

female sparrows to day-lengths of ten, twelve, fourteen, sixteen and twenty-four hours at a uniform light intensity. In the male, gonadal development increased with day-length. During an exposure of eighteen days the greatest relative increase in testicular response occurred between day-lengths of twelve and fourteen hours; days longer than fourteen hours produced little further development. During an exposure of forty-six days, however, it was shown that males could be brought to full breeding condition in winter by a day-length of only ten hours. In the female, as in the male, gonadal growth increased with increased day-length; but during a thirty-day exposure the greatest relative increase in ovarian development occurred between day-lengths of sixteen and twenty-four hours, and no ovarian growth occurred on day-lengths of eight or ten hours. During an experiment lasting approximately  $3\frac{1}{2}$  months, females kept on a uniform day-length of eight hours showed no gonadal growth.

The difference in the degree of reproductive response of males and females to light is probably explained by the fact that the testis responds to lower concentrations of gonadotropic hormones than does the ovary, rather than by a difference in the sensitivity of the male and female pituitaries to light.

Light intensity in Nature falls low enough to modify the photoperiodic response of the sparrow only near sunrise and sunset. The presence or absence of clouds may cause a difference between the photoperiodically effective length of consecutive days, which is as great as the seasonal change in day-length during the month of January.

In the English sparrow an internal rhythm is important in determining the breeding season. Increased day-length in the spring reinforces this internal rhythm and ensures that all males reach reproductive competence in the spring rather than at some other season. The time of onset of breeding determines the onset of the reproductive refractory period. Consequently, the spring breeding season causes this refractory period to occur during the autumn and early winter. The end of the refractory period in turn determines the time when the sparrow can again respond to day-length. As a result, in this species the season of reproduction is controlled by the interrelationship between the seasonal change in day-length and the internal reproductive rhythm.

T. H. HAWKINS

## PRISON CAMP GEOLOGY

THE fascinating memoir, referred to below\*, is worthy of notice, not only because it is a major contribution to 'front' petrology and deep-seated tectonics, but also because of the extraordinary conditions under which the research it records was carried out. The University of Edelsbach was founded by French prisoners-of-war in Oflag XVII A (1940-45). Not content with lectures alone, the geologists made a thorough investigation of the area—only 400 metres square—enclosed within the barbed wire. No stone was left unturned, and trenches and secret tunnels provided many critical exposures. A microscope was constructed in the camp and equipped with polarizers improvised from piled cover glasses. Thin sections were mounted with

\* Métamorphisme, silicifications et pédogénèse en Bohême Méridionale. By F. Ellenberger in collaboration with R. Dézavelle, M. Fischer, A. Guilleux, V. Host, A. Moysse and P. Pérault. Pp. 169. (Besançon: Annales Scientifiques de Franche-Comté, 1948.)

a mixture of violin wax and edible fat. Only the determination of certain untwinned feldspars remained to be completed on the return to France.

The greater part of the memoir is devoted to the crystalline rocks of the Waldviertel complex and the syntectonic granitization phenomena displayed by them. The country rocks are tectonites with pronounced linear structures. They include biotite- and graphite-schists, and types ranging from plagioclase to amphibolite, all originally poor in quartz. Some excellent examples of micro-tectonic analysis are given, and it is shown that in spite of the intense deformation undergone, lattice discontinuities have been largely healed by granoblastic 're-cooking'. Movement and recrystallization were probably simultaneous, rather than alternating, phenomena. Granitization and what was formerly styled 'injection', due to geochemical migrations, consisted of quartzification, followed by development of perthitic orthoclase at the expense of both the original rock material and the newly crystallized quartz. The evidence suggests that while diffusion through the lattices took place locally, the main transport was by way of intergranular boundaries. Complementary to the addition of silicon and potassium, the caesium elements calcium, iron and magnesium were expelled from the granitization zone to form basic fronts in the surrounding rocks. The amphibolitic aureoles of the Moldanubian 'orthogneiss' are believed to be large-scale results of the same process.

It is shown that quartz and orthoclase were remarkably plastic during the physico-chemical conditions that attended their formation, and that, in consequence, the granite formed by the transformation of pre-existing rocks could readily become intrusive. It follows that to prove a granite intrusive does not prove that it has ever been in a liquid condition.

The memoir is full of important observations and stimulating suggestions, and should be read by all workers in the field of plutonic geology.

## FORTHCOMING EVENTS

(Meetings marked with an asterisk \* are open to the public)

Tuesday, June 21

CHADWICK PUBLIC LECTURE (at the Royal Society of Tropical Medicine and Hygiene, 26 Portland Place, London, W.1), at 2.30 p.m.—Dr. Sibyl Horn: "Evolution of Industrial Work for Women and Young People and its Effect on the National Health".\*

ROYAL ANTHROPOLOGICAL INSTITUTE (in the Anatomy Theatre, University College, Gower Street, London, W.C.1), at 5 p.m.—Mr. G. G. Worcester: "The Boat in Anthropology".

Tuesday, June 21—Wednesday, July 20

ROYAL ANTHROPOLOGICAL INSTITUTE (at 21 Bedford Square, London, W.C.1), at 10 a.m. each day.—Exhibition of "Traditional Art of the British Colonies".\*

Wednesday, June 22

BRITISH PSYCHOLOGICAL SOCIETY, MEDICAL SECTION (at the Medical Society of London, 11 Chandos Street, Cavendish Square, London, W.1), at 8 p.m.—Symposium on "Aggression in Nature and Society". (All members of the Society are invited.)

Thursday, June 23

MINERALOGICAL SOCIETY (at the Geological Society, Burlington House, Piccadilly, London, W.1), at 5 p.m.—Scientific Papers.

## APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

AGRICULTURAL ECONOMISTS and ASSISTANT AGRICULTURAL ECONOMISTS (Grade B)—The Registrar, The University, Manchester 13 (July 4).