 0.00726	− 0.00096	»	»	11	k_e	»
		23 27	745	554	499	732	726	096					
»	» 8	0 2	0.00742	+ 0.00551	+ 0.00496	0.00731	+ 0.00725	− 0.00095	»	»	12	k_e	»
		0 31	722	537	483	742	736	097					
»	» 8	1 3	0.00746	+ 0.00554	+ 0.00499	0.00753	+ 0.00747	− 0.00098	»	»	13	k_e	»
		1 28	725	539	485	758	752	099					
»	» 11	17 3	0.00844	+ 0.00843	+ 0.00029	0.00716	+ 0.00710	− 0.00093	2	»	4	l_E	»
		17 50	868	867	030	735	729	096					
»	» 11	18 31	0.00889	+ 0.00888	+ 0.00031	0.00745	+ 0.00739	− 0.00097	»	»	5	l_E	»
		19 59	996	995	035	772	765	101					
»	» 11	0 53	0.00890	+ 0.00889	+ 0.00031	0.00731	+ 0.00725	− 0.00095	»	»	8	k_E	»
		1 22	882	881	031	734	728	096					
»	» 11	1 57	0.00898	+ 0.00897	+ 0.00031	0.00742	+ 0.00736	− 0.00097	»	»	9	k_E	»
		2 23	911	910	032	750	744	098					
»	» 13	16 12	0.00831	+ 0.00830	+ 0.00029	0.00712	+ 0.00706	− 0.00093	»	»	10	k_e	»
		16 47	886	885	031	723	717	094					
»	» 13	17 17	0.00892	+ 0.00891	+ 0.00031	0.00729	+ 0.00723	− 0.00095	»	»	11	k_e	»
		17 58	886	885	031	733	727	096					
»	» 13	23 33	0.00896	+ 0.00895	+ 0.00031	0.00777	+ 0.00770	− 0.00101	»	»	12	k_e	»
		0 5	885	884	031	781	774	102					
»	» 13	0 43	0.00910	+ 0.00909	+ 0.00032	0.00780	+ 0.00773	− 0.00102	»	»	13	k_e	»
		1 15	916	915	032	778	771	102					
»	» 18	2 48	0.00584	+ 0.00495	+ 0.00309	0.00751	+ 0.00745	− 0.0098	3	»	8	l_e	»
		3 31	583	494	309	752	746	098					
»	» 18	4 33	0.00566	+ 0.00480	+ 0.00477	0.00760	+ 0.00753	− 0.00099	»	»	5	l_E	»
		5 16	591	501	313	766	759	100					
»	» 18	6 6	0.00625	+ 0.00530	+ 0.00331	0.00768	+ 0.00761	− 0.00100	»	»	9	k_E	»
		6 42	622	527	330	775	768	101					
»	» 20	15 18	0.00712	+ 0.00604	+ 0.00377	0.00854	+ 0.00847	− 0.00111	»	»	10	k_E	»
		15 58	662	561	351	842	835	110					
»	» 20	16 40	0.00712	+ 0.00604	+ 0.00377	0.00818	+ 0.00811	− 0.00107	»	»	11	k_e	»
		17 18	670	568	355	816	809	107					
»	» 20	23 19	0.00637	+ 0.00540	+ 0.00338	0.00783	+ 0.00776	− 0.00102	»	»	12	k_e	»
		23 54	676	573	358	779	772	102					
»	» 20	0 32	0.00635	+ 0.00539	+ 0.00336	0.00760	+ 0.00753	− 0.00099	»	»	13	k_e	»
		1 2	593	503	314	744	738	097					
»	» 20	2 43	0.00519	+ 0.00440	+ 0.00275	0.00720	+ 0.00714	− 0.00094	»	»	4[1]	l_E	»
		3 28	531	450	281	742	736	097					
»	» 23	0 20	0.00632	+ 0.00630	− 0.00044	0.00755	+ 0.00749	− 0.00099	4	»	4[1]	l_E	»
		1 0	648	646	045	746	740	097					
»	» 23	1 46	0.00627	+ 0.00625	− 0.00044	0.00748	+ 0.00742	− 0.00098	»	»	6[2]	l_E	»
		2 28	638	636	045	752	746	098					

Magnet turned: [1] $a = 45°$. [2] $a = 55°$.

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation *H*	Fieldstation *X*	Fieldstation *Y*	Gjøahavn *H*	Gjøahavn *X*	Gjøahavn *Y*	St.	I	M	*r*	Obs.
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1904	June 23	3 11	0.00652	+ 0.00650	− 0.00045	0.00756	+ 0.00750	− 0.00099	4	Z	7[1]	l_E	A
		3 50	656	654	046	756	750	099					
»	» 24	15 54	0.00573	+ 0.00572	− 0.00040	0.00690	+ 0.00684	− 0.00090	»	»	5	l_E	»
		16 35	566	565	039	700	694	091					
»	» 24	17 20	0.00570	+ 0.00569	− 0.00040	0.00715	+ 0.00709	− 0.00093	»	»	8	l_e	»
		17 59	613	612	043	726	720	095					
»	» 24	0 36	0.00650	+ 0.00648	− 0.00045	0.00758	+ 0.00752	− 0.00099	»	»	9	k_E	»
		1 18	660	658	046	757	751	099					
»	» 24	2 4	0.00647	+ 0.00645	− 0.00045	0.00762	+ 0.00755	− 0.00099	»	»	10	k_e	»
		2 45	641	639	045	758	752	099					
»	» 25	15 14	0.00720	+ 0.00718	− 0.00050	0.00831	+ 0.00824	− 0.00108	»	»	11	k_e	»
		15 47	721	719	050	825	818	108					
»	» 25	16 30	0.00698	+ 0.00696	− 0.00049	0.00842	+ 0.00835	− 0.00110	»	»	12	k_e	»
		17 3	541	540	038	761	754	099					
»	» 25	17 52	0.00701	+ 0.00699	− 0.00049	0.00819	+ 0.00812	− 0.00107	»	»	13	k_e	»
		18 26	726	724	051	803	796	105					
»	» 27	16 3	0.00626	+ 0.00588	− 0.00214	0.00680	+ 0.00674	− 0.00089	5	»	13	k_e	»
		16 42	638	600	218	655	649	085					
»	» 27	23 41	0.00690	+ 0.00648	− 0.00236	0.00719	+ 0.00713	− 0.00094	»	»	11	k_e	»
		0 15	736	692	252	737	731	096					
»	» 27	0 54	0.00741	+ 0.00696	− 0.00253	0.00741	+ 0.00735	− 0.00097	»	»	10	k_e	»
		1 27	773	726	264	745	739	097					
»	» 28	18 8	0.00629	+ 0.00591	− 0.00215	0.00675	+ 0.00669	− 0.00088	»	»	8	l_e	»
		18 40	645	606	221	670	664	087					
»	» 28	1 11	0.00702	+ 0.00660	− 0.00240	0.00712	+ 0.00706	− 0.00093	»	»	4[2]	l_E	»
		1 48	708	665	242	732	726	096					
»	» 29	15 41	0.00610	+ 0.00573	− 0.00209	0.00672	+ 0.00666	− 0.00088	»	»	6[1]	l_E	»
		16 23	652	613	223	674	668	088					
»	» 29	17 10	0.00667	+ 0.00627	− 0.00228	0.00675	+ 0.00669	− 0.00088	»	»	7[1]	l_E	»
		17 50	653	614	223	692	686	090					
»	» 29	0 36	0.00746	+ 0.00701	− 0.00255	0.00760	+ 0.00753	− 0.00099	»	»	5	l_E	»
		1 8	752	707	257	752	746	098					
»	» 29	1 54	0.00756	+ 0.00710	− 0.00259	0.00758	+ 0.00752	− 0.00099	»	»	9	k_E	»
		2 23	771	725	264	754	748	098					
»	July 1	16 11	0.00999	+ 0.00969	− 0.00242	0.01038	+ 0.01029	− 0.00135	6	»	13	k_e	»
		16 42	—	—	—	1020	1011	133					
»	» 1	0 4	0.00780	+ 0.00756	− 0.00189	0.00795	+ 0.00788	− 0.00104	»	»	11	k_e	»
		0 51	744	722	180	800	793	104					
»	» 1	1 24	0.00769	+ 0.00746	− 0.00186	0.00798	+ 0.00791	= 0.00104	»	»	10	k_e	»
		1 54	751	729	182	794	787	104					
»	» 2	0 2	0.00700	+ 0.00679	− 0.00169	0.00750	+ 0.00744	− 0.00098	»	»	6[1]	l_E	»
		0 41	682	662	165	773	766	101					
»	» 2	1 20	0.00716	+ 0.00695	− 0.00173	0.00776	+ 0.00769	− 0.00101	»	»	7[2]	l_E	»
		1 52	728	706	176	776	769	101					
»	» 4	16 2	0.00795	+ 0.00771	− 0.00192	0.00818	+ 0.00811	− 0.00107	»	»	4[2]	l_E	»
		16 41	776	753	188	782	775	102					

Magnet turned: [1] $\alpha = 55°$ [2] $\alpha = 45°$.

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date		Gr. M. T.	Fieldstation H	Fieldstation X	Fieldstation Y	Gjøahavn H	Gjøahavn X	Gjøahavn Y	St.	I	M	r	Obs.
			h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1904	July	4	17 31	0.00722	+ 0.00701	— 0.00175	0.00754	+ 0.00748	— 0.00098	6	Z	5	l_E	A
			18 4	778	755	188	744	738	097					
»	»	4	0 23	0.00777	+ 0.00754	— 0.00188	0.00789	+ 0.00782	— 0.00103	»	»	8	l_E	»
			1 2	769	746	186	782	775	102					
»	»	4	1 50	0.00780	+ 0.00757	— 0.00189	0.00810	+ 0.00803	— 0.00106	»	»	9	k_E	»
			2 22	816	792	197	807	800	105					
»	»	6	15 56	0.00763	+ 0.00751	— 0.00132	0.00812	+ 0.00805	— 0.00106	7	»	13	k_e	»
			16 35	755	744	131	800	793	104					
»	»	6	17 39	0.00561	+ 0.00552	— 0.00097	0.00620	+ 0.00615	— 0.00084	»	»	12	k_e	»
			18 14	631	621	110	813	806	106					
»	»	7	0 11	0.00714	+ 0.00703	— 0.00124	0.00700	+ 0.00694	— 0.00091	»	»	6[1]	l_E	»
			0 50	717	706	125	715	709	093					
»	»	7	1 34	0.00738	+ 0.00727	— 0.00128	0.00713	+ 0.00707	— 0.00093	»	»	7	l_E	»
			2 14	748	737	130	730	724	095					
»	»	8	15 53	0.00692	+ 0.00681	— 0.00120	0.00700	+ 0.00694	— 0.00091	»	»	4	l_E	»
			16 46	703	692	122	690	684	090					
»	»	8	17 37	0.00652	+ 0.00642	— 0.00113	0.00703	+ 0.00687	— 0.00092	»	»	5	l_E	»
			18 16	743	732	129	725	719	095					
»	»	8	22 52	0.00786	+ 0.00774	— 0.00136	0.00733	+ 0.00727	— 0.00096	»	»	8	l_e	»
			23 38	767	755	133	735	729	096					
»	»	8	0 30	0.00789	+ 0.00777	— 0.00137	0.00740	+ 0.00734	— 0.00097	»	»	9	k_E	»
			1 13	769	757	134	745	739	097					
»	»	9	15 27	0.00727	+ 0.00716	— 0.00126	0.00710	+ 0.00704	— 0.00093	»	»	10	k_e	»
			16 8	692	681	120	682	676	089					
»	»	9	16 57	0.00703	+ 0.00692	— 0.00122	0.00690	+ 0.00684	— 0.00090	»	»	11	k_e	»
			17 40	758	746	132	610	605	080					
»	»	11	16 8	0.00580	+ 0.00571	— 0.00101	0.00674	+ 0.00668	— 0.00088	8	»	6	l_E	»
			17 4	556	548	097	678	672	088					
»	»	11	17 50	0.00584	+ 0.00575	— 0.00101	0.00718	+ 0.00712	— 0.00094	»	»	7	l_E	»
			18 25	637	627	111	726	720	095					
»	»	11	23 14	0.00688	+ 0.00678	— 0.00119	0.00774	+ 0.00767	— 0.00101	»	»	4	l_E	»
			23 55	680	670	118	777	770	101					
»	»	11	0 41	0.00700	+ 0.00689	— 0.00122	0.00783	+ 0.00776	— 0.00102	»	»	5	l_E	»
			1 13	701	690	122	785	778	102					
»	»	12	15 33	0.00656	+ 0.00646	— 0.00114	0.00748	+ 0.00742	— 0.00098	»	»	8	l_e	»
			16 17	678	668	118	722	716	094					
»	»	12	17 9	0.00668	+ 0.00658	— 0.00116	0.00704	+ 0.00698	— 0.00092	»	»	9	k_E	»
			17 53	675	665	117	740	734	097					
»	»	12	22 44	0.00709	+ 0.00698	— 0.00123	0.00767	+ 0.00760	— 0.00100	»	»	10	k_e	»
			23 25	713	702	124	772	765	101					
»	»	12	0 11	0.00708	+ 0.00697	— 0.00123	0.00774	+ 0.00767	— 0.00101	»	»	11	k_e	»
			0 51	782	770	136	752	746	098					
»	»	13	14 26	0.00648	+ 0.00638	— 0.00113	0.00769	+ 0.00762	— 0.00100	»	»	12	k_e	»
			14 58	694	683	121	782	757	102					
»	»	13	15 45	0.00640	+ 0.00630	— 0.00111	0.00795	+ 0.00788	— 0.00104	»	»	13	k_e	»
			16 18	519	511	090	700	694	091					

Magnet turned: [1] $a = 45°$.

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation H	Fieldstation X	Fieldstation Y	Gjøahavn H	Gjøahavn X	Gjøahavn Y	St.	I	M	r	Obs.
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1904	Aug. 2	1 45	0.00819	+ 0.00817	− 0.00057	0.00796	+ 0.00789	− 0.00104	11	Z	5	l_E	A
		2 21	844	842	059	804	797	105					
»	» 3	15 36	0.00961	+ 0.00959	− 0.00067	0.00860	+ 0.00853	− 0.00112	»	»	8	l_e	»
		16 15	911	909	063	793	786	104					
»	» 4	16 48	0.00907	+ 0.00905	− 0.00063	0.00775	+ 0.00768	− 0.00101	»	»	9	k_E	»
		17 33	909	907	063	765	758	100					
»	» 5	16 58	0.00870	+ 0.00868	− 0.00061	0.00784	+ 0.00777	− 0.00102	»	»	10	k_e	»
		17 35	834	832	058	776	769	101					
»	» 5	22 53	0.00758	+ 0.00756	− 0.00053	0.00725	+ 0.00719	− 0.00095	»	»	11	k_e	»
		23 27	789	787	055	740	734	097					
»	» 5	0 6	0.00743	+ 0.00741	− 0.00052	0.00751	+ 0.00745	− 0.00098	»	»	12	k_e	»
		0 40	808	806	056	750	744	098					
»	» 6	16 17	0.00636	+ 0.00634	− 0.00044	0.00660	+ 0.00654	− 0.00086	»	»	13	k_e	»
		16 58	779	777	054	697	691	091					
»	» 9	16 44	0.00871	+ 0.00870	+ 0.00030	0.00690	+ 0.00684	− 0.00090	2	»	5	l_E	»
		17 33	850	849	030	710	704	093					
»	» 9	23 47	0.00964	+ 0.00963	+ 0.00034	0.00776	+ 0.00769	− 0.00101	»	»	8	l_e	»
		0 25	968	967	034	766	709	100					
»	» 9	1 7	0.00946	+ 0.00945	+ 0.00033	0.00765	+ 0.00758	− 0.00100	»	»	9	k_E	»
		1 46	953	952	033	761	754	099					
»	» 10	17 28	0.01074	+ 0.01073	+ 0.00038	0.00850	+ 0.00843	− 0.00111	»	»	10	k_e	»
		18 3	1033	1032	036	805	798	105					
»	» 10	2 30	0.00924	+ 0.00923	+ 0.00032	0.00768	+ 0.00761	− 0.00100	»	»	11	k_e	»
		3 3	920	919	032	765	758	100					
»	» 11	16 59	0.01025	+ 0.01024	+ 0.00036	0.00808	+ 0.00801	− 0.00105	»	»	12	k_e	»
		17 35	948	947	033	805	798	105					
»	» 11	0 8	0.00884	+ 0.00883	+ 0.00031	0.00760	+ 0.00753	− 0.00099	»	»	13	ke	»
		0 45	907	906	032	758	752	099					
1905	Feb. 10	19 50	0.00840	+ 0.00839	+ 0.00029	0.00707	+ 0.00701	− 0.00092	»	S	I	l_E	H
		20 30	892	891	031	672	666	088					
»	» 10	0 10	0.00874	+ 0.00873	+ 0.00031	0.00730	+ 0.00724	− 0.00095	»	»	II	l_E	»
		1 14	910	909	032	735	729	096					
»	» 11	18 33	0.00956	+ 0.00955	+ 0.00033	0.00743	+ 0.00737	− 0.00097	»	»	I	l_E	»
		19 9	919	918	032	729	723	095					
»	» 11	22 12	0.00895	+ 0.00894	+ 0.00031	0.00735	+ 0.00729	− 0.00096	»	»	II	l_E	»
		22 52	897	896	031	740	734	097					
»	» 11	0 29	0.00909	+ 0.00908	+ 0.00032	0.00753	+ 0.00747	− 0.00098	»	»	I	l_E	»
		1 10	907	906	032	754	748	098					
»	» 12	18 28	0.00907	+ 0.00906	+ 0.00032	0.00690	+ 0.00684	− 0.00090	»	»	II	l_E	»
		19 18	878	877	031	670	664	087					
»	» 22	17 30	0.00906	+ 0.00905	+ 0.00032	0.00726	+ 0.00722	− 0.00095	»	Z	5	l_E	A
		18 7	866	865	030	702	696	092					
»	» 22	18 57	0.00856	+ 0.00855	+ 0.00030	0.00668	+ 0.00662	− 0.00087	»	»	8	l_e	»
		19 32	828	827	029	674	668	088					
»	» 22	20 24	0.00863	+ 0.00862	+ 0.00030	0.00710	+ 0.00704	− 0.00093	»	»	9	k_E	»
		20 57	869	868	030	747	741	098					

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation			Gjøahavn			St.	I	M	r	Obs.
			H	X	Y	H	X	Y					
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1905	Febr. 22	21 39 22 14	0.00918 902	+ 0.00917 901	+ 0.00032 031	0.00755 747	+ 0.00749 741	− 0.00099 098	2	Z	10	k_e	A
»	» 23	19 5 19 41	0.00961 1044	+ 0.00960 1043	+ 0.00043 036	0.00843 850	+ 0.00836 843	− 0.00110 111	»	»	11	k_e	»
»	» 23	22 10 22 41	0.00876 913	+ 0.00875 912	+ 0.00031 032	0.00749 746	+ 0.00743 740	− 0.00098 097	»	»	12	k_e	»
»	» 23	23 17 23 49	0.00863 901	+ 0.00862 900	+ 0.00030 031	0.00741 739	+ 0.00735 733	− 0.00097 096	»	»	13	k_e	»
»	» 28	17 58 18 33	0.00637 646	+ 0.00612 621	− 0.00176 178	0.00822 797	+ 0.00815 790	− 0.00107 104	9	S	I	l_E	»
»	» 28	19 15 19 50	0.00605 568	+ 0.00582 546	− 0.00167 157	0.00766 744	+ 0.00759 738	− 0.00100 097	»	»	I	l_E	»
»	March 1	16 53 17 40	0.00657 625	+ 0.00632 601	− 0.00181 172	0.00811 770	+ 0.00804 763	− 0.00106 101	»	Z	5	l_E	»
»	» 1	18 44 19 19	0.00591 625	+ 0.00568 601	− 0.00163 172	0.00788 808	+ 0.00781 801	− 0.00103 105	»	»	8	l_e	»
»	» 1	21 57 22 34	0.00605 586	+ 0.00582 563	− 0.00167 162	0.00762 762	+ 0.00755 755	− 0.00099 099	»	»	9	k_E	»
»	» 1	23 32 0 14	0.00577 567	+ 0.00555 545	− 0.00159 156	0.00761 760	+ 0.00754 753	− 0.00099 099	»	»	10	k_e	»
»	» 3	17 27 18 8	0.00436 432	+ 0.00419 415	− 0.00120 119	0.00607 608	+ 0.00602 603	− 0.00079 079	»	»	11	k_e	»
»	» 3	19 16 19 45	0.00500 420	+ 0.00481 404	− 0.00138 136	0.00665 648	+ 0.00659 642	− 0.00087 085	»	»	12	k_e	»
»	» 3	20 16 20 46	0.00435 448	+ 0.00418 431	− 0.00120 123	0.00643 635	+ 0.00637 630	− 0.00084 083	»	»	13	k_e	»
»	« 17	20 14 20 50	0.00612 612	+ 0.00455 455	+ 0.00410 410	0.00650 653	+ 0.00644 647	− 0.00085 085	1[1]	»	5	l_E	»
»	» 17	21 37 22 11	0.00606 630	+ 0.00450 468	+ 0.00405 422	0.00678 696	+ 0.00672 690	− 0.00088 091	»	»	8	l_e	»
»	» 17	23 0 23 23	0.00642 635	+ 0.00477 471	+ 0.00430 424	0.00719 727	+ 0.00713 721	− 0.00094 095	»	»	9	k_E	»
»	» 18	16 45 17 20	0.00629 627	+ 0.00467 466	+ 0.00421 420	0.00700 706	+ 0.00794 700	− 0.00091 092	»	»	10	k_e	»
»	» 18	18 2 18 32	0.00682 660	+ 0.00507 490	+ 0.00456 442	0.00709 720	+ 0.00703 714	− 0.00093 094	»	»	11	k_e	»
»	» 18	21 43 22 13	0.00637 625	+ 0.00473 464	+ 0.00426 418	0.00750 756	+ 0.00744 750	− 0.00098 099	»	»	12	k_e	»
»	» 18	22 47 23 14	0.00673 651	+ 0.00500 484	+ 0.00450 436	0.00760 755	+ 0.00754 749	− 0.00099 099	»	»	13	k_e	»
»	» 25	16 56 17 23	0.00670 684	+ 0.00568 580	+ 0.00355 365	0.00757 755	+ 0.00751 749	− 0.00099 099	3	»	5	l_E	»
»	» 25	18 7 18 37	0.00697 662	+ 0.00591 561	+ 0.00369 351	0.00751 744	+ 0.00745 738	− 0.00098 097	»	»	8	l_e	»
»	» 25	20 48 21 22	0.00689 659	+ 0.00584 559	+ 0.00365 349	0.00759 761	+ 0.00753 754	− 0.00099 099	»	»	10	k_e	»

[1] The measurements at this station seam to be about 100 γ too low.

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date	Gr. M. T.	Fieldstation *H*	Fieldstation *X*	Fieldstation *Y*	Gjøahavn *H*	Gjøahavn *X*	Gjøahavn *Y*	St.	I	M	*r*	Obs.
		h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1905	March 25	21 56	0.00675	+ 0.00572	+ 0.00358	0.00758	+ 0.00752	— 0.00099	3	Z	11	k_e	A
		22 21	651	552	345	753	747	098					
»	» 25	22 57	0.00669	+ 0.00567	+ 0.00355	0.00748	+ 0.00742	— 0.00098	»	»	9	k_E	»
		23 19	676	573	358	747	741	098					
»	» 26	21 5	0.00685	+ 0.00581	+ 0.00363	0.00753	+ 0.00747	— 0.00098	»	»	12	k_e	»
		21 35	632	536	335	746	740	097					
»	» 26	22 8	0.00632	+ 0.00536	+ 0.00335	0.00741	+ 0.00735	— 0.00097	»	»	13	k_e	»
		22 45	598	507	317	727	721	095					
»	» 31	16 25	0.00812	+ 0.00800	— 0.00141	0.00750	+ 0.00744	— 0.00098	7	»	5	l_E	»
		17 4	841	828	146	769	762	100					
»	April 3	21 43	0.00689	+ 0.00679	— 0.00120	0.00645	+ 0.00739	— 0.00084	»	»	8	l_e	»
		22 10	704	693	122	662	656	086					
»	» 4	17 22	0.00657	+ 0.00647	— 0.00114	0.00597	+ 0.00592	— 0.00078	»	»	9	k_E	»
		17 54	655	645	114	588	581	077					
»	» 5	16 11	0.00746	+ 0.00735	— 0.00130	0.00715	+ 0.00709	— 0.00093	»	»	10	k_e	»
		16 49	692	681	120	679	673	089					
»	» 5	17 34	0.00675	+ 0.00665	— 0.00117	0.00662	+ 0.00656	— 0.00086	»	»	11	k_e	»
		18 30	703	692	122	664	658	087					
»	» 5	21 31	0.00749	+ 0.00738	— 0.00130	0.00647	+ 0.00641	— 0.00084	»	»	12	k_e	»
		22 3	853	840	148	630	625	082					
»	» 5	22 42	0.00742	+ 0.00731	— 0.00129	0.00639	+ 0.00634	— 0.00083	»	»	13	k_e	»
		23 10	682	672	118	652	646	085					
»	» 11	17 6	0.00807	+ 0.00795	— 0.00140	0.00729	+ 0.00723	— 0.00095	»	»	5	l_E	»
		17 43	771	759	134	726	720	095					
»	» 12	16 49	0.00793	+ 0.00781	— 0.00138	0.00640	+ 0.00635	— 0.00084	»	»	8	l_e	»
		17 27	680	670	118	633	628	083					
»	» 12	23 6	0.00722	+ 0.00711	— 0.00125	0.00662	+ 0.00656	— 0.00086	»	»	9	k_E	»
		23 42	742	731	129	685	679	089					
»	» 27	22 9	0.00722	+ 0.00711	— 0.00125	0.00698	+ 0.00692	— 0.00091	10	»	5	l_E	»
		22 45	698	687	121	714	708	093					
»	» 28	16 51	0.00806	+ 0.00794	— 0.00140	0.00778	+ 0.00771	— 0.00102	»	»	8	l_e	»
		17 25	802	790	139	770	763	101					
»	» 28	18 8	0.00780	+ 0.00768	— 0.00135	0.00753	+ 0.00747	— 0.00098	»	»	9	k_E	»
		18 41	805	793	140	753	747	098					
»	» 28	21 42	0.00715	+ 0.00704	— 0.00124	0.00711	+ 0.00705	— 0.00093	»	»	10	k_e	»
		22 12	719	708	125	709	703	093					
»	» 28	22 46	0.00727	+ 0.00716	— 0.00126	0.00698	+ 0.00692	— 0.00091	»	»	11	k_e	»
		23 18	742	731	129	691	685	090					
»	» 29	16 39	0.00727	+ 0.00716	— 0.00126	0.00700	+ 0.00694	— 0.00091	»	»	12	k_e	»
		17 16	561	552	097	591	586	077					
»	» 29	17 54	0.00574	+ 0.00567	— 0.00100	0.00608	+ 0.00603	— 0.00079	»	»	13	k_e	»
		18 22	564	555	098	619	614	081					
»	May 2	21 59	0.00753	+ 0.00752	— 0.00039	0.00693	+ 0.00687	— 0.00090	12	»	5	l_E	»
		22 38	781	780	041	695	689	091					
»	» 3	16 48	0.00857	+ 0.00856	— 0.00045	0.00669	+ 0.00663	— 0.00087	»	»	8	l_e	»
		17 25	780	779	041	663	657	087					

Table CLXX (continued). **Horizontal Intensity.** **Fieldstations.**

Year	Date		Gr. M. T.	Fieldstation *H*	Fieldstation *X*	Fieldstation *Y*	Gjøahavn *H*	Gjøahavn *X*	Gjøahavn *Y*	St.	I	M	*r*	Obs.
			h. m.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.	C. G. S.					
1905	May	3	22 8 22 44	0.00784 806	+ 0.00783 805	— 0.00041 042	0.00675 663	+ 0.00669 657	— 0.00088 087	12	Z	9	k_E	A
»	»	4	16 44 17 15	0.00751 723	+ 0.00750 722	— 0.00039 038	0.00676 685	+ 0.00670 679	— 0.00088 089	»	»	10	k_e	»
»	»	4	17 52 18 28	0.00728 756	+ 0.00727 755	— 0.00038 040	0.00698 723	+ 0.00692 717	— 0.00091 094	»	»	11	k_e	»
»	»	4	22 1 22 30	0.00722 746	+ 0.00721 745	— 0.00038 039	0.00741 744	+ 0.00735 738	— 0.00097 097	»	»	12	k_e	»
»	»	4	23 5 23 36	0.00804 —	+ 0.00803 —	— 0.00042 —	0.00748 762	+ 0.00742 755	— 0.00098 099	»	»	11	k_e	»
»	»	10	17 19 17 54	0.00741 722	+ 0.00741 722	— 0.00026 025	0.00783 786	+ 0.00776 779	— 0.00102 103	13	»	5	l_E	»
»	»	10	21 51 22 23	0.00719 723	+ 0.00719 723	— 0.00025 025	0.00771 779	+ 0.00764 772	— 0.00101 102	»	»	8	l_e	»
»	»	10	23 8 23 40	0.00746 749	+ 0.00746 749	— 0.00026 026	0.00782 775	+ 0.00775 768	— 0.00102 101	»	»	9	k_E	»
»	»	11	16 56 17 33	0.00751 710	+ 0.00751 710	— 0.00026 025	0.00788 770	+ 0.00781 763	— 0.00103 101	»	»	10	k_e	»
»	»	11	18 14 18 50	0.00748 708	+ 0.00748 748	— 0.00026 025	0.00765 783	+ 0.00758 776	— 0.00100 102	»	»	11	k_e	»
»	»	11	21 49 22 21	0.00708 697	+ 0.00708 697	— 0.00025 024	0.00753 751	+ 0.00747 745	— 0.00098 098	»	»	12	k_e	»
»	»	11	22 56 23 26	0.00646 697	+ 0.00646 697	— 0.00023 024	0.00761 770	+ 0.00754 763	— 0.00099 101	»	»	13	k_e	»

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