

Inorganic chemistry.	Metallurgy. Assaying.
	Water analysis. Chemical engineering.
Organic chemistry.	Pharmacology. Food analysis.
Petrography, mineralogy, crystallography.	Economic geology. Mining engineering.
Dynamic geology, physiography.	River and harbor improvement.
Historical geology, stratigraphy, paleontology.	Geological mapping and correlation.
Agrogeology (soil science).	Agriculture (in part). Soil mapping and classification.
Biology, or genetics.	Plant and animal breeding. Eugenics.
Systematic botany. Paleobotany.	Economic botany.
Plant morphology and physiology.	Plant pathology, etc.
Plant ecology, sociology and geography.	Agriculture (in part). Forestry.
Systematic zoology. Animal morphology. Paleozoology.	Classification. Taxidermy. Restoration of extinct species.
Animal physiology, ecology and behavior.	Veterinary medicine. Economic entomology and ornithology.
Human anatomy and physiology.	Medicine and surgery. Hygiene.
Psychology.	Psychiatry. Pedagogy. Advertising.
Anthropology, ethnology, archeology.	
Sociology, demography, economics.	Finance. Civics. Legislation.
Geography.	Cartography. Exploration. Regional description.

Very likely it would be better to subdivide the physical, chemical and zoological sections more minutely, or at least differently. For example, it might be well to separate the electricians from other physicists, and the vertebrate from the invertebrate zoologists. In botany, too, the mycologists and bacteriologists have little in common with the students of flowering plants, and might reasonably demand separate sections, unless they are sufficiently accommodated by affiliated societies. Meteorology and climatology, with the re-

lated art of weather forecasting, have not been mentioned above, but they should have a separate section, unless their followers are too few, in which case it might be best to unite meteorology with dynamic geology, and climatology with geography.

Of course the more numerous the sections the more papers there will be which would be equally appropriate for two different sections; but this difficulty, which is inherent in all classifications, will be more than offset by the advantages of having the sections more homogeneous, and besides it can be partly overcome by joint meetings, as heretofore.

Incidentally some such classification as the above should serve not only for the purposes of the American Association for the Advancement of Science, but also for the scientific departments of a large university. About the middle of the last century, when the Association had only two sections, in some of our largest institutions of learning all or nearly all the sciences were taught by one or two men, as is done in some small schools to-day. Much more recently botany and zoology were usually included in the same department, and even yet few universities have more than one botanical or zoological department, or a separate chair of geography; the last-named, where taught at all to mature students, being usually combined with geology or even with pedagogy.

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SCIENTIFIC BOOKS

National Antarctic Expedition, 1901-1904. Meteorology Part II., comprising Daily Synchronous Charts, 1 October, 1901, to 31 March, 1904. Prepared in the Meteorological Office under the superintendence of M. W. CAMPBELL HEPWORTH, C.B., R.D., Commander R.N.R. London, published by the Royal Society. 1913. 4to. 26 p., 1003 charts.

This volume completes such physical results of the British National Antarctic Expedition as were specifically taken under the supervision of the Royal Society. It is a monumental work of unusual polar value, and as such

marks an epoch in the meteorological history of the Antarctic regions.

The meteorological conditions of the antarctic and sub-antarctic regions are shown on 883 daily charts, which include 44,893 observations. Cooperation was obtained from 233 ships and 92 land stations, including several observatories. Through the courtesy of the leaders of the German (Professor von Drygalski), Scottish (Dr. W. S. Bruce) and Swedish (Dr. Otto Nordenskiöld) Antarctic Expeditions observations were used from Kaiser Wilhelm II. Land, Laurie Island, South Orkneys and Snow Hill Island and Palmer Land.

One hundred and twenty supplementary charts exhibit for each month of the year (and for the year) the mean sea-level pressure and air temperature, with the mean temperature and the mean pressure for each month from October, 1901, to March, 1904.

The wind observations are also summarized in ten tables as to direction and force, arranged according to seasons, to related zones and to oceanic divisions.

Commander Hepworth is justified in setting forth the magnitude of the work, though his statement is questioned that the charts "refer to an area that is far larger than that embraced by any similar set of charts hitherto published." While true as to the Antarctic regions, he seems to have forgotten the daily charts of international meteorological observations, published by the signal corps of the United States army from July, 1878, to June, 1884, which covered the entire northern hemisphere and embodied observations from more than 1,000 regular observers.

The results as set forth by Commander Hepworth are of interest and value. "The average path of all central areas of depressions is found to have been in about the 52d parallel. Between the meridians of 20° E. and 150° E., it was between the 49th and 50th parallels; and between 150° E. and 70° W. in about the 55th." The average rate of travel is about 300 miles per day. One storm, with an average rate of 355 miles daily, was charted through a course of 2,840 miles. It may be

added that the assumption of the late Mr. H. C. Russell is confirmed, that to the east of the 30th meridian E., centers of atmospheric depressions usually travel on paths south of the 43d parallel during winter, and south of the 46th parallel in summer.

Of special interest are the conclusions as to the general movements of the atmosphere. Commander Hepworth says: "The interchange of air between equatorial and polar regions may be effected through the intermediary of anticyclonic circulations, albeit these high-pressure systems are permanent; and in my opinion the temperature zones are bridged in this manner."

The charts of mean pressures clearly indicate a seasonal migration of high pressure belts in the Antarctic regions. This action is evidently general. Pointed out by Buchan in a general way, these atmospheric phenomena for the northern hemisphere were definitely set forth by the reviewer in a series of charts, published in Appendix 17, Annual Report of the Chief Signal Officer of the Army, 1891.

An incidental feature of this magnificent work requires notice. The Antarctic map of Volume I., 1908, omitted entirely Wilkes's Antarctic discoveries. The key map of Volume II. contains the legend: "Land reported by Commander Wilkes, U. S. N., 1840." Twelve months prior to the transmittal of the proofs of the introductory remarks, an Australian, Dr. Mawson, had not only visited this "reported" land but had established two scientific stations thereon, and to-day with courage and energy creditable to the British empire adds to the world's knowledge of this vast and ice-crowned continent, so long discredited.

A. W. GREELY

THE BELGIAN ANTARCTIC EXPEDITION

Resultats du voyage du S. Y. Belgica en 1897-8-9, sous le commandement de A. DE GERLACHE DE GOMERY. Rapports Scientifiques. GÉOLOGIE. Petrographische untersuchungen des gesteinsproben, II., von DRAGOMIR SISTEK. 1912, pp. 20, 1 pl. ZOOLOGIE. Tuniciers caducichordata (Asci-