

Sepolero in the Italian Province of Arezzo. Also during the month there was a swarm of earthquakes in the Karlsruhe, Rasstat, Lauterbourg area. The swarm began on June 1 and lasted practically the whole month, the greatest shock of the series being felt on June 7 with scale VI to VII (some chimneys down) at Karlsruhe. The epicentre of this shock was near lat. 49° 04' N., long. 8° 19' E. some 9 km. north-west of Karlsruhe, and the depth of focus has been estimated at 20-30 km. The energy of the shocks of this swarm did not travel far, but was recorded by the seismographs at Strasbourg, Stuttgart and the Swiss observatories. Apart from the observatories mentioned above, reports for the month have also been received from the U.S. Coast and Geodetic Survey, Aberdeen, Beograd, Cleveland (Ohio), De Bilt, Toledo and Uccle.

Galactic Noise

R. V. D. R. WOOLLEY has discussed in a recent paper (*Mon. Not. Roy. Astro. Soc.*, 107, 3; 1948) the theory of the origin of the galactic radiation. Since radio workers consider it short-wave radiation and spectroscopists regard it as very long-wave radiation, it is undesirable to refer to it by a name embodying any idea of wave-length, and the appropriate term 'noise' has been adopted since it can be heard on the earphones. Eddington discussed the temperature of interstellar space in "The Internal Constitution of the Stars", and estimated it at about 10,000°; but later he suggested that the absorption in space of ultra-violet quanta would reduce the temperature. (By temperature he meant the parameter appearing in the Maxwellian velocity distribution of the free electrons.) Woolley investigates the problems of temperature and the degree of ionization in interstellar space, and concludes that if the noise is due to free-free transitions, it must certainly come from hot regions in interstellar space and almost certainly from regions where the density is above the average. In these circumstances, if 'cold' regions, that is, regions of low hydrogen ionization, do not contribute appreciably to the noise, then an observed amount of galactic noise from a particular part of the sky implies a minimum bright hydrogen emission from that part. If observation fails to reveal this bright hydrogen emission, the only conclusion is that galactic noise is not due to free-free transitions. If the noise is due to free-free transitions, it is shown that the minimum number of Hz quanta received per sq. cm. per second per unit solid angle of the sky is within reach of observation with modern equipment.

Cinematograph Films of Living Cells

C. C. SPEIDEL (*Amer. Scientist*, 36, 237; 1948) describes with some very fine illustrations the results he has obtained by fast cinematography of cells inside the living animal. He used regenerating tail tissue of the tadpole for his observations, and shows that cellular organisation may be studied here with results which tissue cultures cannot provide. Regeneration of nerve fibres, showing the manner in which their direction and anastomosing take place, mitosis in a nerve cell and the relative movements of the two daughter nuclei, the movement of lymphocytes and diapedesis of leucocytes are among the many beautiful results of this method of observation. The salvaging of extravasated blood cell by cell by the sprouting of a lymph vessel is startling, while the movement of muscle fibres in contraction and relaxation may be

followed step by step. It would seem that this method of analysis would be of great value in further studies of development, especially in the little-known differentiation of plant tissues.

Tests of Mosquito Repellents

WHEN Australian forces began campaigning during the Second World War in the highly malarious islands of the south-west Pacific area, a very urgent need was an effective mosquito repellent. Bulletin No. 213 (1947) of the Commonwealth of Australia Council for Scientific and Industrial Research describes laboratory and field tests conducted by Major R. N. McCullough and Capt. D. F. Waterhouse with this object in view. More than 125 substances were tested for use as repellents against both anopheline and culicine mosquitoes. The chief species used in these experiments were *Anopheles punctulatus farauti*, the yellow-fever mosquito *Aedes aegypti*, and the common pest mosquito *Aedes vigilax*. The work involved was a co-operative investigation between the Council for Scientific and Industrial Research and the Army. Taking all factors into account, dimethyl phthalate was by far the most satisfactory repellent tested. Also, it is almost completely odourless and has very little or no irritant effect on the skin of the hands and face, to which it is applied. A number of other synthetic and naturally occurring substances were tested with indifferent results. Many essential oils were quite ineffective, while the two most promising were too irritant to use. Pyrethrum preparations gave consistently poor results. The treatment of clothing with dimethyl phthalate prevented mosquitoes from attacking through the material, except to a very limited degree, up to 72 hours after application. As a result of these investigations of repellents, and of those on a larger scale in the United States, the manufacture of adequate quantities of dimethyl phthalate was organised and the substance made available to the Australian fighting forces in 1943, some special forces being supplied with it as early as March 1943.

Control of Weeds

PROF. G. E. BLACKMAN, in a short paper on "Recent Developments in the Control of Weeds" (*J. Roy. Hort. Soc.*, 73, 5; May, 1948), summarizes some useful results on the effectiveness of various selective weed-killers. Sulphuric acid gave the best control of goosegrass, *Galium aparine*; methyl-chloro-phenoxy-acetic acid gave the best kill of shepherd's needle, *Scandix pecten-veneris*, and common red poppy, *Papaver rhœas*; and dinitro-ortho-cresol was most toxic to scentless mayweed, *Matricaria inodora*, but also gave control equal to the acetic acid compound of *P. rhœas*. The use of sulphuric acid is still most effective, particularly against weeds of the onion crop. Spraying with this acid gives about 90 per cent of the yield obtained by hand weeding and hoeing, but at very much less expense in labour. Charlock is susceptible to control by growth-substance sprays at all stages from seedling to flowering, though poppies are susceptible only as seedlings.

Tomato Spotted Wilt Virus

THE disease of tomatoes caused by spotted wilt virus often shows considerable variation in severity. D. O. Norris has now shown (*Bull. 202, Coun. Sci. and Ind. Res., Australia; Melbourne, 1946*) that this is due to varying combinations of at least five strains of the virus. The paper describes and figures the

symptoms of these strains on sixteen host species, and indicates suitable tests for the presence of strains in a particular disease. The thermal death-point of spotted wilt complexes is considered to be about 10° C. higher than the usual value of 42° C. This is a rather unwelcome discovery from the point of view of possible control. On the other hand, the finding of a high degree of resistance to spotted wilt by *Lycopersicum peruvianum* is likely to be of considerable importance in breeding.

Clutch and Brood-size in the Robin

THE inquiry into clutch and brood-size in the robin (*Erithacus rubecula*), which was first reported by David Lack in 1946, has now been closed. Later observations show that the breeding season in Holland is later than in Britain but is earlier in North France, Germany and Switzerland than inland in Europe at a similar latitude (*British Birds*, 41, No. 4; April, 1948). The tendency for the average clutch-size of the robin in England and Wales to be highest in May, lower in April, and lower still in March, June and July has been confirmed. It has also been shown that the average clutch-size is different in different years and there may be a correlation between fine weather and higher clutch-size. The average clutch-size in Ireland is approximately the same as in England and Wales, but in Scotland the average clutch-size is higher than in England and Wales. Nesting is more successful in May than in April, possibly because in April the ground vegetation is not so well grown as in May, leaving the nests less exposed to predators.

International Committee for Bird Preservation

THE report of the British Section of the International Committee for Bird Preservation (The Secretary, c/o British Museum (Natural History), Cromwell Road, London, S.W.7) is a record of much good work. For some years past naturalists and others have been perturbed by the decline in the wildfowl population of the world, and, among other things, the report contains an account of the Committee's work in investigating the situation as it affects the wildfowl of Europe. Among the activities are the ringing of duck to trace their migration routes. A duck decoy at Orierton is being used for this purpose, and ringing on a lesser scale is being carried out at other decoys in Great Britain. In 1947, the headquarters of the Committee, previously in Brussels, were transferred to London, and the British Museum (Natural History) is now the centre of the organisation, which has thirty-four national sections from all five continents.

The Film in Scientific Research

THE Sciences Committee of the Scientific Film Association is arranging a one-day conference on "The Film in Scientific Research", to be held on October 12 at the Royal Institution, London. The chair will be taken by Mr. J. E. Cummins, chief scientific liaison officer in London of the Australian Government, and the Conference will be opened by Sir Robert Watson-Watt. The Conference will include discussions by British and foreign men of science on the value of scientific films as a research tool in various branches of science; the function of the research film in giving up-to-date information in a particular field; scientific films as an aid to the training of scientific workers; scientific films as a medium for explaining to the general public

important results of scientific research; and technical aspects of the use of films in scientific research. The Conference will conclude with a two-hour showing of British and foreign research films. Material suggested for discussion and information as to the existence or availability of research films suitable for showing at the Conference should be sent to the Honorary Secretary, Sciences Committee, Scientific Film Association, 34 Soho Square, London, W.1, as soon as possible.

Announcements

WE regret to announce the following deaths:

Mr. S. G. Brown, F.R.S., known for his work on the gyroscopic compass and numerous other mechanical instruments, on August 7, aged seventy-five.

Mr. Harry E. Burton, principal astronomer and head of the Equatorial Division of the U.S. Naval Observatory from 1929 until June 30, 1948, on July 19, aged seventy.

Mr. J. R. Cowie, chairman of Council of the British Electrical and Allied Industries Research Association, on August 5.

Dr. Henry Guppy, C.B.E., librarian of the John Rylands Library, Manchester, on August 4, aged eighty-six.

THE chairman of the Royal Society's Library Committee, Prof. E. N. da C. Andrade, has accepted an invitation by the Council to become honorary librarian to the Society during his tenure of chairmanship of the Library Committee.

SIR LEWIS FERMOR, director of the Geological Survey of India during 1932-35, has been elected *Correspondant Etranger* of the Société Géologique de France.

SIR FRANK STOCKDALE, chairman of the Colonial Development Corporation, has been appointed chairman of the governing body of the Imperial College of Tropical Agriculture, in succession to Sir Eric Macfadyen, who has been associated with the College since 1928.

MR. SETON LLOYD, technical adviser to the Directorate of Antiquities in the Government of Iraq, has been appointed director of the British Institute of Archaeology at Ankara in succession to Prof. J. Garstang, as from March 1, 1949.

MR. R. McCHLERY, former Rhodes scholar and, since 1926, a member of the Agricultural Department, Salisbury, has been seconded to the Central African Council to take up the new appointment of Central African Scientific Liaison Officer in the United Kingdom, and to establish a Central African Scientific Liaison Office in the British Commonwealth of Nations Scientific Offices, London.

DR. A. E. A. WERNER has recently joined the staff of the National Gallery, Trafalgar Square, as research chemist. He was previously reader in chemistry in Trinity College, Dublin.

A CONFERENCE of German Hygienists and Microbiologists is being held at Stuttgart during August 25-27. Among the topics to be discussed are: tuberculosis in animals and its chemotherapy; immunization against virus diseases; milk hygiene in Germany; human helminthiasis and its chemotherapy; human and animal trichinosis; rickettsia toxins; morphology and ecology of bacteria; bacteriology of enteritis; serum reactions, etc. Particulars can be obtained from Prof. G. Lutz, Heusteigstr. 66, Stuttgart-S.