

instead of diabetes. Another point established by Dr. Miller is that lizards are highly sensitive to glucagon and insensitive to (mammalian) insulin, in this respect differing markedly from birds.

Similar species differences were also indicated by Dr. S. I. Segal (New York) in the course of a stimulating account which ranged far and wide over the comparative aspects of gonadotrophic action and gonadal function in mammals and birds.

It was no more than a logical step to proceed from this point to a consideration of biochemical variations of hormones among vertebrates, which formed the subject of the next session. Dr. I. I. Geschwind (Berkeley) gave a detailed review of variations in such protein and polypeptide hormones as oxytocin and vasopressin, or the melanophore-stimulating principle of the anterior pituitary, as well as of the methods available for their study. Investigations of this kind may be expected to provide an explanation of the fact that a given hormone preparation such as somatotrophin from one mammalian group may be ineffective in another, or why one hormone (for example, prolactin) may induce wholly different responses in different species.

Neuro-endocrine reflex and co-ordinating mechanisms were the topics of another session. Prof. G. W. Harris (London) discussed the hypothalamic control of thyroid-stimulating hormone secretion, and there were separate accounts of the hormonal requirements for ovulation in amphibia (Dr. C. Y. Chang and Prof. E. Witschi, Iowa), birds (Prof. A. V. Nalbandov, Illinois) and mammals (Dr. J. W. Everett, Duke). The last-named reported in detail on the ability of pituitary autografts to the kidney to become vascularized and resume their functional activity when transplanted near the median eminence of rats. These animals, he indicated, not only resumed oestrous cycles of roughly normal duration but also ovulated, and some, when mated with males, became pregnant. By contrast, transplantation of these grafts to the temporal lobe did not restore cycles.

In a similar context, Dr. K. G. Wingstrand (Copenhagen) referred to experiments in which the adeno-hypophysis of toads was grafted on the site from which the median eminence had been previously extirpated, and after some weeks resumed its function. This seemed to prove that the anterior lobe must be activated by substances originating in some hypothalamic area other than the median eminence, and that the latter is only a release organ.

Neurosecretion and its role in neuro-endocrine integration were discussed by Profs. E. and B. Scharrer (New York). In their view, many vital processes are not controlled exclusively by either nervous or hormonal mechanisms, but by both. Neither works as a closed system; the neuro-secretory cells provide a hormonal link between nervous centres and endocrine glands, whereby their activities are intimately interrelated.

A novel and attractive feature of the conference was a further session devoted to vertebrate organs of an unusual nature or incompletely established endocrine status, such as the ultimobranchial body, Stannius corpuscle, etc. Dr. F. Baker (Columbia), in reviewing the renal thyroid of fishes, described a condition of hyperplasia and aberrant distribution of thyroid follicles of fish kept in water with a low-iodine content. Thyroid masses, developed as a result of such compensatory hypertrophy, may be found in such ectopic sites as the eye, heart and brain, but this can be prevented by transferring the animals to a high-iodine environment.

During the same session, Prof. E. J. W. Barrington (Nottingham) gave a most stimulating and beautifully illustrated account of his bio- and histo-chemical studies on iodine binding in the endostyle of protochordates. He not only showed convincingly that this, indeed, occurs (for example, in amphioxus and tunicates), but also pointed out some interesting theoretical implications of his findings. For example, since iodine binding in amphioxus is associated with the production of an alimentary type of mucus, elaboration of thyroglobulin (which followed phylogenetically later) may have been the outcome of cytochemical evolution, perhaps as an ecological adaptation by chordates to life in fresh water. With regard to the origin of the iodination process, it is of interest that iodine binding also occurs in the surface layer of the tunic of tunicates, possibly as a random binding to scleroprotein. Since, however, the tunic surface is being continually worn away, it is conceivable that the iodination products might, by ingestion, have become incorporated by the animals, at some stage of evolution, into their biochemical processes. This, in turn, may have established the need for a more concentrated and efficient iodination process, and thus have initiated the iodinating function of the endostyle, itself the forerunner of the vertebrate thyroid gland. Although speculative at present, these conclusions may be given a firmer basis by future research.

The increasing use now being made of electron microscopy in the investigation of ultra-structural detail was very evident during the conference. A considerable proportion of contributors had included electron microphotographs, some of the best being those of Dr. J. D. Green (Los Angeles) and Sir Francis Knowles (Marlborough College). The standard of illustrations, in general, was remarkably high. There were many admirable colour slides—few perhaps finer than those shown by Prof. Barrington and Drs. Miller and Knowles. The superb colour film of the rat's ovary during the process of ovulation prepared by Prof. R. J. Blandau (Washington) must also be mentioned in this connexion.

The official proceedings of the entire conference will be issued as a separate volume, publication of which is confidently predicted before the end of the year.

P. ECKSTEIN

GLASGOW UNIVERSITY EXPEDITION TO NORTH RONA AND SULA SGEIR

AN expedition to the remote, uninhabited Scottish islands of North Rona and Sula Sgeir (45 miles north-west of Cape Wrath) took place during June 23–July 23. Arrangements for the expedition were made

largely by four members of the University of Glasgow, D. E. Baird, I. O. Macdonald, R. S. Wyburn and S. B. Donald. The other six members of the expedition were Miss Helen C. Nisbet and R. A. Gailey

(University of Glasgow); Mr. and Mrs. M. Lauder-Smith; T. B. Bagenal and H. T. Powell (Marine Station, Millport). The present account refers principally to work carried out on North Rona; one day only was spent on Sula Sgeir.

North Rona is composed of Lewisian gneiss, granulitic in texture and showing strong differentiation into acidic and basic fractions. A notable feature is the occurrence of sheet-like intrusions of quartz-felspar pegmatite with a coarse graphic structure, the outcrops of which are largely controlled by folding along W.N.W.-trending axes. Ample evidence for glaciation exists, but no indication of the direction of ice movement could be found. A thin cover of boulder clay, containing erratics of mainland rocks, exists over most of the island. Remnants of wave-cut platforms were noted, and the approximate heights of the principal morphological features were determined.

The expedition made a detailed ground survey of the remains of Saint Ronan's cell and chapel, the church enclosure, and the adjacent village which has been deserted since 1844. The cell is rectangular with sloping walls and a roof of flat slabs, and may date from the eighth century; the adjoining chapel is later in date and has been used as the village church. The original foundation was probably a hermitage. The village is situated towards the north-west corner of an infield of some 24 acres, cultivated in large lazybeds. There are three groups of ruins in the village, each consisting of a rectangular dwelling surrounded by a number of small circular or oval cells.

A survey of the terrestrial flora was carried out and a collection made of the flowering plants, bryophytes and lichens. Only 44 species of flowering plants were found on North Rona, and Sula Sgeir has only seven. Soils were examined *in situ*, and samples brought back for further study. A comprehensive collection of terrestrial invertebrates was made, and ecto- and endo-parasites were collected from some of the 140 sheep on Rona. Selected

blood samples and blood-sucking insects were taken for the Ruchill Virus Research Laboratory.

A survey of the marine flora and fauna was made on both islands and, considering the isolation of the islands and the very severe exposure to swell and wave action, a surprisingly large number of algae and invertebrates was found. One of the rarest and most interesting algae present was *Fucus distichus* subsp. *edentatus*. North Rona is the largest known breeding ground of the Atlantic grey seal, and it is of interest to record that one seal calved successfully as early as July 6; the earliest calves recorded hitherto for Britain have been born in mid-August.

A census was made of the birds breeding on Rona and notes kept of the migrants passing through. Although counts of those species nesting in the sea caves were not always possible, many of the figures obtained show marked changes from the counts made before the War. Leach's petrel was of special interest, for in Britain it breeds on only very few Scottish islands, including North Rona and Sula Sgeir; its distribution and numbers on Rona were estimated, and some 500 were ringed. Of the migrants, the most spectacular was a red-headed bunting that remained on the island for a few days.

Two films and many photographs were taken of features of interest on the islands. The results of the various investigations are now being worked up and will be published elsewhere.

The expedition is grateful to the University of Glasgow, the Carnegie Trust for the Universities of Scotland, Mr. Charles Hepburn, and other individuals, institutions and firms, for financial or other practical support for the venture; to Commander R. C. Dumas and the crew of M.F.V. 289 for invaluable assistance in getting to and from North Rona; and to Dr. R. R. Morrison of Bridge-of-Weir for transporting six members of the expedition from Rona to Sula Sgeir aboard his motor-yacht *Mary Rose of Morar*.

T. B. BAGENAL
H. T. POWELL

THE INSTITUTE OF PHYSICS

THE thirty-eighth annual report of the Board of the Institute of Physics, covering the work of the Institute during 1957, was presented to the annual general meeting of the Institute on July 1. Particular attention is directed in the report to the steady growth in the membership of the Institute during the past ten years, from 3,455 in 1948 to 5,881 in 1957. The number of applications for election or transfer to the various grades of membership received during the year under review for submission to the membership and examinations committee was 795 compared with 752 in the previous year. Representatives of the committee visited nine technical colleges which had applied for recognition by the Institute. Five colleges requested the recognition of diplomas awarded on full-time or sandwich courses as satisfying the Institute's academic requirements for membership, and two diplomas, the awards of Sunderland Technical College and the Welsh College of Advanced Technology, Cardiff, were accepted. The Board accepted the recommendation of the membership and examinations committee that students following courses in recognized institutions leading to qualifications recognized by the Institute should be eligible for admission to the student grade

of membership irrespective of compliance with the Institute's regulations concerning general education, but students who do not comply will still be required to do so before being eligible for the graduateship grade of membership.

In the written papers for the examination for the graduateship grade twenty-one of the sixty-eight candidates satisfied the examiners. There were 542 candidates for the Ordinary National Certificate in applied physics and 182 for the Higher Certificate, compared with 424 and 152, respectively, in 1956.

The circulation, both to members and non-members, of the Institute's two journals, the *Journal of Scientific Instruments* and the *British Journal of Applied Physics*, increased during the year. Supplement No. 6 of the *British Journal of Applied Physics*, containing a selection of the papers presented to the Institute's Non-Destructive Testing Group, including most of those read at the Group's conference held in Bristol in July 1956, was published in May. In the "Physics in Industry" series, a new volume "Pressure Measurement in Vacuum Systems", by J. H. Leck, was published during the year, together with a revised edition of Dr. J. Topping's "Errors of Observation and their Treatment" in the "Monographs for