and the following extract from the *Agricultural Gazette of New South Wales* (August 2) is of interest:—"The Chief Quarantine Officer for Plants has informed the Under-Secretary for Agriculture of a most extraordinary method whereby an objectionable weed might be broadcasted throughout the State. It appears that, as an advertising medium, some printed paper, representative of a flying insect, has been sent to Australia, and the genius who invented this particular style of advertisement, in an endeavour to make it more realistic or uncommon, had attached to each specimen the burr or seed of the noxious weed 'Burdock' (*Arctium Lappa*). The authorities in Western Australia had called the attention of the Director of Quarantine to the use to which the burr of this noxious weed was being put. It is needless to say that business firms stopped the issue of the advertisement under notice as soon as they knew there was a serious objection to its use."

Burdock is a very troublesome weed, and it is clear that our colonial friends have to be on the alert if they are to prevent the introduction of new plants in the manner outlined.

THE LANCASHIRE SEA-FISHERIES LABORATORY.

THE eighteenth report of the Lancashire Sea-Fisheries Laboratory (for the year 1909) contains an account of work carried out at the University of Liverpool, at the sea-fish hatchery at Piel, and at the Port Erin Biological Station. Mr. James Johnstone describes five species of internal parasites of fishes from the Irish Sea, the three genera discussed being Lebouria, Prosthecobothrium, and Echeneibothrium. The same author reports on the measurements of some 55,000 plaice from the district, curves representing the frequency of fish at each unit of length for the most important fishing grounds being given. The average weights of plaice at each unit of length from various fishing grounds have also been determined. Taking Heincke's formula $w = \frac{l^3}{100}k$ where w is the weight in grams and l the length in centimetres, the monthly variations in the value of k have been calculated for several of the grounds. The value shows a maximum in July, and the minimum appears to be in January, at which time of the year very little food is found in the stomachs of the plaice.

A considerable section of the report is occupied by papers on hydrographical work done in the Irish Sea by Mr. Johnstone and Dr. H. Bassett. It is doubtful, however, whether the comparatively slender data contained in the papers of the latter writer can be usefully employed in the way suggested by him, in connection with the prediction of climatic conditions over extended periods of time. Very much more research will be necessary before such predictions can have any but a speculative value.

The report concludes with a paper by Prof. Herdman, Mr. A. Scott, and Mr. Dakin on plankton work carried out off the Isle of Man in 1909. The paper as a whole tends to confirm the doubts, which have often been expressed, as to the value of the quantitative methods of plankton work, as at present practised. Until some trustworthy instrument has been devised for accurately measuring the quantity of water which has passed through the net on each occasion, the elaborate methods of counting the organisms captured would hardly seem to repay the time which must necessarily be employed upon them.

ZOOLOGY AT THE BRITISH ASSOCIATION.

THE attendance of zoologists at the meetings of Section D was affected by the fact that the International Congress of Zoology at Graz and the International Congress of Entomology at Brussels had taken place so recently. These meetings abroad were probably responsible for the absence of a few of those who in previous years have contributed papers to the section. The programme, being a little less crowded than usual, was taken at a more comfortable pace, and reasonable time was available for discussion and remarks on the various subjects under consideration. The attendance at the meetings of the section was very satisfactory, especially in the circumstances, and the interest in the proceedings was fully maintained to the end; indeed, the concluding meeting was one of the best of the series.

Coral Snakes and Peacocks.

The popular lecture, which for several years has been a feature of the programme of the section, was given before a large audience by Dr. H. F. Gadow, F.R.S., who chose for his subject "Coral Snakes and Peacocks," and illustrated his remarks by a series of lantern-slides in colour. He first described some of the physical features of Mexico, during a visit to which country his observations on coral snakes (Elaps) were made. The red, black, and yellow markings of these snakes have been said to be of the nature of "warning coloration," but Dr. Gadow pointed out that, although the markings are conspicuous when the snakes are lying in a dish or other vessel, the colours commingle, especially in the dusk, with the natural surroundings of the animal, so that it becomes very inconspicuous. Coral snakes are entirely nocturnal in habit; they lie in hiding during the day, so that the explanation of their coloration as "warning" is unwarrantable. Many harmless snakes are coloured in a similar manner to the coral snakes, *e.g.* among a large collection of Coronella from various places in Mexico examples of one species were found which seem to have "mimicked" several of the colour patterns exhibited by species of Elaps. But Dr. Gadow pointed out that the specimens of Elaps and Coronella found in the same locality do not exhibit the same colour pattern. Dr. Gadow's conclusion, stated briefly, was that the resemblances in colour pattern between Coronella and Elaps are instances of pseudo-mimicry. In the second part of his address Dr. Gadow traced the gradual transition from a comparatively simple feather with light and dark bands to the "eyed" feather, with fully developed metallic lustre, of the mature peacock's "fan." He then described the retrogressive changes leading from the "eyed" feathers to the modified feathers of the back and margin of the "fan."

Coccidia and Coccidiosis in Birds.

Dr. H. B. Fantham described his observations on the life cycle of the sporozoon *Eimeria* (*Coccidium*) *avium*, which produces a form of "enteritis" in grouse, fowls, and pheasants, especially in young birds. Resistant oöcysts of the parasite are voided in the fæces of the infected birds, and are acquired by other birds in their food or drink. A mature oöcyst contains four sporocysts, in each of which are two active motile sporozoites. After the oöcysts have been swallowed by a bird, the cyst wall is softened by the pancreatic juice, the sporozoites creep out and penetrate the epithelial cells of the duodenum, in which they become rounded and grow, feeding passively on the host cell. After attaining a certain size, the nucleus and protoplasm of the parasite—now a schizont—divides into a cluster of merozoites arranged *en barillet*, *i.e.* like the segments of an orange. Very little residual protoplasm remains after the formation of merozoites. These small, vermicular merozoites glide away and invade other cells, within which they grow to schizonts and multiply. A number of generations of merozoites is produced in this way, and the destruction of the epithelium and the derangements resulting therefrom in some cases cause death of the host. In most instances some merozoites pass down into the cæca, where they grow and multiply, producing intense inflammation. Sooner or later a limit is reached, both to the power of the bird to provide nourishment for the parasites and to the multiplicative capacity of the parasite itself, and then sexual forms are produced. Some of the organisms become large and contain much reserve food material. These are the macrogametocytes, each of which, after the maturation changes, becomes a single macrogamete. Slightly smaller parasites, with little or no reserve material, undergo nuclear multiplication and give rise to many minute biflagellate microgametes, which disperse and swim away in search of macrogametes. Each of the latter has precociously invested itself with a cyst wall, in which a micropyle is

left for the entry of the microgamete. One microgamete only fuses with the macrogamete, and then the oöcyst wall is completed by closure of the micropyle. This series of changes, from infection to the formation of oöcysts, extends over about eight or ten days in the grouse. At first the oöcysts are uninucleate, and their contents completely fill them; later the contents concentrate into a spherical mass, the nucleus divides into four, around each of which the protoplasm aggregates, forming four round sporoblasts. Each sporoblast develops into an oval sporocyst, in which two sporozoites are formed. The oöcysts, when dropped, are very hardy; some which had been taken from a moor a year previously were found to be still alive.

Coccidiosis is accompanied by an increase in the number of polymorphonuclear leucocytes in the blood of the host, together with a decrease in the number of the erythrocytes. Young birds are much more susceptible to coccidiosis than older ones, but older birds which have become "chronics" serve as reservoirs of oöcysts, and are constant sources of infection. Lime dressing of the soil, which destroys oöcysts, is the most effective treatment at present known for combating coccidiosis.

The Formation and Arrangement of the Opercular Chaetae of Sabellaria.

Mr. Arnold T. Watson contributed an account of the opercular chætae of *Sabellaria alveolata*. The operculum, with which this tube-building polychæte defends the opening of its tube, consists of two crescent-shaped structures, each of which is composed of three concentric rows of paleæ, of characteristic form, borne at the distal extremity of the peristomial lobe. Viewed from above, the exposed portions of the paleæ of the outer and middle rows are seen to be arranged in an imbricated manner, their free ends directed outwards, while the free ends of the paleæ of the innermost row, the chætae of which alternate in position with those of the middle row, are directed inwards and upwards. Mr. Watson has found that there are two "nests" for the formation of the chætae, an outer one supplying the outer paleæ and an inner one producing the middle and inner paleæ, which are packed alternately in the nest. The chætae can be traced, and evidently travel, in a somewhat spiral fashion to reach, in rotation, their respective positions at the dorsal end of each opercular crescent. A similar process was observed in *Sabellaria spinulosa*, but in this species there are, in each lobe, two or three long, curved, acicular dorsal chætae in addition to the three rows of chætae which form the operculum. In certain members of the family, *e.g.* Pallasia, the operculum is armed with only two rows of paleæ, but there exist, in addition, two or more hooks, placed dorsally, in positions corresponding to the acicula above mentioned. These hooks have been regarded by some zoologists as homologous with the missing middle row of opercular paleæ, but this view is rendered very doubtful by the conditions found, and described above, in *Sabellaria spinulosa*.

The Anatomy and Physiology of Calma glaucoides.

Calma is a small nudibranch mollusc living exclusively on the eggs of fishes, which it simulates closely in appearance. Mr. T. J. Evans described the modifications which this animal has undergone in response to its specialised diet. The radula, a rasping instrument in other gastropods, has become a saw for cutting open the eggs, the teeth being reduced to a single row. The stomach is enormously enlarged, and in well-fed specimens is filled with a hard, albuminous mass. During the feeding period the growth of the genital organs is retarded; they do not develop until the contents of the stomach have been digested, by which time space is available for the growing gonads. The gonads are not massed as in an ordinary Eolid, but are packed in the angles between the liver diverticula, and the male duct has been pushed forward to the level of the mouth. There is no intestine or anus, and the excreta of the first year remain on the floor of the stomach and liver branches under the food of the second year. In the cerata certain amœboid cells of the hæmocœl enter into relations with the liver cells and absorb protein from them. When fully impregnated with nutritive material they fall back into the hæmocœl as oval glassy cells, and the protein contents are gradually absorbed during the winter fast.

Sex and Immunity.

Mr. Geoffrey Smith gave the results of further work on the effects of the parasitic cirripede Sacculina on the spider crab Inachus. He has previously shown that the effect of the parasite is to cause the male host to assume adult female characters externally, and, after the death of the parasite, internally also, for large ova were produced in the testes. The effect of the parasite on the young female crab is of a similar nature, for the young infected female is forced to assume adult female characters at a premature stage. Mr. Smith suggested an ingenious explanation of these phenomena. He showed that, in an infected Inachus of either sex, the Sacculina-roots manufacture yolk similar to the ovarian yolk of a normal female Inachus. The parasite thus forces the crab, whether male or female, to produce substances in the blood from which the Sacculina-roots can manufacture yolk; as fast as these substances are produced the Sacculina takes them up and, by anchoring them, stimulates their continued production. These yolk-forming substances, saturating the body fluids of infected crabs, both male and female, cause the development of the secondary sexual characters. When the parasite dies and its roots no longer assimilate the yolk-forming substances, they are taken up by the remains of the gonad (which, while the crab was parasitised, had been reduced and non-functional), which consequently proceeds to form ova. In the parallel case of Peltogaster, parasitic on Eupagurus, Mr. Potts has shown that small ova are formed in the testes of the host while the parasite is still alive, so that, in this case, the excess of yolk-forming substances is taken up by the gonad during the life of the parasite. This over-production of a substance which is being anchored by a parasite is regarded by Mr. Smith as closely analogous to the production of antibody in immunisation. By supplying the Sacculina with the yolk-forming substances, the crab protects other nutritional substances necessary for its vital organs from being abstracted by the parasite.

In answer to comments by Prof. Bateson, F.R.S., and Prof. Hartog, regarding the nature of the eggs found in the testes of male crabs recovering from the attacks of Sacculina, Mr. Smith stated that such ova are as large and as fully formed as normal eggs, become pigmented (red) like the latter, and, so far as structure is concerned, are entitled to be regarded as ordinary eggs. Replying to observations by Mr. Doncaster regarding the presence or absence of "femaleness" in the male crab, Mr. Smith said that the conditions indicated that the male contains latent female potentialities, for these latter could not be introduced by the Sacculina, and yet complete formation of morphological female characters took place in recovering males.

The Colours of Insect Larvae.

Prof. Walter Garstang described a series of experiments which he had carried out this summer on the effects of foods deficient in chlorophyll on the coloration of phytophagous larvæ of Lepidoptera. The experiments were designed to confirm and extend the results obtained in 1892 by Prof. Poulton, who showed that, in the case of *Tryphaena pronuba*, larvæ fed on the white mid-ribs of cabbage retained a white ground colour (with the addition of superficial black pigment in the later stages), while larvæ fed on yellow etiolated leaves developed the same green and brown pigments as those fed on green leaves. Prof. Garstang obtained very similar results, using the larvæ of *Euplexia lucipara*. Larvæ fed from the time of hatching on the yellow inner leaves of lettuce developed the same green pigments as those fed on green leaves, while larvæ fed on the mid-ribs acquired a semi-transparent whitish colour, very faintly tinged with green or yellow. The superficial blackish markings developed in all cases.

On the other hand, the larvæ of *Mamestra brassicae* fed on mid-rib of lettuce and on carrot, while failing to produce the normal green colours, also showed a marked

deficiency of the black superficial pigments which formed a conspicuous element in the coloration of normal green-fed larvæ during the last two stages. Several larvæ fed on mid-rib were practically white at the time of pupation; those fed on carrot were slightly darker. Further experiments would be necessary to show whether the deficiency of black pigments was due to altered metabolism or was comparable with the many cases among Geometrid and Vanessid pupæ, &c., in which the formation of black superficial pigment-screens is subject to inhibition from white or yellow backgrounds. The latter interpretation of this case was regarded by Prof. Garstang as improbable on the evidence available, for the mid-rib set had been kept for the most part in a dark cupboard, and two of these larvæ, transferred, when half grown, to purple cabbage in the light, had shown the same features to a pronounced degree.

In the discussion which followed, Mr. Doncaster inclined to the other interpretation, and suggested that the light reflected from the alimentary canal of the specimens on purple cabbage (which became blue-green after ingestion) may have had an inhibitive effect.

Insect Coloration.

Mr. Mark L. Sykes exhibited specimens of various insects among leaves and other natural objects, and in his remarks held that the colours of these insects supported the view of protective coloration. Mr. G. Storey, commenting on some remarks of Mr. Sykes on mimicry, mentioned Prof. Punnett's experiments on certain Ceylon butterflies of the genus Papilio, which are supposed to afford one of the most striking cases of mimicry. These experiments, he thought, were by no means sufficient to overthrow the theory of mimicry, but they showed that the mimickers derived little protection from their deception from certain classes of their enemies.

The Biology of Teleost and Elasmobranch Eggs.

Dr. W. J. Dakin confirmed the results reached by Botazzi and others which indicated that the osmotic pressure and salinity of the blood of marine teleosts were different from that of the external medium in which they lived, but were affected by changes in the salinity of the water. The blood of the eel has a lower osmotic pressure in fresh water than in the sea, and the blood of fresh-water fishes is less saline than that of marine fishes.

The osmotic pressure of the blood of elasmobranchs is almost identical with that of the sea water in which they live.

Dr. Dakin extended his observations to the eggs of certain fishes, and showed that the specific gravity of plaice eggs can be altered by varying the salinity of the water in which they are living. The egg-contents are therefore not independent of the sea water. He also showed that the salinity and osmotic pressure of the egg-contents was much less than that of the medium in which the eggs were living, and about the same as that of the blood of the adult fish. There is therefore an equilibrium between the sea water and the egg-contents which does not consist in an equality of osmotic pressures; while both osmotic pressures are very different, a change in that of the water produces a small but definite change in that of the egg-contents. Death of the egg-contents destroys the conditions under which this equilibrium is sustained, and the egg-contents increase in salinity by reason of the influence of the surrounding sea water; a corresponding increase in specific gravity takes place, and the egg is no longer able to float.

The osmotic pressure of elasmobranch eggs is very different from that of teleost eggs, though both may be living in water of the same salinity. The relation existing between the egg-contents of dog-fish eggs and the water is the same as that between the blood of the adult fish and the medium in which they live.

Semination in the Sanderling.

Prof. C. J. Patten has already pointed out that examples of the sanderling (*Calidris arenaria*), apparently in nuptial plumage, and occurring along our shores at the height of the breeding season, are not fully matured, their plumage presenting a slight difference from the true nuptial garb. To this plumage the name pre-nuptial was applied. Prof. Patten found, on examining the testes of such birds, that although a certain amount of spermatogenesis had taken place, no real functional activity had been reached. Of the sanderlings which occur on our coasts during the period when they ought to be nesting, those birds not pairing seem to divide into small parties and to lead a sort of nomadic life from shore to shore until about the end of August, when they tend to muster; in September they join company with migrants coming from northern climes, the latter, as a rule, being young birds in first autumn plumage. There are thus formed flocks of young and partially matured birds. The fully adult birds arrive about October. Prof. Patten considers that there is reason to believe that other species of shore-birds take more than a year to reach maturity, and that, prior to this period, their desultory migratory movements correspond in the main with those of the sanderling. Investigations into the question of semination in these cases would afford elucidation of some points of importance regarding avian migration and geographical distribution.

Anatomical Adaptations in Seals to Aquatic Life.

Dr. H. W. Marett Tims exhibited a series of lantern-slides illustrating some of his observations on the collection of embryo seals obtained by the *Discovery* expedition, and directed attention to the adaptations to aquatic life which these animals present. The rotation of the limbs to the adult position takes place at an early stage of development. The shortening of the neck is produced by a great ventral curvature of the spine in the cervical and anterior dorsal regions. This, too, is indicated at a very early embryonic stage in both male and female. Dr. Tims remarked, incidentally, that the manner in which the cervical region of the skeletons of seals in our museums was set up, namely, with the vertebræ almost in a straight line, was quite wrong. The prevention of the entrance of water into the lungs is brought about by a secondary growth of the posterior edge of the soft palate, which becomes fused with the wall of the œsophagus. The fact of the very early establishment of these modifications affords an instance of what some would regard as examples of the inheritance of acquired characters.

The Temporal Bone in Primates.

Prof. R. J. Anderson contributed some notes on the temporal bone in primates, pointing out that the squamosal shell, which has three or four ossific centres, sometimes shows a separate zygomatic part and occasionally a separate upper triangular part. The antero-posterior and vertical measurements of the bone in several primates were given; they vary from 5 : 1 in Pithecia to less than 2 : 1 in Semnopithecus. The various antero-posterior dimensions were regarded as evidence of facial influence and the vertical ones of cranial influence.

The Oxford Anthropometrical Laboratory.

Dr. E. Schuster presented some first results from the Oxford Anthropometrical Laboratory. One of the most interesting tests there carried out was that devised to measure the power of concentration. A pattern, made by pricking nine holes in a piece of cardboard, was shown to the subject five times, on each occasion for only a small fraction of a second. The subject was then asked to make a map of it on squared paper, which he generally failed to do correctly; he was shown the pattern again five times, and asked to make a fresh map, and so on until he produced a correct one. It was found that those men acquitted themselves best under this test who subsequently did well in the final schools, and that men reading science and mathematics were, on the whole, better than those reading other subjects.

The Relation of Regeneration and Developmental Processes.

After dealing with a large number of examples illustrating this subject, Dr. J. W. Jenkinson pointed out that, in development, three processes are clearly recognisable—cell and nuclear division, growth, differentiation. Differ-

entiation—the main problem—is determined by external factors, such as the physical and chemical environment, and by internal factors, *e.g.* the initial structure of the germ and the interaction of developing parts. Experiments prove that there exist in the cytoplasm definite organ-forming substances arranged in a definite manner, and sometimes stratified and graded. Such an arrangement accounts for the observed progressive restriction of the potentialities of parts. During cleavage these substances are segregated into cells, but the order in which this takes place seems to be immaterial; the essence of segmentation is the reduction of the ratio of cytoplasm to nucleus.

In regeneration—the production of a whole structure by a part in a differentiated organism—similar processes and factors may be observed. The regenerate often differs quantitatively or qualitatively (heteromorphosis) from the original; reversal of polarity is a special case of the latter. Features common to all regeneration are:—(1) the covering of the wound; (2) cell multiplication (resulting in the reduction of the cytoplasm-nucleus ratio); (3) growth, always at right angles to the cut surface, and at a rate which alters like the ontogenetic rate; (4) differentiation, which usually follows the ontogenetic order, but may differ from it (anomalous behaviour of germ layers). Of the external factors concerned little is known except that the actual injury is the prime stimulus; the internal factors are:—(1) interaction of parts; (2) size (there is a minimal size); (3) degree of differentiation (power of regeneration decreases with age); (4) level or material (necessarily cytoplasmic, since the nuclei are all alike); (5) polarity, which may be expressed in terms of a graded stratification of materials. The adult organism contains the same organ-forming substances as were present in the germ, and arranged in a similar way; the difficulty is that the former is divided into cells. A further difficulty is presented by the anomalous behaviour of the germ layers and by the fact that a part, in which these substances exist, *ex hypothesi*, in other than the correct proportions, can yet form a whole. This indicates that the problem is fundamentally one of assimilation; and Dr. Jenkinson pointed out, in conclusion, that metabolism and regeneration in the protozoa are solely dependent on the presence of the nucleus.

Prof. C. S. Minot gave an address, which, however, cannot be summarised in a few lines and without the aid of diagrams, dealing with the relations of the primitive streak, blastopore, neurenteric canal, and medullary folds in various vertebrates.

Cytological papers by Prof. Hartog and Dr. Edwin Hindle were contributed to the joint meeting of Sections D and K, and Dr. E. J. Russell read, to the joint meeting of Section D and Sub-section B, a paper on the part played by micro-organisms, other than bacteria, in determining soil fertility. A notice of these papers will be found in the reports of the proceedings of Section K and of Sub-section B.

J. H. ASHWORTH.

GEOGRAPHY AT THE BRITISH ASSOCIATION.

IN his presidential address on some of the more pressing needs of geography, Prof. A. J. Herbertson spoke of geographical classification and terminology especially with regard to the genetic classification of land forms, and gave suggestions as to a suitable form of notation. In speaking of geographical units, he laid great stress on the significance of vegetation to the geographer, for which a study of climatic regions is as necessary as a study of morphological ones. Dr. Herbertson's address was printed in full in NATURE of September 22.

The first paper was by Dr. J. D. Falconer, on the origin of some of the more characteristic features of the topography of northern Nigeria. The rivers belong to two great hydrographical systems, the Niger-Benue and the Chad systems. The watersheds are lofty plains of a mature topography, while the prominent hills exert only a secondary influence on the drainage system. In their upper and middle courses the rivers flow over open plains the surface of which is diversified by numerous isolated granite domes, turtlebacks, and inselberge. In their lower courses they often flow in deep valleys bounded on either side by ranges of flat-topped hills. These hills have been carved out of horizontal sedimentary rocks, while the isolated domes of the upper plains are clear evidence of a crystalline floor. The peculiar character of the river valleys is entirely due to the recent origin of the whole river system.

Two papers were read by Dr. W. S. Bruce, the first on Prince Charles Foreland, Spitsbergen, the second on his plans for a second Scottish National Antarctic Expedition. During the summers of 1906, 1907, and 1909, Prince Charles Foreland was explored by Scottish expeditions under Dr. Bruce's leadership. The expedition of last year in the steam-trawler *Conqueror* was on the most extensive scale of the three, and practically completed the exploration of the island. The chief object of the work was to make a detailed map of the Foreland on a scale of two miles to the inch. This map is a continuation of similar work carried on by the Prince of Monaco on the mainland, and by Norwegians under his direction. The island is about fifty-four miles long and from three to seven and a half miles broad, with an area of 262 square miles. An almost continuous range of hills, the northern Grampians, occupies the northern two-thirds of the island, and rises to 3800 feet in Mount Monaco and 3300 in Mount Jessie. Separating these from the Ross heights at the southern end is an extensive low-lying part, called the Foreland Laichs, apparently a raised sea bottom. On the east an almost continuous ice-sheet flows from the northern Grampians to Foul Sound, but the west is free from glaciers. A bathymetrical survey of Foul Sound demonstrated a bar towards the northern end over which vessels drawing more than 12 or 15 feet have difficulty in finding a passage. The rocks are mainly Hekla Hook schists and graywackès, with a small pocket of tertiary beds on the east near Ferrier Haven. The completed topographical map will be one of the most detailed ever made of any part of the polar regions.

The plans for a second Scottish National Antarctic Expedition were first published in 1908, but have since been matured and elaborated. It is intended first of all to complete the bathymetrical survey of the South Atlantic between Buenos Aires and Cape Town, and Cape Town and the South Sandwich group. A course will then be set for Coats Land, discovered by Dr. Bruce in 1904. Wherever a suitable landing-place can be found along this coast, the base of the expedition will be established. From this base Dr. Bruce will endeavour in the following summer to cross Antarctica *viâ* the Pole to Victoria Land, a long journey, but one which for the greater part of the way will be over entirely new ground, and must result in considerable light being thrown on the complex and difficult problem of the structure of Antarctica. After landing Dr. Bruce and his party on Coats Land the ship will continue eastward, conducting oceanographical work along the edge of Antarctica. On this work Dr. Bruce lays particular stress. It is also hoped to map in the "missing" coast line between Coats Land and Kaiser Wilhelm Land. After refitting at Melbourne, the ship will proceed southward to pick up Dr. Bruce at some point on Victoria Land, and then make for New Zealand. Thence *viâ* Cape Horn a course will be made for Coats Land to embark the remainder of the party left there, who will have been conducting meteorological work during two winters and one summer. From Coats Land the expedition will return home. The exploratory work will be conducted entirely in the Weddell and Biscoe quadrants, for Dr. Bruce recognises that the Ross sea and adjacent lands are the special province of Captain R. F. Scott and Sir Ernest Shackleton. The total cost of the expedition will be about 50,000*l.*

In the afternoon Captain J. K. Davis, of Sir Ernest Shackleton's recent expedition, read a paper on the voyage of the *Nimrod* from Sydney to Monte Video. Attempts were made to locate certain doubtful islands, viz., Royal Company Islands, Emerald Island, the Nimrod group, and Dougherty Island. None of these islands were found, and deep soundings were obtained on or near their supposed positions. They may therefore be removed from the chart. A visit to Macquarie Island resulted in some interesting collections. The two-hourly meteorological observations taken during this voyage, which extended through May and June, should prove of great importance.

Friday morning was devoted to a joint meeting with Section C. Three of the papers dealt with local geo-