

## News and Views.

JEAN BAPTISTE PIERRE LAMARCK died one hundred years ago, on Dec. 18, in his eighty-sixth year—a master of zoology whose work and thoughts gave fresh impetus to the progress of biology in his day, and in ours still enliven the unsettled controversy concerning the heritability of 'acquired' characters. Lamarck was a systematist, and in these days when systematics is apt to be despised among the multiplying branches of zoology, it is well to be reminded that it was on his experience in the discrimination of species that his great achievements were based. The earliest of these bore upon the classification of animals. He investigated the rich fauna of fossil mollusca in the Tertiary beds of the Paris basin, discovered that different species were distinctive of different beds, and gave at once an auspicious start to the palæontology of invertebrates and a lusty push to the stratigraphical conception of geological formations which his contemporary Werner had inaugurated. For the first time, he proposed a reasonable division and grouping of the invertebrate animals, which, apart from the insects, Linnæus had bundled into a hotch-potch of 'Vermes'. It was characteristic of Lamarck that his mind kept revolving the greater problems raised by his detailed work. Thus the satisfaction with which he at first regarded the linear arrangement of his classification of the animal world gave way to doubt, and ultimately was replaced by the modern conception of a branching genealogical tree—a change of view which says much for the openness of the naturalist's mind at an age at which professors are nowadays compelled to retire.

EVOLUTION was in the air during the latter half of Lamarck's life, and close reasoning, founded upon a grasp of systematic detail and sequence, enabled him to make a notable advance. He thought that changing environment influenced the habits of animals as changing wants might influence habits, and new habits meant the adaptation of old structures. The crux of his position lay in his assumption that adaptations thus acquired by an individual became, without more ado, part of the stock-in-trade of its progeny. No theory has swung more completely between the poles of belief and unbelief than Lamarck's assumption of the heritability of 'acquired' characters. At the first it was assumed without proof, and was held for years as being self-evident. Weissmann gave it a blow from which it has not yet recovered, and, for years after Weissmann's analysis of the 'eighties, few zoologists of standing but regarded the transmission of acquired characters as being not only unproved but also theoretically impossible. Fortunately, modern views are more elastic, and Lamarckism in a modified form has again its supporters amongst zoologists as well as botanists.

THE gale that set in over the south-west of England on the night of Dec. 6 last rose to hurricane strength in the early hours of Dec. 7, and a gust of 108 miles an hour was recorded. Much damage is reported both to shipping and also inland. It bore a striking re-

semblance to the storm of Mar. 8, 1922, which also gave a gust of 108 miles an hour and reached its climax at about the same hour of the morning. Slightly higher speeds have been recorded in other parts of the British Isles: 109 miles an hour at Dunfanaghy (Donegal) on Jan. 28, 1927, and 110 miles an hour at Quilty (Co. Clare) on Jan. 27, 1920. The gale of Jan. 28, 1927, was in many respects the most remarkable of the four, in that it yielded gusts of more than 100 miles an hour, not only in Ireland but also in Scotland, and the average speed actually exceeded 80 miles an hour for a time at Dunfanaghy. Winds of this strength are very rare outside tropical hurricanes and tornadoes. One might be tempted to regard them as very nearly the extreme limit of what can be achieved by a fast-moving secondary depression, in which the air motion can often be resolved into a more or less complete circular whirl and a motion of translation, generally from west or south-west, the resultant wind being very strong where the two components are in the same direction, that is to the south or south-west of the centre. But it is doubtful whether this is the case. Sir Napier Shaw, in his well-known work on weather forecasting, mentions a gale associated with just such a fast-moving secondary that blew down hundreds of trees in Cambridge between 2 P.M. and 4 P.M. on Mar. 24, 1895. This gale may be within the recollection of some of our readers. It was doubtless considerably more severe than the recent gale, and equally destructive storms have been recorded.

THE Barton power station of the Manchester Corporation and the proposed Battersea power station of the London Power Company are good illustrations of the difficulties inherent in working large steam stations, some of which electrical engineers and chemists are now successfully overcoming. The Manchester station is attacked because it is located in open country and the fumes emitted were deleterious to vegetation. The Battersea power station is to be built in urban surroundings and near important public buildings. By appealing against the injunction made against it by the Court of Appeal, the Manchester Corporation has gained a year during which it must abate the nuisance. The successful experiments carried out at the Grove Road Station showing how sulphur fumes can be eliminated from flue gases are very promising. According to a White Paper issued by the Ministry of Transport (Cmd. 3442, London: H.M. Stationery Office, 6d.), the Government Committee states that the possibility of eliminating nearly the whole of the sulphur gas present in the fumes has been proved. It desires, however, that a more definite explanation of the mechanism of the oxidation of sulphurous to sulphuric acid should be forthcoming before it can report on the practicability of the process. We are surprised that the opponents of the Battersea power station do not suggest some other site and give figures to prove that it is practicable. The problem of supplying London with electricity is not an easy one. The demand now exceeds 400,000 kilowatts, the capital involved is very large,



the prosperity of many industries depends on cheap electric power, and the comfort of hundreds of thousands of citizens is involved. Purely destructive criticism is not helpful. It is easy to put spokes in the wheel of progress. Our sympathies are entirely with those chemists and engineers who are doing their best to mitigate the objectionable components present in the fumes arising from the combustion of fuel.

At a meeting of the Royal Anthropological Institute on Dec. 3, Mr. A. Leslie Armstrong described an archaeological expedition undertaken this year with the object of exploring caves in Rhodesia, and in view of the meeting of the British Association in South Africa. The cave of Bambata is situated near the summit of the mountain of that name, the highest in a group of typical granite hills lying on the south-east verge of the Motopo Hills. Through the work of the Rev. Neville Jones of Hope Fountain, and Dr. Arnold of Bulawayo, in 1918, the cave was known to contain important deposits and a frieze of wall paintings. Work was commenced here by the expedition early in June. The relic bed proved to be nearly 20 feet in thickness, and provided for the first time in South Africa a definitely stratified sequence of cultures. At the base was a Lower Palaeolithic stratum, more than three feet in thickness, containing *coup de poing* of South African Acheulean (Stellenbosch) facies. This was succeeded by a deep deposit of typical Mousterian character, above which, through a thickness of more than twelve feet, was a distinctive culture exhibiting Capsian affinities, but with Mousterian tendencies or survivals. Burins were abundant in this culture, also a distinctive point, the gradual development of which was traced from a pure Mousterian point, by well-defined stages, into a slender point of almost Solutrean technique. The upper layer of the deposit contained implements of micro-lithic form which are apparently ancestral to the Wilton culture of the Cape. The Mousterian zone was found to include definite intercalations of Capsian layers, separated and covered by layers of normal Mousterian character. This suggests the contemporary presence in this area of the two races before the Neolithic influence became dominant. At the Victoria Falls it was possible to correlate the Lower Palaeolithic cultures contained in the residual gravels of the Zambezi River, with definite stages in the cutting back of the river gorge. The results demonstrate the great antiquity of Palaeolithic man in South Africa.

STUDENTS of psychic phenomena will find much to interest them in an article entitled "Spirit Hunting in the South Seas", which is contributed by Prof. B. Malinowski to the *Realist* for December. In it he describes a manifestation by Tomwaya Lakwabula, a famous spirit-seer of the village of Oburaku in the Trobriand Islands of Melanesia, which came under his personal observation. It has always been a question how far the medicine man or shaman has availed himself of imposture in the manifestation of his powers or how far they were due to the effects of hysteria, auto-hypnosis, or some similar abnormal psychic state. It is evident that Prof. Malinowski is something of a sceptic, at least in regard to certain points in the

medium's operations. It would appear that there are two classes of seers. A minor class, and even this is not indeed numerous, visits the spirit world for short periods and receives visits from the spirits, who bring messages and foretell the future. The second class consists of the great seers who occur but rarely in the history of the people. This latter class falls into prolonged trances, not in secret as among the first class, but in the eyes of the multitude. It was one of these prolonged trances which came under Prof. Malinowski's observation, lasting for more than a week. The call to this trance comes, the natives believe, from the spirits themselves.

THE first manifestation of the spirit-seer's powers which Prof. Malinowski saw was at the mortuary wake of the chief, when after the nervous twitchings usual in such cases, the seer broke into song in a voice which was not his own but was recognised by the natives as that of the chief, and in a language which was not that of the natives, but was said to be of the spirit world. Immediately afterwards the poles and platform at the grave were violently disturbed. This, it was said, was caused by the spirit of the chief trying to return to the body. During the prolonged trance, seances were held nightly, when the villagers gathered round the hut in which the medium's body lay extended on a couch visible from the door, and attended by his daughter. Although the seer at these seances sang both in his own and in an altered voice—on one occasion there were at least two changes, and once there took place the materialisation of a small bunch of betel nuts—no messages were delivered until the sixth or seventh night. These messages dealt with practical affairs—the disposal of a canoe, the arrangements for the periodical ceremonial feast to be celebrated in memory of the deceased chief, and so forth. The voice in which these messages were delivered was not that of the chief, but of a man who was said to have been dead for some time. When the trance was over the seer appeared to be much emaciated, perhaps only natural as his food had been supplied by the spirit world, though Prof. Malinowski has his doubts on this point. He looked tired, and his mind at first seemed quite vacant; only slowly did his mental faculties return to normal. The whole account is extremely interesting, and although the very practical and apposite character of the messages from the spirit world arouses some suspicion, it seems a genuine case of an abnormal personality, possibly exploited with some skill.

THE undoubted power of the cinema as an influence in education has not, as yet, been harnessed in Great Britain. Other countries, notably Russia, Germany, France, and the United States, have elaborated formulæ for the employment of the motion picture; but we have lagged behind. Considerable expectations are, therefore, to be attached to the work of a commission of inquiry appointed by a conference of scientific and educational societies and institutions which was held on Nov. 27. In April of this year the Association of Scientific Workers took the lead by calling a preliminary conference, which appointed an organising committee. This committee acted in conjunction with the British Institute for Adult Education in drafting the report to



be presented and in calling the second conference. The report proposed the formation of a representative commission and defined its terms of reference with such breadth as to include an inquiry into the various aspects of mechanical visual and aural aids in education, films in relation to the general education and culture of the public, and the establishment of a central organisation to co-ordinate work, both research and informatory, on the motion picture in relation to general and specialist education. The constitution of the commission insures that its findings will be received with respect. The members include Prof. W. A. R. Ainsworth, who represents the Board of Education; Mr. J. W. Brown; Mr. A. C. Cameron; Major A. G. Church; Mr. E. Salter Davis; Mr. J. Fairgrieve; Sir Richard Gregory; Sir Benjamin Gott; Mr. G. T. Hankin; Mr. F. A. Hoare; Sir Percy Jackson; Dr. C. W. Kimmins; Colonel J. M. Mitchell; Prof. J. L. Myers; and it has power to co-opt additional members.

MR. ALAN E. MUNBY read a paper to the Royal Institute of British Architects on Nov. 18, on the design of science buildings. He made a strong plea for greater efficiency in building, and pointed out that a little extra expenditure often meant a disproportionately great increase in technical completeness. One of the great difficulties of the architect lies in the absence of any consensus of opinion on the part of educationists and men of science as to the appropriate equipment for specific subjects, and Mr. Munby suggested that some generally agreed outline of requirements might be formulated without undue difficulty. As to the buildings themselves, the adoption of a unit will often simplify construction and assist in the allocation of space, but the architect must constantly bear in mind that the whole design must grow up together, and that the fixed fittings must be laid out on the plans, suitably spaced, at a stage to prevent the embarrassment of the general contractor by subsequent changes. After a consideration of the chief technical details, Mr. Munby stressed the importance an architect should attach to acquiring a thorough understanding of the highly specialised objects aimed at; only so can he be in a position to deal intelligently with the various schedules of requirements that may be placed before him and to give them proper amplification in detail. Otherwise, we feel that sympathy would certainly be due to the professor who told Mr. Munby that he would much rather have an architect who knew nothing about science buildings than one who thought he knew something.

THE Annual Forest Report for Finland, 1927, recently published, depicts the wonderful progress which has been achieved in the introduction of a scientific management into the forests in the ten years since she established her independence during the period of the Kerensky Government in Russia in 1917. Apart from the notable position Finnish timbers have obtained in the European soft wood export trade (she exported 1,283,000 standards of sawn material during the year), there are other important directions in which Finland has been dealing with the forestry question from the point of view of

the economic necessities of the country as a whole. Finland is mainly a forest country; out of a total superficial area of 14,151,052 hectares, the forest and waste lands cover 13,449,387 hectares. Any effective administration of the country must therefore inevitably be intimately bound up with a proper management of the forests. That this fact has been thoroughly appreciated the Report well displays. Laws have been introduced which afford protection to areas both in the north and on the seaboard and the islands, where disafforestation would lead either to denudation of mountain slopes or to the serious results of exposure to wind and storms.

THE question of the management in Finland of communal forests (namely, areas owned collectively by villages, etc.), and of those belonging to the Church and other bodies, has been met by placing the management in its main principles under the Forest Department. Another law has enabled the latter to maintain supervision over privately owned forests. The owners are not permitted to exploit their forests without making arrangements for re-stocking the areas felled; the extent of the fellings made in any one area is also limited by silvicultural principles. Commissions in each district, consisting of forest officials, are responsible for the supervision, and purchasers of the materials to be felled on areas they buy have to submit to the Commissions an estimate of the amount of material they expect to fell. Thus a check has been instituted against over-felling on one hand, and on the other against leaving unregenerated a felled area. It is said that the private proprietors realise to the full the importance of this law and have readily fallen in with its requirements. Four forest schools are maintained and a research institute. The work undertaken by the professors and assistants in the latter is already becoming well known and will achieve results of lasting importance to Finland. It is a wonderful record for ten years.

THE brilliant success of the Deutsches Museum in Munich, in pushing to its furthest limits the use of motion in adding to the attractiveness of exhibits, has suggested similar developments in other countries. The latest project of the kind is a great scheme for a Museum of Science and Industry in Chicago to "reveal the technical ascent of man". According to Science Service, Washington, D.C., it is proposed to build in Jackson Park a replica in stone of the old Fine Arts building of the World's Exposition of 1893, which is still standing. The new building will cost 5,000,000 dollars, will be fitted for the exhibition of technical and scientific collections, and will possess about 400,000 square feet of floor area. Mr. Julius Rosenwald has endowed the Museum with 3,000,000 dollars, to be spent on exhibits and equipment, but it is surmised that, as in Bavaria, municipalities, the great industries, and private individuals will hasten to add to the completeness of the stock-in-trade of the Museum. Work is to proceed at once, and by 1933 the building ought to be completed and open to the public, although the wise decision has been taken that no attempt will be made to rush the collection and arrangement of exhibits. If the Deutsches



Museum be taken as a standard, the collections may ultimately be worth some 30,000,000 dollars.

THE Report of the meetings of the International Commission on Illumination, held in the United States in September 1928, is a volume of nearly 1300 pages with 18 pages of index. The subjects discussed included street lighting, glare, car headlights, daylight and artificial illumination of works and schools, standards, methods and appliances for photometry, diffusing and signal glasses, colorimetry, vocabulary, units and symbols. The principal decisions are given on pp. 9-20, and some of them are subject to further consideration after reports from the various national committees. The vocabulary is fixed so far as French and English are concerned, but the German, Italian, and Spanish terms have still to be determined. The c.g.s. units are to be used; symbols are to be: *F*, luminous flux; *I*, luminous intensity or candle power; *E*, illumination; *B*, brightness; *R*, luminous radiance; and *L*, quantity of light. The Geneva code for interior illumination is to be retained for the present and statistics for street lighting by modern methods are to be compiled. The proper method of specifying a coloured glass or a diffusing material is indicated, and plans outlined for setting colorimetry on an international scientific basis.

THE Multiple Industrial Fellowship on Portland Cement of the Mellon Institute of Industrial Research and the Eastern Face Brick Manufacturers' Association have recently inaugurated a broad scientific study of the problems of bricklaying. So many factors are involved in the construction of a brick wall that it is necessary to limit the investigation to combinations of variables most likely to occur in actual practice. The project has been under discussion for a considerable period of time; experiments were begun by Dr. F. O. Anderegg, senior industrial fellow at the Mellon Institute, and his assistants only after a satisfactory programme had been worked out. At the present time more than three hundred experimental brick walls or panels have been erected in order to find the most suitable combinations of materials and workmanship. The following problems are being investigated: the rate of absorption and total absorption of moisture by brick; the surface characters of brick; the merits of different cementing materials, ranging from pure lime to pure cement, and of various sands and mortar pigments; the effect of varying the type of backing, both as to material and size of unit; the results of variation in workmanship, including pointing, tapping, and the filling of head-joints; the effect of variation in design, involving a study of coping and parapet construction, of capillary contact, of condensation, and of elasticity; and the behaviour of mortar with reference to the other variables in all types of climatic conditions. All results of these studies are to be published for the benefit of those interested in building construction.

WE record the foundation of a new scientific society, the Gesellschaft für Völkerkunde, which was formally constituted on Oct. 1 with a hundred and

sixty members. Though organised on a German-speaking basis, its membership is open to ethnologists of all nationalities. There is an entrance fee of 3 marks and an annual subscription of 5 marks for 1929, and of 3 marks for subsequent years. A quarterly journal entitled *Ethnologische Studien*, of which the first (a double number) has already appeared, is published on behalf of the Society by the Verlag Asia Major, under the editorship of Prof. Fritz Krause, Director of the Ethnological Museum at Leipzig and the first president of the Society. The journal will include ethnological papers in German, English, and French. Members have the privilege of obtaining the journal as well as the *Ethnologische Anzeiger* and *Anthropos* at a reduced price. The address of the Society is, Museum für Völkerkunde, Johannisplatz, Leipzig, C.1. Further particulars may also be obtained from J. H. Driberg, 8 Tavistock Place, W.C.1.

IN the autumn issue of the *Fight against Disease*, the quarterly journal of the Research Defence Society, it is announced that a committee has been formed, with Lord Dawson of Penn as chairman, to perpetuate the memory of Henry Hill Hickman, who died in 1830, and was the first to suggest the use of oral inhalation for the production of anaesthesia during operations. This committee has received sufficient support to enable it to restore Hickman's tombstone and to place a memorial tablet in his native church of Bromfield, Shropshire. It is also hoped to be able to present his portrait to the Royal Society of Medicine and to establish a Hickman memorial medal for work of merit in anaesthesia. Donations may be sent to Dr. Cecil Hughes, 8 Cumberland Mansions, W.1.

THE July number of the *Transactions* of the Mining and Geological Institute of India contains the address of the newly elected president, Mr. F. L. G. Simpson, which was devoted to a review of the mineral production of India for the forty-five years from 1880 compared with that of the rest of the world, the detailed figures upon which his statements were based being given in a series of tables appended to the address. He shows, for example, that within the period named, the weight of coal produced in India has been increased twenty-one times, whereas in Great Britain during the same period it has only been doubled, and in the whole of the rest of the world has been increased three times. The tables referred to form a convenient summary of the mineral production of India over the period with which Mr. Simpson dealt.

THE Right Hon. Lord Cornwallis, chairman of the Kent County Council, has consented to act as president of the forty-first Congress and Health Exhibition of the Royal Sanitary Institute, to be held at Margate on June 21-28, 1930, and the following as presidents of sections: Dr. Andrew Balfour, Section A. (preventive medicine); Sir Henry Maybury, Section B. (engineering and architecture); Lady Howard de Walden, Section C. (maternity and child welfare, including school hygiene); Sir John Moore, Section F. (veterinary hygiene).



MESSRS. Henry Sotheran, Ltd., 43 Piccadilly, W.1, have just circulated another part of their well-known "Price Current of Literature". Its number is 816, and, as usual, it contains very valuable bibliographic notes with reference to many of the works listed. The catalogue is in the front rank of those which reach us, and should certainly be seen by collectors and librarians. The present part gives particulars of nearly 3000 books relating to mathematics, astronomy, physics, and philosophy, including the famous Newton Library.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A technical assistant in the testing department of an Admiralty establishment at Portsmouth—The Secretary of the Admiralty (C.E. Branch), Whitehall, S.W.1 (Dec. 17). A junior engineering assistant under the Corporation of Kingston-upon-Hull—The City Engineer, Guildhall, Hull (Dec. 18). An assistant pathologist for work in connexion with the radium 'bomb' treatment of cancer at the Westminster Hospital—The Secretary, Westminster Hospital, Broad Sanctuary, S.W.1 (Dec. 21). A pathologist and bacteriologist at the Cumberland Infirmary, Carlisle—The Secretary, Cumberland Infirmary, Carlisle (Dec. 31). A research fellow in the Department of Glass Technology of the

University of Sheffield—The Registrar, The University, Sheffield (Dec. 31). A junior scientific officer in the Air Ministry's Scientific Research Pool, primarily for work at the Royal Aircraft Establishment—The Chief Superintendent, R.A.E., South Farnborough, Hants (Jan. 1, quoting A. 397). A lecturer and organiser in horticulture in the Department of Agriculture, the University, Leeds—The Registrar, The University, Leeds (Jan. 6). A director of the Apia Observatory—The High Commissioner for New Zealand, 415 Strand, W.C.2 (Jan. 25). A chief agricultural officer in Sind, under the Director of Agriculture, Bombay Presidency—The Secretary to the High Commissioner for India, General Department, 42 Grosvenor Gardens, S.W.1 (Jan. 31). A whole-time secretary to the School of Oriental Studies—The Director, School of Oriental Studies, Finsbury Circus, E.C.2 (Mar. 10). A junior assistant under the Directorate of Ballistics Research of the Research Department, Woolwich—The Chief Superintendent, Research Department, Woolwich, S.E.18. An assistant agricultural officer under the Kent Agricultural Committee—The Chief Agricultural Officer, Sessions House, Maidstone. A scientific assistant at the Imperial Bureau of Plant Genetics—The Director, Imperial Bureau of Plant Genetics, School of Agriculture, Cambridge.

### Our Astronomical Column.

Recent Fireballs.—Mr. W. F. Denning writes: "On the first few nights of the present month brilliant meteors were unusually abundant, and several of them were of startling lustre though without detonations. On Dec. 2 at about 6 P.M. a fireball gave a brilliant display over the south of England. Another followed about four hours later, and a third, which lit up the whole countryside, blazed out just as the morning twilight came on Dec. 3. This object passed from south-east to north-west over England and gave a vivid flash at its disappearance, quite dazzling in its intensity. About half a dozen other fireballs made their appearance between Dec. 2 and 5, and the curious fact in connexion with them was that they apparently had their derivation from different systems. About sixty observations have come to hand descriptive of these objects, and when further data come in it will be possible to compare them and make certain deductions as to the heights, velocities, and directions of the various meteors concerned.

"It is a pity that these fireballs are seldom correctly described. Few people possess a good knowledge of the constellations, and so it happens that casual observers are seldom able to describe a meteor's path in the sky with accuracy."

Commensurabilities of Periods of Planets and Satellites.—L. W. Topham contributes an article on this subject to the *Observatory* for November. He points out that there are very numerous cases in the solar system of close approximations to commensurability. The best known is the 2 to 5 ratio in the periods of Jupiter and Saturn; also the period of Neptune is nearly twice that of Uranus; among the satellites there is a relation between I, II, III of Jupiter; and in those of Saturn the periods of Tethys and Dione are nearly twice those of Mimas and Enceladus. He thinks it is reasonable to con-

clude that these relationships have some cosmogonic cause. He suggests that the satellites originally existed as clouds of corpuscles round their primaries; once a condensation was formed in these, other condensations might be set up, by resonance or some similar process, at distances where the period bore some simple relation to that of the first condensation. This would involve the conclusion that the relations originally held exactly, and that the cloud of corpuscles acted as a resisting medium, which was densest near the primary, so that the periods of satellites in this region were relatively more shortened than those of the more distant ones. This suggestion is shown to accord with many of the relations that he has noted in the article.

Auroræ.—*B.A.A. Journal*, Vol. 40, No. 1, contains a report from Mr. W. B. Housman on the observations of auroræ from July 1928 to June 1929. The greater number were observed by Mr. A. Johnson at Harolds-wick, Unst, Shetlands. There is stated to have been increased auroral activity during the period, the displays during the magnetic storms of February and March being especially beautiful. For some years the auroræ have been tabulated in the report by the days of the solar rotations reckoned from the zero values of Lo according to Carrington's system. The region of maximum activity has been slowly shifting forward in solar longitude. In 1926-27 the numbers of auroræ in the four solar quadrants were 13, 28, 24, 11 respectively: in 1928-29 they were 18, 23, 26, 8. The region of maximum activity has shifted from the second quadrant to the third. This may mean that the solar regions chiefly concerned in these disturbances have a somewhat slower rotation than the value used by Carrington. In each period the sum of the numbers for the two middle quadrants is about double that of the first and fourth.