

with the State. The work of the institution is divided broadly into (1) tests and standardisation work for the public, (2) researches. The tests, etc., cover the checking of all kinds of electrical instruments. Among these may be mentioned the tests undertaken for the Marine Ministry on new types of storage battery for use in submarines, and standard tests on electric lamps used in the Navy. Investigations have been made for the War Ministry on meters, etc., used in gunpowder factories, also check tests on standard meters used by the Army in its own specification tests. The laboratory undertakes for the Ministry of Public Instruction and Fine Arts the verification of lightning arrester installations on public buildings. On the research side may be mentioned the important researches published by M. Ch. David on the various grades of carbons used for dynamo brushes; M. Jouaust's researches on the magnetic properties of iron, its magnetic viscosity, and its permeability at high frequencies; and MM. Laporte and de la Gorce's researches on the dielectric strength of insulating materials under continuous and alternating tensions and at varying frequencies. In 1914 the laboratory had in hand researches (which will be continued) on the Violle platinum light standard. MM. Broca and Laporte have undertaken experiments on the action on the human eye of various artificial sources of light, while Dr. Weiss and M. David have studied the mechanism of death from high-tension alternating currents. The Laboratoire Central represented France at the international experimental work carried out at Washington in 1910, as the result of the International Conference on Electrical Units and Standards held in London in 1908, and has published papers on the subject.

MR. A. CHASTON CHAPMAN'S lecture on "Some Main Lines of Advance in the Domain of Modern Analytical Chemistry," delivered before the Chemical Society in March, has been reproduced in the *Journal* (vol. iii., pp. 203-20). Attention is directed to the increasing use of physico-chemical methods, the spectroscope and polarimeter being now supplemented by the refractometer, the electrometer, and a wide range of electro-chemical apparatus. In the same way the use of derivatives of hydrazine as qualitative and quantitative reagents in organic chemistry has been extended by using phloroglucinol to precipitate furfural in estimating pentoses and pentosans, of digitonin to estimate cholesterol, and of picric and picrolonic acids in identifying such bases as arginine, histidine, lysine, and guanidine. Organic compounds have also been introduced as reagents in inorganic chemistry, notably in the colorimetric estimation of nitrates and nitrites. Actual precipitation occurs, however, when benzidine hydrochloride is used to precipitate sulphates, or "nitron" to precipitate nitrates, the latter reagent furnishing for the first time a method for the gravimetric estimation of nitric acid. The separation of nickel from cobalt by means of dimethylglyoxime is characteristic of a considerable group of separations which can now be effected with remarkable ease and efficiency by making use of complex organic compounds. Biological processes, such as the selective fermentation of sugars by different species of yeasts, and the use of the "precipitin" reaction to distinguish between albumins from different sources, have also proved of great value in the analysis of foodstuffs. In conclusion, the lecturer urges the desirability of providing in this country professorships of analytical chemistry, similar to those which exist already on the Continent and in America.

MESSRS. J. WHELDON AND CO., 38 Great Queen Street, W.C.2, have just issued a catalogue (New

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Series, No. 79, "Books and Papers on Microscopical Science in all its Branches") which should be of interest to many of our readers. It is conveniently arranged under the headings:—Bacteriology, Parasitology, etc., Diatoms, Entomostraca, Foraminifera, Fresh-water Algæ and Desmids, Infusoria, Micro-Entomology, Micro-Fungi, Petrography, Crystallography, etc., Protozoa, Rotifera, Zoophytes, Biology, Histology, Physiology, and General Works on the Microscope. Many of the works catalogued, being published in enemy countries, are difficult to obtain at the present time. The list is to be had upon written application.

THE following works are in preparation for appearance in the "Cambridge Public Health Series" (*Cambridge University Press*):—"Ticks as Carriers of Disease," Prof. G. H. F. Nuttall; "Serum Diagnoses," Dr. C. Browning; "The Purification of Water in Sedimentation, Filtration, and Precipitation," Dr. A. C. Houston; "The Purification of Water by Ozone and Chlorine; and Domestic Filters," Prof. G. Sims Woodhead; "The Principles and Practice of the Dilution Method of Sewage Disposal," Dr. W. E. Adeny; "Disinfection," Dr. C. W. Ponder; "Housing in Relation to Public Health," Dr. C. J. Coleman; "School Hygiene," Dr. E. T. Roberts; "Soils, Subsoils, and Climate in Relation to Health," G. Walker; "Meat Inspection," Dr. W. J. Howarth and T. D. Young; "Vital Statistics," R. Dudfield and G. U. Yule; and "Foods, Sound and Unsound," Dr. H. C. Haslam.

OUR ASTRONOMICAL COLUMN.

COMET 1917*b* (SCHAUMASSE).—From observations of this comet made on April 28, April 29, and May 4, the following elements and ephemeris for Greenwich midnight have been calculated by J. Braae and J. Fischer-Petersen:—

$$\begin{aligned} T &= 1917 \text{ May } 18^{\text{h}} 29^{\text{m}} 46^{\text{s}} \text{ G.M.T.} \\ \omega &= 119^{\circ} 11' 90'' \\ \Omega &= 9^{\circ} 37' 25'' \\ i &= 158^{\circ} 42' 87'' \end{aligned} \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 1917$$

$$\log q = 9.88304$$

1917	R.A.	Decl.	Log r	Log Δ
	h. m. s.			
May 31	... 8 25 32	+38 30.2		9.7109
June 1	... 8 35 14	36 2.7	9.9101	9.7375
2	... 8 43 12	33 50.2		9.7636
3	... 8 49 52	31 50.8		9.7889
4	... 8 55 29	30 3.4		9.8133
5	... 9 0 16	+28 26.7	9.9255	9.8369

FIREBALLS IN JUNE.—Mr. Denning writes:—The twilight prevailing during the nights of the month of June is not favourable for meteoric work, but fireballs are often numerous and easily seen. During the first week of June many large meteors have appeared from a radiant in Scorpio at about 252° — 22° , and they have had unduly long flights and slow motions. There are other striking radiants in Ophiuchus and Antinous. This year a special effort will be made by observers near the end of the month, with the object of ascertaining whether there is any repetition of the rich shower which occurred on June 28, 1916, and was presumably connected with the periodical comet of Pons-Winnecke. On that date the rich cluster of meteors through which the earth passed must have been more than 600 millions of miles from the cometary nucleus, so that the meteors are distributed along a very considerable section of the orbit, if indeed they do not form a complete elliptical stream.

KODAIKANAL OBSERVATORY REPORT.—Mr. Evershed's report on the work of the Kodaikanal and Madras Observatories during 1916 refers to several points of interest besides observations of a routine character. Solar observations were made on 342 days, and spectroheliograms in K light were obtained on 329 days. With the grating spectroheliograph photographs of the sun in H_{α} light were obtained on 258 days, and it was found that the number of absorption markings due to dense prominences on the disc had increased largely. It is interesting to note that visual spectroscopic observations were continued with reference to such phenomena as metallic prominences and displacements of the hydrogen lines, which are not readily photographed, and to furnish a check on the position angles determined from photographs. The

SOUTH GEORGIA.

THE island of South Georgia offers especially instructive evidence as to the geological history of the South Atlantic. Though one of the most isolated of the islands there, its structure is continental, and its geographical relations led Suess to the conclusion that it is a member of an island festoon which included the Falklands, Shag Rocks, Sandwich Islands, South Orkneys, South Shetlands, and Grahamland, and projected as a prolongation of the Andes into the South Atlantic, as the West Indies project into the tropical Atlantic.

South Georgia offers the best opportunities of deciding between Suess's theory and the alternative view that South Georgia and the Falklands are parts of an



FIG. 1.—Moraine Flat, glacier, small loch and stream, Cumberland Bay. From the *Trans. Roy. Soc. Edinburgh*.

spectrum of Venus was photographed with very high dispersion, and it is expected that besides yielding a fair value of the solar parallax, these plates will give valuable information as to the wave-lengths of solar lines on the side of the sun which is turned 90° or more from the direction of the earth. Mr. Evershed remained at Srinagar, Kashmir, until November 1. He reports that while the results obtained during the summer of 1916 confirmed his original estimates of the general excellence of the climate for solar work, the conditions during the months November to April inclusive did not appear to differ materially from those found in other localities; that is, the definition was generally good in the morning and evening, and poor near midday. In the summer months good definition throughout the day was the rule, and superlative definition was of quite frequent occurrence.

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ancient South Atlantic land. Much new information as to the geology and geography of South Georgia was collected by Mr. D. Ferguson during a visit there made owing to the generosity of Mr. Theodore Salvesen, of Leith. Mr. Ferguson's results have been published in the *Transactions of the Royal Society of Edinburgh* (vol. 1., part 4, Nos. 23-25, pp. 797-836, plates 81-94), and will be also issued in the *Papers of the Geological Department of Glasgow University*. Mr. Ferguson's account of the stratigraphical geology is illustrated by numerous excellent photographs, a geological map, and sections. This report is followed by papers based on Mr. Ferguson's collections dealing with the petrology by Mr. G. W. Tyrrell, and with the physical geography and palæontology. South Georgia is a long and narrow mountainous ridge, which rises to a height of more than 8000 ft. Its