NOTES, ABSTRACTS, AND REVIEWS.

DR. HELLMANN RETIRES.

Prof. Dr. G. Hellman announces his retirement from the directorship of the Prussian Meteorological Institute on October 1, 1922. Upon the same date he became professor emeritus, instead of ordinary professor, in the University of Berlin.

In his notice of retirement Dr. Hellmann expresses his grateful thanks to his many colleagues both at home and abroad for favors received during his long period of service. He was connected with the Meteorological Institute for 43 years.

NEW NORWEGIAN WEATHER MAPS.

The Bergen Division of the Norwegian Meteorological Institute began on January 1, 1922, the issue of twice-daily morning and evening weather maps prepared in accordance with the theoretical views expressed in various publications.[1]

The size of the charts is 37 by 51½ cm. and they cover the area between the Mediterranean on the south and about 77° north latitude and longitude 50° east to 50° west. The observational data are those received for the daily forecast service. The direction and force of the wind and the temperature are shown graphically in their respective geographic positions on the chart and isobars are drawn. Up to this point the maps are of the usual type of synoptic charts; the distinctly new feature of the maps is the drawing in of the warm front, the cold front, and the occluded fronts which have been found to exist by the analysis of the observational material. A short text is affixed which gives information not elsewhere presented concerning the basis for drawing the respective fronts.

The authors say:

> The maps are destined to illustrate the importance of discontinuities and they are often purposely drawn with a somewhat exaggerated distinctness of these traits.
>
> The scanty data from many parts of Europe often render the analysis impossible, or at least fairly hypothetical and we must make strong reservations as to the correctness of many details regarding the constructed fronts.
>
> The scientific preparation of the maps has been made by Meteorologists E. Calwagen, J. Eythorsson, J. Schinze and F. Spinnagr.

—*A. J. H.*

[1] *Geofisiske Publikationer*, Kristiania, "On the structure of moving cyclones"; "Meteorological conditions for the formation of rain"; "Life cycle of cyclones and the polar front theory of atmospheric circulation". J. Bjerknes and H. Solberg.

CLIMATOLOGICAL ATLAS OF NORWAY.[1]

A new edition of Mohn's *Atlas of the Climate of Norway* has just been published. The atlas contains 60 maps and treats all the meteorological elements except precipitation. The bases of these maps are the tables of climate calculated from the observations of the Norwegian Meteorological Institute, gathered and elaborated during the years 1847-1913. The observations were organized on the international model after the first International Meteorological Congress, at Vienna in 1873. The execution and elaboration of observations are described in the "Jahrbuch des Norwegischen Meteorologischen Instituts."

Plates 1-20. Temperature of the air.
21-28. Humidity of the air.
29-40. Pressure and wind.
41-44. Force of the wind.
45-48. Days of tempests and most frequent direction.
49-52. Cloudiness.
53-56. Days of cloud.
57-60. Days of thunderstorms.

The authors have made a very careful and comprehensive study and the material is well planned.

One interesting feature is the maps showing average monthly temperatures. The contrast between the summer and winter months is brought out very clearly by the steepness of the temperature gradient between the marine climate of the coast and the continental mountain climate. There are very few isotherms for the summer months, but a considerable number of them in the winter months. The lines of equal annual range are also much crowded between coast and interior.

The water-vapor tension remains about the same for January, July, and October, while April shows a slight decrease. The relative humidity is higher in summer than in winter. The pressure gradients follow closely those of temperature for each month.—*G. F. H.*

[1] H. Mohn, Atlas de Climat de Norwége, Nouvelle edition par Aage Grenrud et Kristen Irgens. Geofisiske Plubl. Vol. 2, No. 7, Kristiania, 1922.

BOLETIM METEOROLOGICO.[1]

The Brazilian weather service (Dr. Sampaio Ferraz, director) has just issued a bulletin written in Portuguese containing a large amount of valuable meteorological data from 1881 to 1914. This bulletin, together with the records of the Argentine service, now places within reach of climatologists reliable observations covering fairly long periods of time for a large part of South America. The Brazilian publication contains the records of the observatory at Rio de Janeiro in great detail, and those of 59 other regular stations throughout the country, and 32 rainfall stations in lesser detail. No detailed maps are attempted, as in the publication of the Argentine service, for it must be remembered that there are large stretches of the interior of Brazil which are scarcely known, and that the 91 stations are so scattered as to make the construction of a correlated map extremely difficult. The three maps of the distribution of rainfall in 1914, which are included, show this difficulty in their patchy character and in the large area still blank. One of the maps shows the distribution throughout the year, while in the other two, the year is divided into two "semesters" of six months each, from January to June, and July to December. The reason for this division of the year is not given.

[1] Anno de 1914, 4to, 121 pp., 3 maps, Directoria de Meteorologia, Rio de Janeiro, 1922. Cf. review in MO. WEATHER REV., June, 1922, 50, 309-310.

Some idea of the scope of the observations may be found from the following list of the tables contained in the bulletin:

RECORDS FROM RIO DE JANEIRO, 1914.

1. Daily rainfall (with diagram).
2. Hourly rainfall
3. Hourly mean rainfall by months.
4. Comparison of the monthly rainfall of 1914 with the average for 34 years observation.
5. Monthly rainfall, and rainfall days, 1881-1914.
6. Monthly insolation.
7. Hourly insolation.
8. Variations from hour to hour by months of temperature, vapor tension, relative humidity, and wind velocity.
9. Frequency by months of certain amounts of temperature change from hour to hour, and from day to day.
10. The same for relative humidity.
11. A summary of the last three tables for the year 1914.
12. Correlation of the wind directions with certain other observations.
13. Table of monthly rainfall, evaporation, and insolation for 1914.
14. General table of all observations for 1914.

These tables are followed by the less detailed observations for the same year from 59 regular stations, and by the rainfall data from 32 rainfall stations.—*P. E. J.*

THE GREEN RAY.

By Dr. M. E. MULDER.

Doctor Mulder deserves our thanks for assembling and publishing so many observations and discussions of the "green ray," or "green flash," as the sudden turning to green of the last starlike tip of the sun, as it sets behind a distant, clear, and cloudless horizon, is called—an interesting phenomenon, and very common, especially over water. I myself have seen it many times, both on land and at sea, always as an objective reality, never as a mere after-image.

When the sun sets in a clear sky, its last rays obviously leave the observer in the order of their refrangibility, that is, red first, then the orange, yellow, green and blue. Evidently, therefore, the color of the last tip of the setting sun is green, or even bluish green, for about a second, when the air is exceptionally clean, and red when the lower atmosphere is so laden with dust as to transmit but little light of the shorter wave lengths.

Although an adequate description and complete explanation of the "green ray" can be given in a few lines, Doctor Mulder's book, somewhat evenly divided between English, French, and German, is pleasant reading. It also has the merit of preserving several references to blue and green suns, unusual phenomena for which no generally-accepted explanation has yet been offered.—*W. J. H.*

IS THE ATMOSPHERE WARMED BY CONVECTION FROM THE EARTH'S SURFACE?[1]

By W. SCHMIDT.

[Reprinted from *Science Abstracts*, Section A, § 1512, p. 542.]

By convection is here understood the combined effect of pure thermal convection caused by warming of the lowest layers by contact with a heated surface and also mixing of dynamical origin arising out of the passage of air over the earth's rough surface. Evidence is produced to show that when the latter is present mixing is in general much more effective and the flux of heat greater than when the former alone is active. The direction of the flux of heat depends on whether the actual temperature gradient exceeds or falls short of the adiabatic, and by consideration of the average observed lapse of temperature in different regions, and including in the high layers latent heat carried up by water vapor and liberated when condensation occurs, the author draws the conclusion that, contrary to the usual view, except for a comparatively narrow equatorial zone, the average flux of heat by convection over most of the globe is *toward* the earth's surface, which in this respect exercises a cooling action. But the lower atmosphere may be warmed on the average by long-wave radiation emitted by the earth.—*M. A. G.*

[1] *Meteorologische Zeitschrift*, September, 1921, 38, 262-268.

SUNSPOT IN HIGH LATITUDE.

[Reprinted from *Nature*, London, September 23, 1922, p. 428.]

A small sunspot was noted at Mount Wilson, Calif., on June 24, 1922, in latitude 31° N., longitude 8° E. No spot has been seen in such a high latitude since December, 1919, and it is considered to be the first spot of the new cycle. It will be remembered that the equatorial spots of the expiring cycle continue for a year or more after the commencement of the new one, so that the actual minimum may not be reached till next year. The above spot was of negative polarity, whereas most of the single northern spots in the expiring cycle were positive. This is a further argument, though not a decisive one, for the spot belonging to the new cycle.

BIBLIOGRAPHY.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Meteorologist in Charge of Library.

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Apia. Samoa Observatorium.
Resultate der meteorologischen Beobachtungen am Samoa-Observatorium von 1916 bis 1919. p. 218–220. 30 cm. (Repr. Meteorologische Zeitschrift. H. 7. 1922.)

Austria. Zentralanstalt für Meteorologie und Geodynamik.
Allgemeiner Bericht und Chronik der in den Jahren 1916–1921 in Österreich beobachteten Erdbeben. Mit einem Nachtrag über die in Niederösterreich in den Jahren 1914 und 1915 beobachteten Erdbeben. Wien. 1922. 40 p. chart. 23 cm. (Amtliche Veröffentlichung. No. 13.)

Bemporad, A.
Nuova formulazione della teoria dell' assorbimento selettivo dell' atmosfera e nuove esperienze in proposito. Napoli. 1917. 7 p. 24 cm. (Extr.: Rend. della R. accad. delle scienze fisiche e matematiche di Napoli. Ser. 3a. v. 23. 1917.) (R. Osserv. astron. di Capodimonte. Contributi astronomici. No. 15.)

Bemporad, A., *& others.*
Osservazioni pireliometriche eseguite a Capodimonte nell'anno 1914. Napoli. 1921. 61 p. illus. 34 cm. (Memorie del R. Osserv. di Capodimonte in Napoli. No. 6.)

Briggs, Glen.
Vegetable growing in Guam. Washington. 1922. ii, 60 p. plates. 23½ cm. (Guam agric. exper. sta. Bulletin no. 2.) ["Climate." p. 3.]

Bunge, Bernh.
Der Registrierapparat für Sondier-Gummiballone nach Assmann und Anleitung zur Prüfung desselben. Berlin. n. d. 4 p. plate. 27 cm.