

the survey. The records of the Thames Conservancy at Teddington Weir were instanced as one of the few cases of really effective river measurement. In England and Wales, much assistance in regard to stream gauging can be rendered by the Catchment Boards instituted under the Land Drainage Act, 1930.

The investigations of the British Association Committee were briefly described, and Dr. Cunningham then proceeded to review the methods and organisations adopted in certain other countries, namely, Canada, the United States, France, Germany, Switzerland and Italy. A number of lantern slides were exhibited illustrative of typical apparatus and installations in operation in the respective services. It was shown that in all these countries, in addition to rainfall measurement, great importance is attached to the consistent gauging and measurement of river- and stream-flow and to the publication of the results obtained, so as to be accessible by all who are interested.

Dr. Cunningham urged that it should be considered an essential part of the duty of those in charge of a survey to disseminate information and advice to local authorities and others engaged in the exploitation of water supplies and the control of floods. Finally, he said it would largely nullify the value of a survey if it were limited to the mere collection and filing of records and statistics. The keynote of the organisation should be active research.

Fungi of South Australia

A VERY useful series of handbooks on the flora and fauna of South Australia is prepared by the British Science Guild (South Australia Branch) and published by the Government of South Australia. The editorial committee shows that "there is an admitted lack of inexpensive but accurate books dealing with the plants and animals of South Australia, and it is felt that the absence of such has been a real handicap to young Australia, and so to the progress of Australian Science".

Handbooks on the general flora, mammals, fishes, the building of Australia and the succession of life, crustaceans, and reptiles and amphibians have already been published, while seaweeds, spiders, moths and butterflies, ants and birds are to be described in future volumes. The gratuitous services of recognised authorities on particular subjects have been obtained, whilst the Government of South Australia publishes the volumes at low prices. In spite of the serious depression through which South Australia has been passing, the Government has shown a commendable breadth of vision, and earned the gratitude of all scientific workers by continuing to publish this series.

Part 1 of the handbook on "Toadstools and Mushrooms" before us is by Prof. J. B. Cleland, chairman of the Handbooks Committee, and combines scientific exactitude with a simplicity of statement which should bring the knowledge within reach of any intelligent person. The introductory sections are particularly well written. They deal first with general questions of distribution and activity, and then with uses of fungi, poisoning, fungi and art, localities affected by different species, fungi and bush fires, larger fungi eaten by mammals, insects and other animals, luminescence of fungi, fairy rings, mechanical force

exerted by fruiting bodies, methods of collection and preservation, and descriptions of special terms used in classification.

This takes up forty pages of closely-printed text, and the remaining 138 pages are devoted to a general classification of the higher fungi, and to a detailed classification of the Agaricaceae. The system adopted for the latter combines the orderly, reasoned groupings set forth by Carleton Rea (in "British Basidiomycetæ") with the convenient detail of Claussen's subdivision by spore colour. This combination is used by the foremost students and teachers of mycology in Great Britain. Convenient keys to the species, as well as to the genera, are given.

Thirty-five photographs and drawings and six coloured plates enrich the text, and the price of five shillings is certainly extremely low for such a volume. Copies may be obtained from the Government Printer, North Terrace, Adelaide. British students of mycology can find a wealth of helpful description for many of our native species.

University and Educational Intelligence

CAMBRIDGE.—The Department of Scientific and Industrial Research has offered £2,300 for building and equipping an extension to the Low Temperature Research Station on its southern side. It is to be used in perpetuity for scientific research and in the first instance for research on problems arising out of the preservation and handling of foodstuffs. In the letter making this offer, it is stated that the Committee of Council has had under consideration the possibility of further extensions of the Station in the future, and that the only areas where such extensions appear to be practicable are at the southern end of the eastern side of the Station and at its north-eastern corner. Having regard to the developments which have taken place since the Station was first erected, the Committee considers it desirable that these two areas should be reserved against future needs.

The Smith's Prizes are awarded to H. G. Booker, of Christ's College, and L. Howarth, of Gonville and Caius College. Rayleigh Prizes are awarded to A. F. Devonshire, of Trinity Hall, T. E. Faulkner, of Gonville and Caius College, and F. Smithies, of St. John's College.

EDINBURGH.—The Senatus Academicus has resolved that the honorary degree of LL.D. be offered to the following, for conferment at the Graduation Ceremonial to be held on June 28 :—The Right Hon. Lord Bledisloe of Lydney, Governor-General and Commander-in-Chief of New Zealand; Dr. Nicholas Murray Butler, president of Columbia University, New York; Dr. James L. Garvin, editor of the *Observer*; Mrs. M. M. Ogilvie Gordon, geologist, and vice-president of the International Council of Women; Prof. J. Graham Kerr, regius professor of zoology in the University of Glasgow; Prof. John Laird, regius professor of moral philosophy in the University of Aberdeen; Sir George Macdonald, formerly secretary of the Scottish Education Department, archaeologist, numismatist and historian; Mr. John Donald Pollock, Surgeon-Commander R.N.V.R. medical service during the War; Dr. A. N. Richards, professor of pharmacology in the University of Pennsylvania; The Hon. Lord St. Vigeans, formerly chairman of the Scottish Land Court.

DR. L. FARKAS, who has been working in the Department of Colloidal Science in the University of Cambridge for the last two years, has been appointed lecturer in physical chemistry and head of the new Department of Physical Chemistry in the Hebrew University, Jerusalem, Palestine.

THE University of Durham inaugurated in October 1924 a Department of Science, and a statistical summary of the work accomplished in it in the ensuing ten years 1924-34 has now been published. Its educational work has been mainly for the benefit of prospective school teachers, these numbering 220 out of a total of 304 students who entered for undergraduate courses, but a substantial volume of original work has been done. Excluding book reviews and other miscellaneous publications, original papers, including books, published from the Department between October 1924 and December 1934, numbered 118, of which a large proportion, 49, were concerned with geology, local or general. A distribution of undergraduate students in 1934 among subjects assigns to physics 47, geology 39, mathematics 36, chemistry 34, botany 22 and geography 4.

Science News a Century Ago

Improvements in Iron Manufacture

On March 16, 1835, Dr. Clark read a paper "On the Application of the Hot Air Blast in the Manufacture of Cast Iron", to the Royal Society of Edinburgh. After giving a general account of the manufacture of cast iron, he said that the method first suggested by Mr. Neilson of Glasgow and tried at the Clyde Iron Works consisted of previously heating the air thrown into the blast furnace. The method was found to produce a vast saving of fuel and of flux. During the experiments made in 1830, the air was heated to 300° F. In 1831, Mr. Dixon of the Calder Iron Works thought of substituting raw coal for the coke which had hitherto been employed for fuel, at the same time heating the air to 600° F. The result was that three times as much iron was now made by the use of a given weight of coal as formerly.

Geology of the Cordillera

On March 11, 1835, H.M.S. *Beagle* anchored again at Valparaiso, and a few days later Darwin set out to cross the Andes to Mendoza by the Portillo Pass. In his account of the journey, he recorded on March 19, 1835: "All the main valleys in the Cordillera are characterised by having, on both sides, a fringe or terrace of shingle and sand, rudely stratified and generally of considerable thickness. . . . No one fact in the geology of South America interested me more than these terraces of rudely-stratified shingle. They precisely resemble in composition the matter which the torrents in each valley would deposit, if they were checked in their course by any cause, such as entering a lake or arm of the sea; but the torrents, instead of depositing matter, are now steadily at work wearing away both the solid rock and these alluvial deposits, along the whole line of every main valley and side valley. It is impossible here to give the reasons, but I am convinced that the shingle terraces were accumulated during the gradual elevation of the Cordillera, by the torrents delivering, at

successive levels, their detritus on the beach-heads of long narrow arms of the sea, first high up the valleys, then lower and lower down as the land slowly rose. If this be so, and I cannot doubt it, the grand and broken chain of the Cordillera, instead of having been suddenly thrown up, as was till lately the universal, and still is the common opinion of geologists, has been slowly upheaved in mass, in the same gradual manner as the coasts of the Atlantic and Pacific have risen within the recent period. A multitude of facts in the structure of the Cordillera on this view receive a simple explanation."

Investigations on Vesuvius

At the Royal Society on March 19, 1835, Daubeny read a paper entitled "Some account of the Eruption of Vesuvius, which occurred in the month of August 1834, extracted from the manuscript notes of the Cavaliere Monticelli, Foreign Associate of the Geological Society, and from other sources; together with a Statement of the Products of the Eruption, and of the Condition of the Volcano subsequently to it". After the eruption, the author had descended twice into the crater, which then presented a comparatively level surface, its sides consisting of strata of loose volcanic sand and rapilli, coated with incrustations of common salt, coloured red and yellow by peroxide of iron. The vapours which issued from the various parts of the surface, collected and condensed by means of an 'alembic' introduced into the ground, were found to consist principally of steam and muriatic acid, with only a slight trace of sulphurous or sulphuric acids. The author considered that carbonic acid was also exhaled, but neither nitrogen nor sulphuretted hydrogen appeared to form any part of the gas omitted.

The London and Greenwich Railway

In a note in its issue of March 21, 1835, the *Mechanics' Magazine*, referring to the London and Greenwich Railway, the first railway running out of London, said, "the Greenwich Railway will certainly not be ready to take passengers to the fair on Easter Monday, although according to some sanguine expectants, it was to be ready for that purpose two years ago. It is still progressing, however, and some of its arches have now made their appearance at the London Bridge end of the line, close to Tooley-street. It is understood that a locomotive will ply at Easter, for the conveyance of passengers on that part already completed; of course, such a trip will be taken more for the gratification of curiosity than for the sake of utility. A plan has been broached for erecting a landing place for steamers at Deptford, in connexion with the railway. . . . The success of such a speculation, however, is problematical. In nearly the same time that it would take steam-vessel passengers to land at Deptford, and get seated 'all right' in the railway carriages, they might by going on in the steamer, be at the end of their voyage; and could the transference be effected with even instantaneous rapidity, the railway carriages could not land passengers in the city, as the steamers now do, but in Tooley-street, Southwark, a good quarter of a mile away". As originally planned, the railway had 878 arches, and alongside the line was to be a tree-shaded road, a parade for invalids and children "incomparably superior to the boulevards of Paris".