

of which he published in the *Denkschrift* of the Academy.

Wettstein's chief contributions to botanical knowledge lay in the application of principles of phylogeny and morphology to taxonomy. His monograph of *Euphrasia* (1896) was an intensive study of the species, and their origin and affinities, especially in relation to their geographical distribution. He also developed the idea of *Saisondimorphismus*—the evolution of early and late flowering forms of one stock—as a source of new species. A similar study of a group of European gentians appeared in the following year. He had previously (1891) contributed accounts of the families Solanaceæ and Scrophulariaceæ to the "Pflanzenfamilien", and a "Beitrag zu Flora Albaniens" was published in 1892 as a volume of the "Bibliotheca Botanica". He was a good draughtsman and his botanical contributions are illustrated largely by himself. To botanical students, Wettstein is familiar as the author of a widely used "Handbook of Systematic Botany" (1901-8); he attempted to derive the Angiospermous flowering plant from the Gymnosperms through the Gnetales, regarding *Casuarina* as the most primitive existing Angiosperm. The theory was an ingenious one, but has not been generally accepted.

Wettstein was honoured by his fellow-countrymen

and also received many marks of recognition from European and overseas societies and institutions. He was elected foreign member of the Linnean Society of London in May 1914.

A. B. RENDLE.

WE regret to announce the following deaths:

Mr. M. M. Pattison Muir, senior fellow of Gonville and Caius College, and formerly prælector in chemistry in the University of Cambridge, on Sept. 1, aged eighty-two years.

Prof. A. S. Pringle-Pattison, emeritus professor of logic and metaphysics in the University of Edinburgh, on Sept. 1.

Dr. Droop Richmond, chief analyst to Boots Pure Drug Co., Nottingham, for sixteen years, on Aug. 26, aged sixty-four years.

Dr. Per Axel Rydberg, for the last thirty-two years curator of the New York Botanical Garden in the Bronx, on July 25, aged seventy-one years.

Dr. Louis W. Sambon, a pioneer worker in tropical medicine, on Aug. 31.

Col. the Hon. Milo G. Talbot, C.B., who was awarded a Royal Medal of the Royal Geographical Society in 1909, known for his surveys of the north-west frontier of India and Anglo-Egyptian Sudan, on Sept. 3, aged seventy-six years.

News and Views.

THE very personal appeal of the problems of the internal secretions is sufficient guarantee that the valuable résumé by the master in this subject which appears as a Supplement to this week's issue of NATURE will be widely read. Both author and subject came into being at about the same time and both have grown and developed side by side. During the eighty odd years of a fruitful scientific life, Sir E. Sharpey-Schafer has not only witnessed the change of view regarding the basis of animal behaviour but also he has played a prominent part in bringing about this broader basis. It is being realised more and more that racial and individual characteristics are not solely the expressions of an inherited nervous system but are also dependent, though to a lesser degree, on the development and efficiency of the organs of internal secretion. Many unwarrantable assertions appear from time to time regarding the part played by these special glands in the determination of personality, and until further information concerning their variations with age, climate, and habitat are available, such statements must continue to remain of a highly speculative nature. As in all subjects, during the constructive period, some confusion creeps into the nomenclature, but up to the present no better term has been introduced to connote an internal secretion than the word 'autacoid' proposed by Schafer to express the drug-like action of such a chemical regulator; it is more accurate though less euphonic than the term 'hormone' introduced by Starling, which was origin-

ally intended to suggest excitation only and would thus exclude depressing autacoids.

THE methods of studying these autacoid substances are based largely, first of all, on the loss or removal of the particular gland, with observation of the resulting deficiency disease set up, and secondly, with the cure of the disease by grafting or feeding with the gland from a healthy animal, or alternatively by injection of an extract of the gland, and lastly by administration of the active chemical principle when this is known. The method which has been most extensively used and has proved the most fertile in ascertaining important facts is the injection of extracts into animals and into man. This technique was not used much until Schafer, working in conjunction with Oliver, discovered that extracts made from the adrenal bodies give rise—when injected into the veins of an animal—to a very great increase in blood pressure. It is worthy of mention that all the fundamental facts were noted by Schafer in his early papers. In his work with Oliver he observed that one other gland extract besides that of the adrenal, namely, the pituitary, also contained a pressor principle, and an extract of this gland is now widely employed by obstetricians for the arrest of hæmorrhage after childbirth. The account of the interrelationships of the organs of internal secretion given by Schafer does not warrant the present-day wholesale dissemination of poly-glandular preparations coming from foreign drug manufacturers.

Progress in the elucidation of the mode of action and therapeutic action of a specific autacoid can be established only by careful dosage and observation of a physiologically standardised unit.

CONSIDERABLE interest has been aroused recently by the claim of Dr. Bendien, of Zeist, to have developed a method of diagnosis of cancer which is infallible even in the early stages of the disease. The method has been briefly described by Dr. A. A. Miller in a recent letter to the *Lancet* (Aug. 22, 1931; p. 427) and is given in more detail in a paper by F. C. Smith, F. R. Holiday, and J. Marrack (*ibid.*, Aug. 29, p. 507). It consists of two parts: in the first the serum is mixed with a series of mixtures containing varying proportions of sodium vanadate and acetic acid: normal human serum produces a precipitate in tube No. 6: if flocculation occurs below this, that is, in the more acid mixtures, carcinoma, tuberculosis, or some other disease is indicated. In the second part of the test, the precipitate obtained is heated to 56° C., filtered off, weighed, and dissolved in two per cent sodium bicarbonate solution. The ultra-violet absorption curve of this solution is then obtained by means of the spectrophotometer. Bendien claims that there is a curve typical of cancer and another of tuberculosis.

MARRACK and his co-workers (*loc. cit.*) in their investigation of the test, point out that the concentration of the precipitate in the bicarbonate solution is very variable owing to the fact that it is only dried by suction on the filter, so that it contains water up to 90 per cent of its total weight. No attention can be paid, therefore, to the actual height of the absorption curve obtained; only the shape and slope are significant. They obtained curves of the same general character as those of Bendien, but they found that the actual slope depended on a time factor. When the spectrophotometric examination is carried out as soon as the precipitate has been dissolved, both cancerous and non-cancerous cases show a typical 'tuberculosis' curve with absorption extending into the visible region of the spectrum, as indeed might be expected from the yellow colour of the solutions. On standing, however, the solutions fade slowly, and no longer absorb the longer wave-lengths: curves 'typical of carcinoma' are then obtained. The authors conclude that the method is of no value in the diagnosis of cancer. It is clear that further work is required before Bendien's claim can be accepted without question: it is possible that the different opinions expressed as to the value of the test may be due to differences in technique, but in any case, Marrack's work indicates that to be of value the details of the test must be very rigidly standardised.

INVESTIGATORS have long sought to discover the cause of the common cold. The condition is unquestionably contagious, and has therefore been considered to be a microbial infection. Many micro-organisms have at different times been assigned a causative rôle, and the evidence adduced in favour of one or another agent has frequently seemed to be impressive. Several well-recognised pathogenic micro-organisms, such as the pneumococcus, streptococcus, influenza bacillus,

and *Micrococcus catarrhalis*, have been thought to play a part in the production of this catarrhal condition, the severer form of which was formerly often spoken of as an 'influenza cold', but none can be said to have established a position other than as a possible occasional cause. With the recognition of the existence of the ultra-microscopic or filtrable forms of disease-producing viruses, evidence accumulated that the causative agent of the common cold might belong to this class of infecting agents. This hypothesis receives confirmation by the studies of A. R. Dochez, K. C. Mills, and Y. Kneeland, jun. (*Lancet*, Sept. 5, p. 547), who found that the chimpanzee in addition to man is susceptible to an acute infection of the upper respiratory tract, resembling in every respect the similar infection in man.

MESSRS. Dochez, Mills, and Kneeland have filtered nasopharyngeal washings from individuals with acute colds through Seitz filters, which do not permit the passage of bacteria, and the filtrates were inoculated intranasally into chimpanzees, with the result that a typical acute attack of 'cold' developed. Human volunteers similarly inoculated also manifested the signs of the common cold, and such experimental colds both in apes and in man are contagious by contact to others, and may be passed in series from individual to individual. The virus in the filtrates preserved anaerobically in the ice-box maintained its activity for from four to thirteen days. A method of culture was also devised in a chick-embryo cystein broth medium. This was inoculated with the filtered nasal washings and the culture was carried on for twelve generations, when an inoculation with it induced a mild cold in one out of three human volunteers. The fifteenth culture, representing a dilution of approximately one to two quadrillion of the original material, also produced colds in two out of three inoculated volunteers. In addition to initiating symptoms of infection, the virus also appears to provoke increased activity of any potential pathogenic agents that may happen to be present in the respiratory tract, such as the pneumococcus and others.

ON July 7-20, representatives of the Geological Surveys of Southern Equatorial Africa met at Kigoma to discuss the compilation of a geological map of that part of the continent. The conference constituted the first meeting of the Sub-Commission of African Geological Surveys formed at the Fifteenth International Geological Congress, at Pretoria in 1929, and the countries represented at Kigoma were: French Equatorial Africa, Northern Rhodesia, Belgian Congo, Ruanda Urundi, Uganda, Tanganyika Territory, and Nyasaland. In these countries, provisional geological maps already exist, but great difficulty has hitherto been found in establishing the relation between the geological formations of any one country with those of neighbouring or more distant countries, and this difficulty has been greatest in the case of the ancient unfossiliferous formations. In the course of the recent discussions, however, assisted by a comparison of rock specimens and maps from the different countries, considerable progress has been made, and as a result of this the Sub-Commission has drafted a geological

map of Southern Equatorial Africa, which it is proposed to publish at an early date. A great advance has been made in the mapping of the Katanga System, within which lie the great copper deposits of Northern Rhodesia and the Belgian Congo, and the tin-bearing formations of Uganda can be followed through Tanganyika and Ruanda Urundi to the Belgian Congo. Moreover, the Karroo System, bearing many coal deposits in this part of Africa, was discussed in some detail.

SINCE the only sound basis for the development of mineral resources is a thorough knowledge of the geological formations and of their relation to one another, the discussions at the conference and the conclusions arrived at, as summarised in the new geological map, should prove to be of considerable economical value, as well as of scientific interest. The conference recognised the following three important systems of pre-Karoo age: (a) The Basement Complex, comprising sedimentary and igneous groups showing wide variations in degree of metamorphism; this system is roughly comparable with the Swaziland System of South Africa. (b) The Muva-Ankole System, consisting principally of quartzite and shales, with acid volcanic rocks locally, and, more rarely, basic rocks. In some areas the shales are represented by phyllites or schists, and the quartzites show a similar range of metamorphism. The system can be traced from Northern Rhodesia to Uganda, and includes, for example, the Muva, Mafingi, Ukinga, and Karagwe-Ankolean groups. It is separated from the systems below and above by vast unconformities, and it is considered as probably equivalent in part to the Witwatersrand and the Ventersdorp Systems. (c) The Katanga System, ranging from the Série des Mines to the Upper Kundelungu, and equivalent to the Transvaal-Nama and Waterberg Systems. At the base of the Lower Kundelungu is the great tillite of the Katanga, so that in this area at least one important glacial epoch of pre-Karoo age is recognised. It may be added that over a wide area in this part of Africa glacial deposits are believed to exist at the base of the Karroo, although their correlation with the Dwyka has not yet been established.

THE special displays of the flood-lighting of buildings in London which began on Sept. 1 and are being given in connexion with the International Illumination Congress have proved a great success and have attracted huge crowds of sightseers. The flood-lighting has brought out the beauty of many architectural features of the buildings which are seldom noticed. For example, the upper façade of Somerset House fronting the river is bathed in a clear rose-coloured light which makes a striking contrast with the dark terrace beneath. Buckingham Palace is perhaps the most brilliantly illuminated building, and makes a very attractive spectacle. The lamps required for it consume 200 electric units per hour. The principal area illuminated is from the Tower Bridge to Westminster. The clock tower of Parliament is flooded with light the colour of old ivory, and can be seen from great distances. The spire of St. Bride's Church,

shown up in brilliant white light, also frequently catches the eye when driving through the City. The Institution of Electrical Engineers, on the Embankment, with its six bright pylons, is admired by many. We understand that this illumination is permanent. The illuminations include monuments and parks. From Northumberland Avenue the silhouette of Nelson on his column is a wonderful sight. The column itself is in darkness, and the statue, gently illuminated, stands out in detailed relief. Some well-known buildings in the neighbourhood of London have also been flood-lighted. The George Inn at Slough and the Dysart Arms at Petersham show up the merits of this system of lighting. In a few cases the display is a little garish, but the brighter the spectacle, the better pleased are the sightseers.

THE limitations produced by atmospherics on long-distance working between radio stations are very annoying to radio operators. The commercial operation of a long-wave receiving station may remain completely disorganised for long periods when intense atmospheric disturbances take place near the aerial. A flash of lightning acts as a long-wave spark transmitter, and as the voltage is in millions and the current in thousands of amperes, the effects produced may be very serious. Lightning flashes are not the only cause of atmospherics. The distribution of potential throughout the atmosphere is very irregular and it is probable that sudden equalisations of potential may occur without visual flash, causing all kinds of atmospherics. In *Television* for August, T. Bray points out that television is much less affected by atmospherics than radio communication. It might usefully be employed, therefore, in sending printed messages during heavy tropical atmospherics when ordinary radio cannot be used. Atmospherics manifest themselves as a rapid series of 'splashes' on the television screen, affecting it continuously and sometimes resembling flames passing over it. Bray shows by diagrams that even when aural and automatic reception of the morse code are impossible, the printed letters on the television screen are easily read. This special aspect of television may open out new commercial applications where it can be usefully employed.

News from the *Nautilus*, the submarine in which Sir Hubert Wilkins is making his Arctic expedition, was received by radio by the *News Chronicle* from 350 miles from the north pole, where the ship was on Aug. 25. The actual position was then about lat. 84° N., long 10° E. Echo soundings had shown an irregular ocean floor varying between 1000 fathoms and 300 fathoms within a few miles. This was probably at the place where the *Nautilus* crossed a submarine ridge between northern Spitsbergen and Greenland. Farther east, at a position not stated, a depth of 1205 fathoms was recorded. At the time of the message the ship was in open water with much scattered pack-ice, but closer pack, involving the need to submerge, was expected to the northward. Progress was slow, and spray was freezing on the deck and conning tower. A message sent the previous day.

recorded a serious accident. The *Nautilus* was then 500 miles from the pole, when it was discovered that the diving rudder was lost. A diver discovered, however, that the ordinary steering gear was intact. The loss of the diving rudder made submergence difficult and restricted movements below the surface, but later in the week a message recorded progress. During last week no messages were received from the *Nautilus*, and a certain amount of anxiety was felt. The Norwegian Government decided to send a search expedition and two aeroplanes, under the command of Capt. Riiser-Larsen. A long dispatch from Sir Hubert Wilkins appears in the *News Chronicle* of Sept. 7, from which it appears that the *Nautilus* has been holed and emerged from the pack ice on Sept. 4 in about lat. 81° N., long. 11° E.; she was making her way slowly to Spitsbergen. It is stated that the scientific staff of the expedition are well satisfied with the results obtained.

A MEETING was recently held of the Sub-Committee on Symbols, Units, and Nomenclature used in Physics, appointed by the International Union of Physics. Sir Richard Glazebrook was appointed chairman of the Committee. Prof. Kennelly, as chairman of the Section of the Advisory Committee of the International Electro-Technical Commission dealing with electrical and magnetic magnitudes and units, wrote directing attention to the meeting of his Committee in London on Sept. 18, and inviting members of the Committee of the International Union of Physics to attend. This invitation has been accepted, and it has been arranged to hold a meeting of the Sub-Committee on Symbols, Units, and Nomenclature shortly afterwards to continue the discussion commenced at Brussels. Communications with regard to this meeting should be addressed to Dr. Ezer Griffiths, at the National Physical Laboratory, Teddington.

THE claim by Sir Colin Mackenzie, of Canberra, that the female aboriginal skull discovered in the Jervois Ranges is one of the most important of the prehistoric documents in the world to-day has been received with some scepticism in Australia. The skull is 173 mm. in length, the forehead breadth is 86 mm., and the volume between 956 c.c. and 980 c.c. It is contended that this cubic capacity is the smallest known in any complete human skull; hence that the skull belonged to an individual on the confines of the lowest humanoid stock. On the other hand, Prof. F. Wood Jones, of the University of Melbourne, is convinced, from the study of a cast, that the skull falls well within the limits of the normal modern Australian aboriginal female, and that Sir Colin Mackenzie's conclusions are unwarranted.

THE *Spectator* for Aug. 15 contains an article (p. 210) by D. Yorke on bird migrants at Rossitten, in which are some noteworthy observations on the relation of peregrines to their prey. The first one seen made five attempts to capture wood-pigeons from the migrating flocks, but always failed, even when it got into a flock and flew amongst them; ultimately it caught a greater spotted woodpecker and descended to eat it. Later, three peregrines were in sight at

once, also attacking pigeons unsuccessfully; and again a woodpecker of the above species fell a victim. This would seem to indicate that the wood-pigeon, though greatly desired, is too much for many peregrines, and that the greater spotted woodpecker occupies to them the same relation as a warningly-coloured moth or butterfly does to insect-hunters—a sort of emergency quarry to be taken in default of anything better. It was proved a generation ago that the Danaid butterflies will be eaten by caged insectivorous birds in default of other live food, and the coloration of most woodpeckers would be classed as 'warning' if worn by an insect.

WE have received a letter from Mr. F. Gilbert Carruthers, 10 Addison Road, London, W.4, relative to the question whether earwigs use their forceps for purposes of offence or defence. He mentions that he inadvertently drank some soda water from a mug which contained one of these insects, and that the first intimation he received of the creature's presence was when he experienced a distinct nip on the lip. The nip, he adds, was more surprising than painful. In this connexion it may be mentioned that, when alarmed or disturbed, earwigs regularly open their forceps in a threatening manner. If a finger, or other object, be placed between the forceps, the latter will often close with a slight nip. The main function of these weapons is still obscure: on rare occasions earwigs have been recorded to use their callipers for seizing their prey, and also for fighting against one another.

SIR WILLIAM R. MORRIS has given £25,000 to the British Empire Cancer Campaign for the establishment of a research fellowship in radiology at the Mount Vernon Hospital, Northwood, Middlesex. This hospital was opened in 1929 as the Empire centre for the treatment of patients suffering from cancer, and for the investigation of the causes and cures.

THE twelve major topics announced for discussion at the third International Conference on Bituminous Coal to be held under the auspices of the Carnegie Institute of Technology, Pittsburgh, on Nov. 16–21 (see NATURE, Feb. 14), are as follows: cleaning and preparation; hydrogenation; by-products; fertilisers; low and high temperature carbonisation; gasification; combustion; railway and steamship fuel; smoke abatement, dust removal, and flue gas purification; origin, classification, and properties; competition between coal and other fuels; storage of coal. The following countries are among those to be represented: United States, Austria, Great Britain, Czechoslovakia, France, Germany, the Netherlands, Poland, U.S.S.R., Spain, and Switzerland.

J. A. A. KETELAAR has asked us to correct an error made by him in his letter in NATURE of Aug. 22, p. 303, entitled "Structure of the Trifluorides of Aluminium, Iron, Cobalt, Rhodium, and Palladium". The value of the z -parameter of the fluorine ions (2) is not $\frac{1}{3}$ but $\frac{2}{3}$, in accordance with the description of the structure at the end of the letter.