

the extent of the injury that would be inflicted on the objects of such observations by a temporary interruption of the same. A large number of the problems presented by the physics of our globe can only be attacked with any hope of success from this basis; it is essential to have a number of well supervised principal stations in each country supplying an uninterrupted homogeneous series of observations. These stations are also of service in the study of climatological history, and are destined to prove of great importance in the study of meteorology in the future.

Only in a limited sense can we agree with Prof. Schuster's dictum that before commencing to observe we should make sure that our observations will prove of service, and will give answer to a definite question. Not even in the case of observatories do such instructions hold good. When addressed to private observers we would characterise them as "blinkers" which limit the range of vision to definitely laid down lines. We quote one example: when Schwabe began his sun-spot record, it must have appeared to specialists as a mere hobby, devoid of all scientific object; had it been otherwise astronomers would undoubtedly have commenced such observations earlier. And what scientific value have these observations now attained to?

#### LEAD IN PEATY WATER.<sup>1</sup>

THE report under notice is a statement of the results obtained from an examination of the water supplies and their gathering grounds and storage reservoirs in twenty-three more or less peaty collecting areas in Yorkshire and Lancashire. The object of the examination was to indicate the origin of the plumbo-solvent nature of these waters, and the best methods of preventing or counteracting this action before the water was distributed to consumers. Dr. Houston concurs with Mr. Ackroyd and with other chemists who have studied the subject in these districts in attributing the power of dissolving lead in dangerous quantity to the presence in these waters of acids derived from the peat; and he further intimates his belief that the acid is produced from the peat by the action of certain bacteria found in the peat itself. He finds that the acid nature of the water is frequently not indicated by litmus paper or by other ordinary means, but that it is easily ascertained by the change in colour produced in an alcoholic solution of lacmoid.

The "erosive" action which is exerted on dull lead by dissolved oxygen is considered to be of relatively slight importance, since, in the absence of peaty acids, the amount of solvent action due to this cause is comparatively slight. The peaty acids apparently produce soluble salts of lead and cause the water to bring a much larger proportion of lead into solution than could be introduced by the formation and solution of the oxide alone. Peat is invariably acid in reaction, and peaty water is also always acid. That the solution of the lead by moorland water is due to the peaty acids which it contains has been proved by direct experiment. Further, a decrease of plumbo-solvent power is noticed when these acids are reduced in quantity by various natural causes, or by artificial neutralisation. Indeed, the methods of counteracting plumbo-solvency in peaty water which are adopted in the moorland districts consist in neutralising the acids in the water with carbonate of soda, with carbonate of lime, or with slaked lime. In this connection, it should be remembered that the quantity of slaked lime used must be carefully adjusted, since when it is present unaltered in solution in the water it promotes and does not diminish the plumbo-solvent power.

The variation in degree of solvent action shown by the same moorland supply at different times is shown to be connected with the varying proportions of acid peaty water and of neutralising spring water which the supply contains. In dry weather, the neutral and neutralising water predominates, while rainy weather tends to increase the proportion of superficial acid water which comes out of the peat; these variations in composition markedly influence the plumbo-solvent power of the water.

The author appears to have confined his attention to the

<sup>1</sup> Thirtieth Annual Report of the Local Government Board, 1900-1901. Supplement "On Lead Poisoning and Water Supplies." By Dr. Houston. Pp. xi + 224.

amounts of lead in solution in the water, and, undoubtedly, these are the common sources of danger. But a not inconsiderable amount of lead may be removed from the metal, and exist at first in solution as hydroxide, and subsequently as a deposit of hydroxycarbonate, when pure soft water acts on lead in the presence of the atmosphere; in water supplies this action is often considerably restricted by the presence of carbonic acid in solution in considerable proportion, or by the presence of silica, sulphate or carbonate in small amount.

The vast amount of detailed information contained in the report is worthy of serious consideration by those who have to deal with the supply of soft peaty water, as is also the recommendation that the seasonal plumbo-solvent power of the different sources from which any particular supply is derived should be accurately known; arrangements can then be made either to avoid the collection of portions of the supply at the times when they possess a dangerous solvent power on lead, or to neutralise them by satisfactory treatment before they are distributed to consumers. F. C.

#### PROGRESS OF THE NEW VEGETATION OF KRAKATAO.

IT is within a few months of twenty years since the great eruption took place which absolutely killed all life in the island of Krakatão. About three years later, Dr. Treub visited the island and examined the beginnings of a new vegetation, the results of which were recorded in 1888 (*NATURE*, vol. xxxviii. p. 344). He found that the first vegetable settlers on the covering of pumice-stone, lava and ash were microscopic algæ belonging to the Cyanophyceæ. These organisms covered the surface with a slimy layer, which acted as a decomposing agent and created a suitable substratum for ferns, of which about a dozen species were already abundant in 1886. Dr. Treub also observed a few individuals of fifteen species of flowering plants, most of which had sprung from drift-seeds.

In the spring of 1897, a party of botanists visited the island, and Dr. O. Penzig has published the results of their investigations and observations (*Annales du Jardin Botanique de Buitenvoort*, 2me série, iii. (1902), pp. 92-113, with seven views), from which we learn that sixty-two species of vascular plants were observed on Krakatão and the neighbouring islets, Lang and Verlaten. Fifty of these colonists are flowering plants, representing twenty-one natural orders, and it seems highly probable that they all reached the islands independently of man. Classifying these fifty-three species according to the assumed means by which their seeds were conveyed to the islands, 7.54 per cent. were possibly carried by birds, 32.07 per cent. were probably wind-borne and 60.39 per cent. were almost certainly cast up by the waves of the sea. No additional species of fern appears to have established itself in the islands between 1886 and 1897. This is inexplicable, because the region is rich in ferns, the spores of which, one would suppose, would be brought by winds in abundance. Apart from ferns, the probable "aeophilous" element consists of eight Compositæ, six grasses and four orchids. After passing the strand belt of vegetation, which is by far the most numerous in species, dense thickets of Phragmites, Saccharum and Gymnothrix were encountered. The interior and higher part of Krakatão is still much less covered with vegetation, ferns largely preponderating. Conspicuous and relatively common amongst the flowering plants was *Spathoglottis plicata*, a terrestrial orchid. The other orchids are *Vanda Sulingi*, *Arundina speciosa* and a species of Phajus. Krakatão is about twenty miles distant from both Java and Sumatra, and the most interesting question suggested by the new vegetation is, How far does it afford a solution of the problem of the origin of the vegetation of much more remote islands which have more than a littoral or coral island flora?

W. BOTTING HEMSLEY.

#### ANTHROPOLOGICAL NOTES.

THE strange cranial deformation known as trigonocephaly, in which the forehead is constricted and more or less pointed, and the temporal region and the base of the skull are broadened, is the subject of a research by Dr. M. Hanotte in *l'Anthropologie* (tome xiii. No. 5, p. 587).

The weight of the human brain is the subject of a detailed

investigation by Mr. F. Marchand (*Abhandl. der math. phys. Classe der Königl. Sächs. Ges. der Wiss.*, No. 4, 1902, p. 393). The average weight of the brain for men between fifteen and fifty years of age is 1400g., that for women 1275g. The smaller size of the female brain is not dependent on shorter stature, as the median brain weight of women is absolutely smaller than that of men of similar size.

The *Mittheilungen der Deutschen Gesellschaft für Natur- und Völkerkunde Ostasiens* (Band viii, Theil 3) contains two long articles, one by Mr. P. E. Schiller on the etiquette of present-giving in Japan, which is full of quaint customs, and another by Prof. Karl Florenz on the new agitation against the Japanese letter-forms. These, which are of Chinese origin, weigh like an intolerable burden on Japanese progress. Dr. Florenz adds an elaborate essay on comparative European and Japanese phonetics, illustrated by numerous diagrams of palates. This appears to be a valuable contribution to the subject of comparative phonetics.

The interesting excavations in the caves of Baoussé-Roussé, undertaken by the liberality of the Prince of Monaco, under the able direction of M. l'Abbé de Villeneuve and with the assistance of M. Lorenzi, the enthusiastic and skilful *préparateur*, have resulted in important discoveries. The work has been accomplished with the greatest thoroughness and exactitude. Dr. R. Verneau has published in *l'Anthropologie* (tome xiii. No. 5, p. 561) an illustrated account of his study of the remains from the "Grotte des Enfants," in which he states that although the Cro-Magnon type of man is found at a depth of 7m. 05, at 70m. lower two skeletons were found which presented a very clear negroid appearance, but they are not true negroes. His hypothesis is that earlier than the race of Cro-Magnon and later than the race of Spy, a third ethnic element was present on the Riviera which presented negroid characters.

We have frequently directed the attention of ethnologists to the mine of information concerning the customs, beliefs and handicrafts of civilised and uncivilised folk that is to be found in the pages of our contemporary *Globus*. The articles are generally a record of first-hand observations, and the majority of them are illustrated. Another feature of the journal are the careful summaries of contemporary geographical, ethnographical and archaeological literature. The following titles taken from the current volume (lxxxii.) illustrate the range of subjects:—A historical-ethnological study on gynæcological "ex voto," by Dr. E. Blind, with illustrations (p. 69); Dravidian folk-poetry, by Mr. W. Gallenkamp; dwarfs in history and tradition, by Mr. D. MacRitchie. In the previous volume, there were papers by Mr. G. Thilenius on prehistoric pygmies in Schlesien (p. 273), and by Mr. J. Kollmann on pygmies in Europe and America. Prof. K. Weule raises the question (vol. lxxxii. p. 247) whether there are dwarf people in New Guinea. His remarks are based on photographs of three men whose stature ranged from 1201m. to 1205m. Further evidence must be obtained before we can be sure whether these are a true pygmy people or only dwarfed Papuans. Name-giving and marriage among the Orang Temia of the Malaka Peninsula, by Hrolf Vaughan Stevens, edited by H. Stöner (p. 253). An article by Mr. G. Knosp on the Annamite Theatre is illustrated by a coloured plate. An interesting *résumé* of archaeological, somatological and ethnographical researches in Portugal is given on pp. 283-289. Dr. C. Kassner describes and figures (p. 315) various ethnographical survivals in Bulgaria, amongst others the suspended boards that are used as gongs.

In the current number of the *Reliquary and Illustrated Archaeologist* is the first of a series of papers on prehistoric Dartmoor, by Mr. R. Burnard, which promises to be a valuable contribution to the archaeology of a most interesting region. A few years ago, extremely little was known about the monuments of Dartmoor, but thanks to the labours of the Dartmoor Exploration Committee of the Devon Association for the Advancement of Science, Literature and Art for the past six years, a considerable amount of information has been obtained. The present communication deals with hut-circles.

Designs cut in rocks have previously been recorded from New Caledonia, but M. Archambault in *l'Anthropologie* (xiii., 1902, p. 689), gives a number of photographs of petroglyphs that he has discovered, and certainly many of them are very remarkable, and they open out a promising field for inquiry. Unfortunately, the author was unable to obtain any information from the natives respecting them, but it does not follow that all knowledge about them has passed away, and it is to be hoped that

fresh endeavours will be made to elucidate their signification. In the same journal will be found a further paper by M. Ch. de Ujfalvy of his series on the "Iconographie et Anthropologie Irano-Indienne," in which he deals with the physical type of living Hindus, based on the researches of Risley and Crooke. He alludes to Nesfield's view regarding the caste system, and upholds his conclusions in opposition to Risley's adverse criticism.

The French are masters in the art of popularisation of science; to take a recent example, one can buy for 60 centimes a carefully compiled, up-to-date summary of French archaeology by Zaborowski ("Bibliothèque utile," F. Alcan, Paris). In the seventh edition of "*l'Homme préhistorique*," the French people can learn the opinion of specialists on the ancestry of man and the main characteristics of the men of the various archaeological epochs. The tools, weapons, artistic efforts of Palæolithic man are described. The feature of this excellent little book is the prominence paid to the transition period between the Palæolithic and Neolithic periods. The Bronze and Iron ages are merely alluded to.

In the current number of *Man*, the monthly journal of general anthropology which is published under the direction of the Anthropological Institute, besides several papers on the physical anthropology of different peoples, there are interesting contributions on the use of diagrams for craniometrical purposes. Archaeology, mainly Egyptian Mediterranean, is particularly well represented. The arts and crafts of various peoples are described in numerous interesting papers, and comparative religion is well to the fore, the discussions on totemism and on the Supreme Being in Sarawak being more especially noteworthy. The articles and notes in *Man* are written in non-technical language, and as they are of such general interest, the journal deserves to reach a wide circle of readers.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

PROF. J. J. DOBBIE, professor of chemistry in University College, North Wales, has been appointed director of the Edinburgh Museum of Science and Art.

ON Thursday, April 2, a meeting will be held in the map room of the Royal Geographical Society, when Prof. Elisee Reclus will speak on the subject of geographical education, with special reference to his globular contoured maps, globes and reliefs, of which he will exhibit examples. All interested in the improvement of cartographical methods are specially invited to attend and take part in the discussion.

FIFTEEN science professors of Calcutta colleges have, it is reported in the *Pioneer Mail*, signed a protest against the proposals of the recent Universities Commission in connection with the teaching of science. Their memorial points out that the principal recommendations of the Commission regarding science teaching tend to discourage instruction in science, for, they continue, the Commission propose to exclude it altogether from entrance examinations, and make it optional for the higher examinations; so that if the recommendations of the Commission are adopted, students will be allowed to obtain the highest degrees of the university without being required to acquire a knowledge of even the rudiments of any branch of science at any stage of their university training. Dr. MacKichau, Vice-Chancellor of the Bombay University, in a speech at Convocation on February 24, proposed that a fund of not less than twenty lakhs of rupees be raised to found a science school in the University of Bombay. Part of this money must, he said, come from the public; Government may be safely trusted to provide the remainder. Part of this fund would be employed to provide buildings for the science laboratories and to equip them with the necessary appliances; part of it in providing instruction by professors appointed by the University, aided by lecturers supplied by the various colleges at its request.

WHAT is known as the "National Diploma in Agriculture" is administered by a joint board elected by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland. This diploma took the