

unsuccessful search for the legendary wealth of the "Seven Cities of Cibola". According to a preliminary report from Dr. Martin, of which certain particulars have been issued through Science Service of Washington, D.C., there was little surface indication of the existence of any of the sites; and it was only the occurrence of scraps of Indian pottery, no larger than a thumb-nail, which directed the attention of the members of the expedition to one site which has been excavated. Even local pottery-hunters had failed to detect the existence of the villages. On this site the walls and floor of a large subterranean pit-house, presumably used by the inhabitants for ceremonial celebrations, has been uncovered. It measures 33 ft. in diameter, and is the largest of its kind hitherto excavated in this area. The objective of the expedition is the identification of sites belonging to the little-known Mogollon culture, one of the three cultural divisions into which American archaeologists now classify the prehistoric cultures of the south-west, preceding and leading up to the great development of the Pueblos. Dr. Martin reports that he has found important evidence relating to the age and development of the Mogollon culture. He estimates that the site excavated was abandoned seven hundred years before Coronado's expedition of about the middle of the sixteenth century.

Archæological Reconnaissance in Roman Scotland

ALTHOUGH by this time the value of the aeroplane in archæological investigation stands in little need of further testimony, a record of recent discovery in Roman Scotland not only renews, as it were, the wonder at its achievement, but also affords striking evidence of how its use, and intensive examination of a terrain from the ground itself, combine with and supplement one another. The occasion of the demonstration was a survey from the air made in June last by Mr. O. G. S. Crawford, editor of *Antiquity* and archæological officer of the Ordnance Survey, to supplement previous work in preparation for archæological maps of Roman Scotland to be published by his department. The survey from the air was amply justified. It solved a number of knotty problems standing over from previous investigation, even after intensive field work, and in addition it added fresh data in the form of previously unrecorded native and Roman forts and fortlets, as well as a number of other discoveries of interest along the lines of the Roman roads in Annandale. Flying farther afield to the north, Mr. Crawford identified a Roman fort farther north of the Antonine Wall than any previously recorded, and on the return the modern method of reconnaissance was able to authenticate a site that has long been on record. Not only was it possible to make out the remains of rampart and road, both by observation and photograph, but also it can now be stated with complete certainty that it is a Roman fort, and further that a Roman road ran north-east from the gate in the rampart on that side of the fort—a fact of which certain implications for Roman dispositions in Scotland are made the subject of preliminary discussion in *Antiquity* of

September by Mr. Crawford in his account of the reconnaissance.

Medicine in Ancient Ireland

IN a recent address before the Irish Free State Medical Union (*J. Irish Free State Med. Union*, 5, 22; 1939) Dr. T. P. C. Kirkpatrick stated that, like many other peoples, the Irish had a traditional god of healing, named Dianecht, who fitted the silver hand to King Nuada about the year 1272 B.C. According to the genealogies of MacFirbis, there were other physicians such as Eaba, the female physician, the second doctor who came to Erin, and Fingen, who was physician to Conchobha MacNessa, whose hand he sutured with golden threads to match his hair. There is also some evidence of medical education in the country, as Josina, the ninth King of Scotland, came to Ireland about the second century B.C. to study medicine. There were, moreover, numerous schools in ancient Ireland, such as those at Clonard, Armagh, Clanmacnoise, Monasterboice and Portuma, in all of which medicine was probably taught. The Brehon or Ancient Laws of Ireland, which according to tradition were written down about the time of St. Patrick but had been in force for some time previously, show that the status of the leech or physician was well defined. In an ancient law tract an elaborate account is given of "Othrus" or "Sick Maintenance", which enacted that a person who had received physical injury from another should be given by his assailant not only the ordinary legal fine but also certain medical expenses. The position of the leech corresponded with that of the smiths, builders, gold-workers and Brehons, who were all high up in the social scale. The fees were fixed and depended on the social position of the patient and the nature of the disease. In addition to medical schools there were also hospitals, such as the "House of Sorrow" attached to the Red Branch at Emania where sick and wounded persons were treated, and the "Forus Tuatha" or territory house which is mentioned in the law tracts as a sort of hospital. Dr. Kirkpatrick concludes that medicine in ancient Ireland was probably as well developed as in any other contemporary country in western Europe.

Alcoholism and Mental Disease

IN his inaugural thesis (*Thèse de Paris*, No. 489; 1939), which is based on his experience at the Lesuellec Psychiatric Hospital, Dr. André Le Gall deals with the subject of alcoholism and mental disease in the Morbihan Department of Brittany. He points out that during the period 1910-37, since when the number admitted to the hospital each year has remained almost stationary, the admissions increased from 149 to 335, while the percentage of alcoholic patients rose from 7.52 in 1920 to 44.77 in 1937. The consequence has been that the total number of patients under treatment at the hospital rose from 778 in 1920 to 1,474 in 1938. There has also been a considerable increase in alcoholism among women, as is shown by the fact that while in 1911 they formed only 18.90 per cent of the total number of alcoholics, in 1937 this figure rose to 43.33

per cent. For several years the average age of the alcoholic patients has shown a tendency to fall, young persons of 20-30 being more numerous than formerly. Alcoholism was found to be as frequent among the married as among celibates, but was more liable to affect the rural than the urban population. In 1936, for example, only 15.73 per cent of the alcoholic admissions were manual labourers, as compared with farm labourers who formed 47.25 per cent of these admissions. The measures suggested by Dr. Le Gall for the control of alcoholism in Morbihan include suppression of the privileges allowed to home distillers, limitation of the number of public houses, the creation of dispensaries of mental hygiene, special homes for inebriates, especially for relapsing cases, the promotion of sport, and the encouragement of propaganda in favour of non-fermented apple juice, which has yielded excellent results in some countries, especially Switzerland.

Earthquake near the New Hebrides

THE United States Coast and Geodetic Survey, in co-operation with Science Service and the Jesuit Seismological Association, has determined the epicentre of the earthquake of August 12 to be provisionally latitude 13° S., longitude 169° E. The instrumental reports from Manila, Sitka, Weston, St. Louis, Fordham, Pasadena, Honolulu and Philadelphia also suggest that the depth of focus from which the shock originated was of the order of 150 km., thus making a deep focus earthquake. The epicentre is to the north of the New Hebrides and north-west of Fiji, being submarine in character. No damage has been reported, either directly due to the shock or to any abnormal sea waves. The region concerned is particularly liable to earthquakes and it is also noticeable that the frequency of earthquakes having deep focus is greater than normal in the whole of the region extending from Japan to the south of Fiji and including the area in question. A new Milne-Shaw seismograph and high-precision clock with seconds regulator have recently been sent on loan to Fiji by the British Association Seismological Committee at the suggestion of the Seismological Committee of the Australian and New Zealand Association for the Advancement of Science to replace the old Milne instrument there. This new seismograph will be particularly valuable for obtaining data for the study of deep focus earthquakes similar to the one mentioned above.

Mathematical Reviews

THE American Mathematical Society has founded a new international mathematical abstracting journal to be known as *Mathematical Reviews*. The first number is to appear late in 1939 or early in 1940; the material to be reviewed begins with the latter half of 1939. It is proposed to review all fields of pure mathematics and also those of applied mathematics and mathematical physics which are of pronounced interest to mathematicians. The new journal, which will be issued approximately once a month, will contain several thousand reviews annually and will run

to approximately eight hundred large double-column pages. Prof. J. D. Tamarkin and Prof. Otto Neugebauer will be the first editors. The Carnegie Corporation has appropriated 60,000 dollars as a reserve for the new journal. The Rockefeller Foundation has made a gift of 12,000 dollars to cover some of the initial costs. Brown University is housing the project and aiding in the editorial work. The American Mathematical Society and the Mathematical Association of America are each beginning with a subsidy of 1,000 dollars for the first year. Annual subsidies are being sought from other organizations, and plans for the permanent financing of the project are being considered. On account of the generous subventions, the subscription price will be set drastically below actual cost.

PARTLY with the view of aiding indirectly in the support of this journal, the Rockefeller Foundation has made a handsome gift to Brown University for an experiment in the dissemination of mathematical publications through the distribution of microfilm. This money is to be used to augment the mathematical library at that University, a collection which is already internationally known as outstanding. Out-of-print journals will be put on film and made available to mathematicians; rare books of general use will be filmed; on request from a subscriber to the new journal, any article reviewed will be sent on film or as film-print. This service will be extended to all parts of the world at a price not exceeding cost. It should be of greatest value to mathematicians in the smaller universities and colleges, and should be a factor in encouraging young men to continue with their investigations.

Matter and Radiation

No. 704 of Hermann's "Actualités" series is by Prof. Louis de Broglie, editor of the volumes on theoretical physics, and is entitled "Le Principe de Correspondance et les Interactions entre la Matière et le Rayonnement". It extends to 170 pages (Paris: Hermann et Cie. 50 francs). The first 48 pages give an account of Maxwell's equations and their extension by Lorentz to cover electrons; the electromagnetic theory of dispersion; the theory of quanta; the correspondence principle introduced by Bohr in 1916; and Heisenberg's representation of the atom by a matrix of quantities all of which are directly observable. Then the principle of wave mechanics is introduced according to which the movement of material corpuscles is based on a certain equation of waves developed from the Hamiltonian function of classical mechanics. It is then shown that wave mechanics includes the correspondence principle and leads to a theory of the interaction of radiation and matter which, though not strictly logical, may be regarded as a first approximation. Later sections deal with the diffusion of light energy by matter, first without change of wave-length, then with such changes as are illustrated by the Compton and the Raman effects. The volume concludes with a study of photo-elec-