somewhat different lines on which they had worked in their range-finder (of which 400 are now in use in our Navy), differed on this point from him and preferred the method of single coincidence. Mr. Barr's paper, illustrated by lantern slides, was of too highly a technical nature to be dealt with in detail in the space at our disposal, suffice it to say it bids fair to revolutionise the method of carving or engraving the matrices used in type casting. The new process dispenses with wax and electro-plating processes, and secures a pattern cut out of solid brass in a much shorter time than was possible in any of the older methods. The author described the great difficulties he had met with in this work, both in the design of a strong, rigid and easily worked pantograph and in the attempt to carve out rapidly the large amount of superfluous material in the brass plate which had to be removed in order that the design should be left clearly in relief on a smooth plane; all these had now been overcome. Special machinery had been designed capable of extraordinary accuracy for cutting rapidly the punches needed, and for grinding the cutters.

The last paper we need refer to was one by Mr. C. R. Garrard on some recent developments in chain driving, which elicited a very interesting discussion, one of the best during the meeting. He gave figures as to the extraordinary pressure per square inch used in chain bearings as compared with those adopted in ordinary engineering work; in an ordinary bicycle chain as high a figure as 11,765 pounds per square inch may be occasionally reached; an account was given of the most recent methods of making these chains and of the quality of steel used, and, lastly, of the use of chains for high-speed driving purposes.

Apparently for the reason given before, local engineers took but little interest or share in the proceedings of the Section, and on the whole it was a disappointing meeting, both from the point of view of attendance and discussion on the papers and also in the quality and general value of the papers dealt with. Section G still calls in vain for papers from the numerous engineering laboratories throughout the kingdom; there are scores of young engineers, engaged in scientific research work, and until they can be got hold of, and the class of papers radically altered, Section G will fail to appeal to the great body of engineers in the country.

T. H. B.

ANTHROPOLOGY AT THE BRITISH ASSOCIATION.

THE Anthropological Section of the British Association met in the new Anatomy Department of the Glasgow University, which was formally opened by Lord Lister on the first afternoon of the meeting. The address of the president of the Section, Prof. D. J. Cunningham, F.R.S., dealt with the human brain, and the part which it has played in the evolution of man, and is to be found in full in NATURE of September 26, p. 539. The rest of the programme was planned as follows: Thursday morning and Monday afternoon were devoted to physical anthropology, which was represented by an unusual number of highly specialist papers; Tuesday to ethnography, chiefly American and Malayan; Friday and Monday morning to archæology; and Wednesday to anthropometry and folklore. The principal papers are classified below in order of their subject-matter.

Anthropography.

Prof. J. Cleland, F.R.S., gave a demonstration of the cartilage of the external ear in the monotremata in relation to the human ear, illustrated from *Echidna* and *Ornithorhynchus*.

Dr. J. F. Gemmill illustrated, by a series of fine microscope-projections, the origin of the cartilage of the *stapes* and its continuity with the hyoid arch, showing that the *stapes* is developed independently of the periotic capsule, and belongs to the hyoid bar.

Prof. A. Macalister, F.R.S., contributed notes on the morphology of transverse vertebral processes, with the object of determining embryologically the morphological relations of the several parts of the neural arch. A further note on the third occipital condyle showed that two distinct structures are comprised under this name—a mesial ossification in the sheath of the notochord, and a lateral and usually paired process caused by the deficiency of the mesial part of the hypochordal element of the hindmost occipital vertebra, with thickening of the lateral portion of the arch.

Principal Mackay read a paper on suprasternal bones in the human subject, which gave rise to an animated discussion of the embryological evidence.

Prof. J. Symington combated Hochstetter's view that the "temporary fissures" of the human cerebral hemispheres are merely the product of incipient maceration and putrefaction in laboratory specimens. He admitted, however, that the arcuate fissure is of no morphological significance, and that it has nothing to do with the hippocampal fissure, which latter can be traced in the fœtal brain in the position which it occupies throughout life in the monotremata and marsupialia. The rudimentary grey and white matter on the back of the adult human *corpus callosum* is probably the remains of a hippocampal formation.

Mr. J. F. Tocher and Mr. J. Gray discussed the frequency and pigmentation value of the surnames of Scottish school-children in East Aberdeenshire. There is a presumption that the present possessors of surnames inherit some of the physical characteristics of their ancestors of the thirteenth and fourteenth centuries, when hereditary surnames first became common in Scotland, and this is confirmed by the fact that among 751 surnames noted, 63 Highland names covered 13 to 14 per cent. of the population; the same proportion of Highland blood as had been previously ascertained by measurements. There is wide variability in the pigmentation value of different surnames; Frasers, for example (from blonde Inverness-shire), tending to be blonde; and Robertsons and Gordons (from Perthshire and West Aberdeenshire) to be dark. A committee of the Association was appointed to assist Messrs. Gray and Tocher in organising a similar pigmentation-survey for the school-children of the rest of Scotland.

Miss Nina Layard exhibited a skull found in peat in the bed of the river Orwell, now in the museum of the College of Surgeons. It proved to be of the same pre-Roman British type which is common in the Fen district.

Mr. W. M. Douglas, superintendent of police, described the working of the Bertillon method of personal identification, as practised in Glasgow. In discussion, Dr. Garson laid stress on the value of the form of nose and ear in identification, as against the colour of hair and eye; pronouncing photographs useless, but finger prints most important.

Ethnography.

The Report of the Ethnographic Survey of Canada summarised the work of the year, and introduced a copious memorandum by Mr. C. Hill Tout on the natives of British Columbia. The committee was reappointed with a grant of 15*l*. Mr. J. O. Brant Sero, a Canadian Mohawk, gave an account of the traditional history of the Caniengahakas and their culture-hero Dekanawideh, with notes on their social and political organisation. This striking communication is printed in full in *Man* for November.

Mr. Hesketh Prichard described in detail the manners and customs of the Tehuelche Indians of Patagonia, and Mr. Seymour Hawtrey those of the Lengua Indians of the Gran Chaco.

The Report of the Skeat Expedition to the Malay Peninsula contained an elaborate account of Malay industries, and was illustrated by photographs and reproductions of native implements and fabrics. Mr. Skeat contributed a detailed study of the Sakais and Samangs, wild tribes in the interior of the Peninsula who retain many marks of a primitive stage of culture.

Messrs. Annandale and Robinson, who are still in the field, sent a full account of the half-Siamese half-Malay community of Sai-Kau in the northerly border-state of Nawnchik, in which the two peoples live side by side and have given rise to a mixed type of culture. Physical measurements show the survival in both of a marked Negrito element.

Mr. R. Shelford propounded a provisional classification of the swords of the tribes of Sarawak.

Dr. W. H. R. Rivers discussed the functions of the maternal-uncle, son-in-law and brother-in-law in Torres Straits, with the view of illustrating the underlying principles and the practical working of certain phases of primitive society.

Mr. C. S. Myers analysed the emotional life of the inhabitants of Murray Island, which he studied in the course of the Cambridge expedition to Torres Strait. The excitability of the native is due rather to the varying sanctions of society than to distinctive mental constitution.

Mr. W. Crooke described the organisation of the projected Ethnographic Survey of India and offered criticisms in detail, regretting, in particular, that it had not been found possible to

provide for systematic photography of native types, occupations and ceremonies.

Mr. R. A. S. Macalister gave an account of the customs, ceremonies and beliefs of the Fellahin of Western Palestine.

Mr. D. MacRitchie, under the title "Hints of Evolution in Tradition," discussed the value of the widespread stories of giants, dwarfs, fairies and hairy folk as evidence of the survival of primitive types of mankind in remote localities until comparatively recent times.

Mr. J. S. Stuart Glennie criticised Dr. Frazer's views of the relations between magic, religion and science, as expressed in the second edition of the "Golden Bough." The new stage which Dr. Frazer named "science" would give a higher and more verifiable form to the common ideal and social observances which constituted religion.

Archaeology.

Dr. W. Allen Sturge opened a discussion on the chronology of the Stone Age of man, with especial reference to his co-existence with an Ice Age, laying stress on the evidence of patination as a test of relative age, and exhibiting a series of implements which appeared to show traces of reworking after a prolonged interval, and also scratches on a patinated surface, which he claimed to be due to ice-movement. In discussion, Sir John Evans pointed out that patination is not always a safe guide as to relative age; and Prof. Kendal and others held that scratches similar to those exhibited are produced by small local movements in the mass of a gravel-bed.

Mr. Coffey attacked the same question from another side by an exhibit of naturally chipped flints from the Larne gravels and North Irish beaches, which so closely resembled the chipping of the alleged "Eolithic" implements as to prevent any certain conclusion being reached as to what really is artificial chipping.

Miss Layard exhibited a flint palæolith with alleged "thong-marks," which seemed, however, to be patches of the rough skin of the nodule; and also a series of implements of stone and horn from the neighbourhood of Ipswich.

Mr. F. D. Longe exhibited a piece of yew from the forest bed near Kessingland, showing cuts made by a straight-edged instrument. Doubts were, however, expressed as to the antiquity of the cuts.

The Report on the age of stone circles gave full particulars of excavations conducted by the committee at Arbor Low. The occurrence of a Bronze Age interment-barrow *on* the rampart of the circle gave a downward limit of date for the latter, and the discovery of flint flakes and other objects *in situ* went far to determine an upward limit. Further investigation, however, is required, and the committee was reappointed with a grant of 30*l*.

An important paper on excavations on Neolithic sites in the Isle of Arran was contributed by Drs. Duncan and Bryce. The results show that the mere presence of stone implements affords no test of the archæological horizon, but that the pottery found in the "Megalithic cists serially arranged" distinguishes these as earlier than the short cists in cairns or circles, and as truly Neolithic. No traces of cremation were found; but only a few of the human remains were in a condition for examination. The cephalic indices of four individuals were 66·6, 70, 75, 75·5, and the anatomical characters were identical with those of the English "long-barrow" folk. The paper will be published in full in *Proc.* Soc. Antiq. Scot., and the anthropographic material in *Journ.* Anthr. Inst.

Dr. Munro gave an account of a "kitchen midden" excavated near Elie, in Fife, which was proved to occupy the site of a wooden house belonging to pastoral or hunting people, and to belong to the eighth century, A.D. (cf. *Proc.* Soc. Antiq. Scot. xxxiv.)

Mr. J. H. Cunningham described the excavation by the Scottish Society of Antiquaries of the Roman station at Ardoch in Perthshire; the results are published fully in *Proc.* Soc. Antiq. Scot., xxxii. Mr. Thomas Ross described the recent excavation of the Roman camp at Inchtuthill.

The Report of the Silchester Excavation Committee recorded the clearance of four fresh *insulae* (xxiii–xxvi) and the discovery of some interesting pavements, and of a large hoard of smith's tools. The Committee was reappointed with a grant of 5*l*. and a similar committee was granted to cooperate with the Cardiff Naturalists' Club in excavation at Gelligaer.

Mr. R. A. S. Macalister discussed the external evidence bearing on the age of Ogham writing in Ireland, pointing out that certain Ogham inscriptions occur in association with tumuli, circles, and alignments, on stones with non-Christian symbolism, or in other circumstances which suggest a pre-Christian origin for the Ogham script.

Mr. James Paton gave a demonstration of Scottish antiquities in the Art Gallery of the Glasgow Exhibition; an innovation which was fully justified by the result, and might be repeated elsewhere with advantage.

Mr. C. S. Myers described the bones of Hen Nekht, an Egyptian king of the third dynasty, who was of giant stature (1870 mm.), and identified him with the gigantic king recorded diversely by Manetho as penultimate king of the second dynasty, and by Eratosthenes as first king of the third.

The Report of the Cretan Exploration Committee summarised the results of excavation on Mycenæan sites at Knossos, Zakro and Præsos in the seasons 1900 and 1901. At Knossos the remains of a splendid palace have yielded a large number of fragmentary fresco paintings, many works of art in bronze, stone and pottery, and a great wealth of clay tablets inscribed in Ægean hieroglyphic and linear characters. The excavations at Knossos demand another season's work, and the Committee was reappointed, with a further grant of 100*l*.

Mr. A. J. Evans, F.R.S., supplemented the Report with a description of the Neolithic settlement which underlies the Mycenæan palace at Knossos, drawing particular attention to the stone mace heads and small human figures in clay and marble, which seemed to him to present Anatolian analogies, and to indicate intercommunication between the Ægean and Babylonia. The Neolithic culture of the Ægean presents points of strong contrast with that of the Bronze Age; and the absence as yet of spiraliform ornament confirms the opinion that this motive was introduced into the Ægean at a later date, and probably from Egypt.

Mr. Bosanquet gave a detailed account of the excavations on the site of Præsos, the ancient capital of eastern Crete. Two large sanctuaries were discovered, together with an "andreion" or public dining-hall, of Hellenistic date, and a remarkable inscription written in Greek characters of the fifth century, but composed in the Eteocretan language.

Mr. Hogarth contributed a description of a Mycenæan site excavated by him at Zakro on the east coast of Crete, with houses, tombs, much pottery of new types, and a deposit of clay impressions from Mycenæan seal-stones.

Mr. R. A. S. Macalister described the result of several seasons' excavation on small sites in western Palestine, which throw important light on the civilisation of the early Israelites and of Philistia.

Interim reports were received from the committees on anthropological photographs and on the present state of anthropological teaching. A new committee was appointed, with Prof. Macalister, F.R.S., as chairman, Mr. C. S. Myers as secretary, and a grant of 15*l*. to conduct anthropometric observations among the native troops of the Egyptian army.

BOTANY AT THE BRITISH ASSOCIATION.

AFTER the delivery of the presidential address by Prof. Bayley Balfour, F.R.S., Dr. Lotsy (Hilbersum, near Arnhem, Holland) explained to the Section the aims and proposals of the International Association of Botanists, which was founded at Geneva in August. The Association has purchased the *Botanisches Centralblatt*, which it proposes to conduct as a first-class review of current botanical literature. Dr. Lotsy pointed out that an increased number of subscribers and shareholders is desired in order to ensure success. On Saturday the members of the Section were invited by the President to the Edinburgh Royal Botanic Garden, where they inspected the museum and garden and were afterwards entertained at lunch by Prof. and Mrs. Bayley Balfour. The excellence of the museum preparations was a striking feature, particularly the specimens and dissections preserved in spirit and labelled for teaching purposes. A very useful paper was read before the Section by Mr. Tagg, in which he gave an account of the methods employed by him with conspicuous success in the Edinburgh Museum in preserving and preparing plants for museum purposes.

On Friday afternoon Prof. Reynolds Green, F.R.S., delivered a lecture on flesh-eating plants. Monday morning was devoted to a joint discussion (Botanical and Educational