

diate or else very difficult to obtain. A first attempt fell wide of the mark: Segre, in his great work on cubic threefolds, written about 1887, had tried to grapple with the problem; but it turned out that the varieties he considered, though rational, were not general of their type. The problem was then taken up by Prof. Gino Fano, of Turin, one of Castelnuovo's first pupils. In a struggle which has lasted some fifty years, Fano has made vital contributions to the subject, culminating last year with the news, in a letter from Switzerland, that he had succeeded in showing that the general cubic threefold is irrational. It would be an under-statement to say that geometers await with impatience the appearance of Fano's investigation.

Miss P. M. Taylor

MISS P. M. TAYLOR, who has recently been appointed woman educational officer to the Central Council for Health Education, was educated at Girton College, Cambridge, and Westfield College, London. Miss Taylor joined the executive committee of the Association of Women Science Teachers in 1932, and in 1935 was elected honorary general secretary, in which capacity she served until October 1944. Her new position with the Central Council is an important one which necessitated her relinquishing the onerous duties of the general secretaryship of the A.S.W.T., though she was re-elected to the Executive Committee this year. The present investigations of the Association, which have already resulted in the publication of the pamphlet "Pre-Nursing Course in Schools" (1943) and the Interim Report on Science in Post-Primary Education (1944), are in a large measure due to the initiative and exceptional powers of organization of Miss Taylor. The Association is fortunate in having her continued co-operation in the completion of this work, the results of which it is hoped to publish shortly. Miss Taylor's zeal is unabated, in spite of the calls made upon her and her capable assistants during the war years to keep in touch with the members. Their success is seen in the vigorous growth in membership and the widespread interest in progressive methods of science teaching, which factors have necessitated the appointment of a full-time secretary. In addition to her work as honorary general secretary, Miss Taylor has served on the Education Advisory Committee of the Central Council for Health Education, the Consultative Committee to the Nursing Reconstruction Committee, Royal College of Nursing, and as president of the Essex Branch of the A.W.S.T. She held the post of senior science mistress at the Southend-on-Sea High School for Girls until July 1944.

Agricultural Zoology in Scotland

DR. D. S. MACLAGAN, lecturer in zoology at King's College, University of Durham, has been appointed head of the Department of Zoology of the West of Scotland College of Agriculture, Glasgow, and research advisory officer in agricultural zoology for the south-west of Scotland, in succession to Prof. L. A. L. King, who has retired. Dr. MacLagan held a Ministry of Agriculture research scholarship during which he carried out work at the Parasite Laboratory of the Imperial Bureau of Entomology and at Harvard University, and later worked with a Carnegie research fellowship at the University of Edinburgh. He is known for his work in animal ecology and on the dynamics of animal populations.

Cosmic Ray Investigations in Armenia

THE preliminary results of the Alagez Expedition of 1944 for the study of cosmic rays have been published in the U.S.S.R. Observations have been made each year since 1942 from a camp on Mt. Alagez in Armenia at a height of about 10,000 ft. above sea-level. All instruments, supplies and camp equipment had to be carried on pack animals. As conditions are extremely favourable for the study of cosmic rays, it has now been decided to build a permanent station there, with an observation post at about 13,000 ft. It is now believed that cosmic rays contain a third element in addition to mesotrons and electrons. The particles which make up this third element have a greater ionizing effect on air than either mesotrons or electrons. The latest expedition spent three months in attempting to discover the nature of this third component, especially the mass of the particles of which it is composed. The difficulty was to separate them from the other already known components. New methods were evolved, and some new and extremely sensitive instruments built. The particles were found to have properties very similar to those of protons. The part they play is apparently more significant than was at first realized. Only preliminary data, however, have been obtained, and the material is still being studied. The expedition made several thousand observations during great cosmic ray showers for the purpose of determining the energy of the cosmic particles which cause the showers. It was found to be enormous. A special kind of shower, occurring over a very small area, but including a tremendous number of particles, was also discovered.

Stone Age Implements in India

INDIA is rich in relics of Stone Age man, and the prehistorian there has a wide field for research. Not a great deal of new information will be gleaned from "Pre- and Proto-history of Gujarat" (H. D. Sankalia, reprinted from "The Glory that was Gūrjaradesa", 1943), though the gazetteer of finds at the end of the article is useful so far as it goes. What the prehistorian asks from researchers in the field in India is definite stratigraphical data. Perhaps, therefore, the geological section of the right bank of the Sabar-mati River at Pedhāmli appearing on p. 15 is the most important single item in the article. It would seem that, as throughout Madras, early Stone Age artefacts come from a gravel conglomerate which rests immediately upon laterite. The occurrence of a microlithic industry suggests that its makers were using composite tools in which several 'pigmy' flints were hafted together to form one efficient instrument. Such industries appear at various different periods when natural circumstances permit or encourage their development and may be of widely different ages; and one must enter a caveat against the wisdom of trying to correlate the microlithic finds of Gujarat with those of Europe. In India itself, Colonel Gordon, in "Indian Art and Letters" (1936), has shown that the rock-shelter paintings in the Mahadeo Hills are not very old—maybe first century B.C. to tenth century A.D. in date. There the only industries found in the rock-shelters below the paintings consist of typical Indian pigmy artefacts. Near the surface a little pottery occurs; in lower levels this is absent. The conclusion would seem to be that the pigmy industries themselves are not very old and certainly nothing to do with the European Mesolithic either culturally or in time. This is also true of the numerous

microlithic industries in quartz found in Ceylon. Dr. Sankalia ("The Second Gujarat Prehistoric Expedition: A Preliminary Account of the Search of 'Microlithic Man in Gujarat,'" by H. D. Sankalia and I. Karve, *New Indian Antiquity*, 7, No. 1; April 1944) has described the unearthing of some skeletons, believed to belong to the folk who made the pigmy objects described. Physical anthropologists will naturally await with interest a complete account of these finds when the final study of them has been made.

Community Centres

THE report on community centres recently prepared by the Ministry of Education (Pp. 40. London: H.M. Stationery Office. 9d. net) is a document of much importance. The Government has decided that the provision of such centres to promote the social and physical training and recreation of the community should be regarded as coming within the scope of the education service administered by local education authorities, such provision being covered by Section 53 of the Education Act, 1944, without prejudice to the power of other local education authorities under Section 4 of the Physical Training and Recreation Act, 1937, to provide centres for athletic, social or educational objects. Arising out of that decision, this report has been prepared at the instance of the Minister of Education by some of his officers, and is now published for general information. The first chapter of the report goes at once to the root of the matter. "During the present century, the day-to-day life of the British people has been profoundly affected by two parallel and closely related developments—the mechanisation of industry and a progressive reduction in working hours. The reduction in working hours may have been largely due to the growing demand for more leisure, but it was mechanisation which made it possible to meet the demand". That is the point of departure taken in this searching and comprehensive report; that, and another fact plain to be seen, that it is one thing to have spare time and another to know how to use it wisely. Though the report does not expressly say so, it means that we have reached a position in which the twofold distinction between work and leisure should be replaced by a threefold distinction between (1) work, done for a living, whether one likes it or not, (2) relaxation, play, recreation, for the recovery of poise, and (3) true leisure, spent upon pursuits which may make it in one way or another "the growing time of the spirit". In subsequent chapters the report goes into detail about the organization, staffing, provision and maintenance, and ownership, control and management of community centres. A valuable appendix sets forth the suggested accommodation required for neighbourhood units in varying situations.

Control of Rabies

In an interesting leading article, the *Lancet* (628, Nov. 11, 1944) directed attention to the need for the existing regulations designed to prevent the reintroduction of rabies into Great Britain. The law requires that all dogs imported, by air or otherwise, shall be quarantined for six months; strict insistence on this regulation would prevent the reappearance in Britain of this serious disease. Rabies is primarily a disease of dogs, cats and allied species; but it is communicable to man and to domesticated animals by the bite of a 'mad' dog. It was first recorded in Great Britain in

A.D. 1000; but it probably existed here before that date. In the middle of the eighteenth century it raged among dogs in London and elsewhere. In the nineteenth century it broke out among several packs of fox-hounds, and some thirty-six persons a year died of rabies. By 1902 rabies had been eradicated from Great Britain by stringent control measures, and it did not reappear for sixteen years. By then (see Stockman, S., *Vet. Record*, 32, 135; 1929, quoted by the *Lancet*, *loc. cit.*) the public was so unfamiliar with the disease that some sections of it failed to realize the dangers of its reintroduction, and the abnormal conditions of that time doubtless helped its spread.

Rabies was found among dogs in Great Britain in September 1918, the infection having been brought in by smuggling dogs into the country by air. The Ministry of Agriculture took energetic measures against it, and these measures were helped by the fact that most of the dogs were affected by the dumb or paralytic form of the disease, which greatly restricts their wanderings and ability to bite, and also by the fact that the disease broke out in Cornwall, which is isolated to some extent from the rest of England; most of the affected dogs wandered west to the sea. Nevertheless, some seventeen counties became involved, 327 dogs died of the disease and 368 human beings were bitten and had to be treated. The outbreak was not controlled until December 1921 (see *Lancet*, ii, 719; 1926). In the United States, during the last ten years, there has been an average of fifty-seven cases a year, and some States have recorded more than a thousand cases a year among animals. Rabies vaccines are available, and the *Lancet* (628, Nov. 11, 1944) discusses the value of these, which has been questioned. Meanwhile it cannot be too widely known that rabies will, if it comes again to Great Britain, cause much suffering among men and animals. The quarantine regulations, which can keep rabies out of the country, should therefore be vigorously supported.

Stars or Planets ?

PETER VAN DE KAMP has an article with this title in *Sky and Telescope* of December 1944, in which he deals with the question of the criterion for stars and planets—a matter of considerable importance in view of the fact that recent discoveries have shown the existence of 'planets' fifteen or twenty times the mass of Jupiter. He accepts Russell's critical value of $1/20$ of the sun's mass as a conventional borderline between visible stars and the invisible bodies which can be designated as 'planets'. This criterion defines a planet or star, therefore, by its mass, not by its size. Among the methods for detecting unseen companions of low mass is the photographic method applied to nearby stars, and if the determination of the orientation of the perturbation orbit were sufficiently accurate, good results would be obtained. Difficulties arise from the fact that photographic star images are $1''$ - $3''$ in diameter, and most of the recently discovered perturbations have a total amplitude of less than $0.1''$. The gravitational method for discovering faint companions of low mass, while it is more powerful than the direct visual approach, has decided limitations for very low masses, and it would be extremely difficult by this method to find companion masses less than $1/100$ times the sun's mass, even for the nearest stars. The star which seems unattended by dark companions may be the exception, and it is possible that the stars attended by massive companions, rather than by small planets,