tutions of this kind generally confine their activities to the professional and scholastic classes, but here is one that is bringing its culture and its wealth of knowledge, based on careful research, to the help of the common people in their practical, every-day work."

R. H. Thurston.

THE INTERNATIONAL GEODETIC ASSOCIATION.*

The systematic reduction of the 52° parallel survey was published by the Central Bureau of the International Association under the title 'Lotabweichungen, Heft II.' The publication of the third part, which will contain the deflections along the northern geodetic lines of the 52° parallel survey, will be attempted this year.

Owing to the resignation of Dr. Schumann, who accepted the position of professor of geodesy, Fischer High School, the investigation of the curvatures of the meridians and parallels of the '*geoid*' could be but little advanced. Still, preparations for the computation of the triangulation through France, Spain and Algiers are in progress, and it is hoped that the final computations will be completed during the coming year.

Voluntary contributions of observations for variations of latitude during the year, from which to determine the motion of the earth's axis of rotation within its body, were received from only four observatories, namely, the observatories of Tokyo, Heidelberg, Leyden and Philadelphia. Unfortunately, the data thus furnished proved insufficient for an independent determination of the pole's motion. Utilizing these contributions, the results were compared with the motion of the pole as deduced from the series of special observations executed by the International Latitude Service, and it is gratifying to note that the comparisons proved the results to be satisfactory.

In this connection it remains to call attention to publication No. 6, of the Central Bureau, entitled 'Ergebnisse der Polhohenbestimungen in Berlin' during the years of 1889, 1890 and 1891, by Dr. Adolf Marcuse.

The work of the International Latitude Service made satisfactory progress during the year. Star-pairs were observed as follows:

Stations.	No. of Pairs Observed.	Observers.
1. Mizusawa	1,577	Kimura and Nakano.
2. Tschardjui	1,564	Medzwietsky.
3. Carloforte	3,386	Ciscato and Bianchi.
4. Gaithersburg	1,822	Davis.
5. Cincinnati	1,425	Porter.
6. Ukiah	2,014	Schlesinger.

The reduction of these observations was made immediately upon the receipt of the records by mail. In addition to these systematic computations, the Central Bureau also undertook the reduction of the *mean* declinations. The mean declinations were derived from Cohns' catalogue.

A list of the apparent declinations of the several stars thus observed, for the epoch of Greenwich culmination for the period November 2, 1902, to November 1, 1903, was prepared, and a copy sent to the observers for the purpose of enabling them to test and control their respective works by their own computations.

An abstract covering the most important results of this work is given by Dr. Albrecht in his article in No. 3808 of the *Astronomische Nachrichten*, entitled 'Resultate des internationalen Breitendienstes' for 1899.9–1902.0.

In this article Dr. Albrect calls attention to the fact that the motion of the earth's pole could no longer be satisfactorily represented by the expression:

$$\Delta\phi + v = x \cos\lambda + y \sin\lambda,$$

but that according to the suggestion of Professor Kimura in *Astrom. Nachr.*, No. 3783, an expression of the form

$$\Delta\phi + v = x \cos\lambda + y \sin\lambda + z$$

would have to be used instead. That is to say, the complete expression for the variation of latitude required an additional yearly term (z), wholly independent of the geographical longitude of the place of observation.

Determination of the Acceleration of Grav-

* Abstract of Professor Helmert's report on the activities of the Central Bureau of the International Geodetic Association during the year 1902, together with the proposed plan of work for 1903.

ity.—In accordance with the provisions of the plan of work for 1892, the measurements of gravity with the Italian pendulum, which on previous occasions had exhibited uncommon variations of length while swinging under diminished atmosphere pressure, were repeated, and it was found that the results for 1902 verified the results from the experiments of 1901.

The results from all these gravity experiments, which will be extended farther, if deemed necessary, in one or the other particular, will be published next year (1903).

Relative Gravity Determinations.—A comprehensive report on the relative determinations of gravity upon the Atlantic Ocean between Spain and South America has been published. The results found proved to be trustworthy, as also the newly determined relative results at the stations of Potsdam, Rio de Janeiro, Lisbon and Madrid, by means of the half-second pendulum. A new connection between the gravity stations at St. Petersburg and Potsdam is also contemplated. Moreover, Breteuil and other base-stations will also be connected by means of Stackraths' pendulum apparatus.

The commission also proposes to connect the Potsdam gravity station with their own pendulum apparatus and to determine the coefficients for air pressure and temperature. For the new Stackrath apparatus these coefficients were ascertained by adequate experiments at Rio de Janeiro. The constants of the four pendulums of Schumann (Strasburg), which have recently been materially remodeled, in order to improve them and render them less sensitive to variations of external conditions, will be determined.

Finally, it is proposed also to swing the pendulum at a series of stations in the high mountains of Central Asia, and to that end the trigonometric survey of India is bestowing particular care upon the determinations of the constants of temperature and air pressure for their own apparatus.

WILLIAM EIMBECK.

THE BRITISH ANTARCTIC EXPEDITION.

THE London *Times* publishes the following summary of the results of the National Antarctic Expedition contributed by a member of the scientific staff:

1. The discovery of extensive land at the east extremity of the great ice barrier.

2. The discovery that McMurdo Bay (?) is not a 'bay,' but a strait, and that Mounts Erebus and Terror form part of a comparatively small island.

3. The discovery of good winter quarters in a high latitude—viz., 77° 50′ S., 166° 42′ E.—with land close by suitable for the erection of the magnetic observations, etc. The lowest temperature experienced was 92° of frost Fahrenheit.

4. An immense amount of scientific work over 12 months in winter quarters, principally physical and biological.

5. Numerous and extensive sledge journeys in the spring and summer covering a good many thousand miles, of which the principal is Captain Scott's journey, upon which a latitude of 82° 17′ south was attained, and an immense tract of new land discovered and chartered as far as 83° 30′ south, with peaks and ranges of mountains as high as 14,000 feet.

6. The great continental inland ice reached westwards at a considerable distance from the coast and at an altitude of 9,000 feet.

7. A considerable amount of magnetic work at sea, also soundings, deep sea dredging, etc.

Captain Scott writes as follows:

We do not seem to have done much in any one particular direction, but I hope the sum total of our labors will not be displeasing to the societies. I must make a general apology for the sketchy nature of this note, which owing to the circumstances, has to be written in haste. When you receive it the matter will be decided, but as I write I am in considerable anxiety as to our prospects of getting out this season. It will be poor luck if we do not. We found one year's ice here last season; it broke away, and the spot remained open to the sea for at least six weeks; but we are now past the date at which it opened last season, and for this last fortnight little ice