MEETING IN DUNDEE OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

PROGRAMME OF TO-DAY'S PROCEEDINGS.

SECTION A—MATHEMATICAL AND PHYSICAL SCIENCE.
(In the High School.)

G. J. Symons—Report of the Rainfall Committee.
Alexander Brown—Observations of the Rainfall at Arbroath.
John Thrusten—On Evaporation from Rain Gauges.
Colonel Sykes—On Storm Warnings, their importance and practicability.
E. J. Lowe—On Ozone Tests.
C. Meldrum—On the Meteorology of the Mauritius.
C. Meldrum—On the Hurricanes of the Indian Ocean.
George Forbes—On the Meteor Shower of August 1867.
Sir D. Brewster—On the Colours of Films of Alcohol.
Sir D. Brewster—On the Radiant Spectrum.
Sir D. Brewster—Notice respecting Mr Macrae's Photographs upon Glass and Porcelain.
A. Claudet—Photographic Portraits obtained by Single Lenses of Rock Crystal and Topaz.

SECTION B—CHEMICAL SCIENCE.
(In the High School.)

A. Crum Brown—Remarks on the Calculus of Chemical Operations.
Maxwell Simpson—On the Formation of Succinic Acid from Ethylidine.
Maxwell Simpson and Gautier—On a compound formed by the direct union of Anhydrous Prussic Acid and Aldehyde.
A. R. Catton—On Loewig's Researches on the action of Sodium Amalgam on Oxalic Acid.
I. Lowthian Bell—On a method of recovering Sulphur and Oxide of Maganese, used at Dieuze, near Nancy, France.
J. H. Gladstone—On the refraction equivalent of Salts in Solution.
J. Spiller—On certain new processes of Photography.
W. Crookes—On a new Polarizing Photometer.

SECTION C—GEOLOGY.
(Panmure Street Chapel.)

W. Pengelly—Third Report of the Committee for the Exploration of Kent's Cavern, Devonshire.
Professor Ansted—On the Conversion of Stratified Rock into Granite in the north of Corsica.
Dr Julius Schvarez—On the Internal Heat of the Earth.
Dr C. Le Neve Foster—On the Preseberg Iron Mines, Sweden.
F. Gordon Davis—On the Calamine Deposits of Sardinia.
George Maw—On the Sequence of the Deposits in Norfolk and Suffolk, superior to the Red Crag.
Dr C. Collingwood—On the Geology of the North of Formosa.
Dr C. Collingwood—Notes on the Geology of the Islands around the north part of Formosa.
W. Carruthers—Enumeration of British Graptolites.
E. Hull—On the Structure of the Pendle Range, Lancashire, as illustrating the South-Easterly Attenuation of the Carboniferous Sedimentary Rocks of the North of England.
E. Hull—Observations on the relative Geological Ages of the principal Physical Features of the Carboniferous District of Lancashire.
W. Carruthers—On British Fossil Cycadeæ.
——On Calamitæ and Fossil Equisetaceæ.
Professor Charles Martins—On the Ancient Glacier of the Valley of Argelez, in the Pyrenees.
P. W. Stuart Menteath—On Tertiary and Post-tertiary Action in the Pyrenees.
C. W. Peach—On new Fossil Fishes from Caithness and Sutherland.
E. Ray Lankester—On some new Cephalaspidean Fishes.
Dr C. Collingwood—On some sources of Coal in the Eastern Hemisphere.
——Notes on the Geological Features of the Sarawak River.
J. F. Walker—On a new Phosphatic Deposit.
Mr R. Slimon's collection of Crustacea will be exhibited, and Mr Woodward will call attention to some of the new forms.

SECTION D—BIOLOGY.
Department of Zoology and Botany.
(High School—West Side.)
George Busk, F.R.S., V.P., will preside.

W. Carruthers—On British Fossil Cycadeæ.
A. R. Wallace—On birds' nests and their plumage, or the relation between sexual differences of colour and the mode of nidification in birds.
Dr Collingwood—Observations on the habits of flying fish.
Dr Collingwood—On Trichodesmium, or sea dust.
Professor Allman—Notes on the structure of certain Hydroid Medusæ.
E. Ray Lankester—On the anatomy of *Patella*.
Dr M'Intosh—Report on the Marine Fauna of St Andrews.
Dr M'Intosh—The Annelidæ of St Andrews.
W. Stephen Mitchell—Report on the leaf beds of the Lower Bagshot Beds of Hants and Dorset.
W. Brown—On the claims of Arboriculture as a Science.

Department of Anatomy and Physiology.
(High School—East Side.)
Professor Sharpey, Sec. R. S., President.

Dr B. W. Richardson—Report on Methyl Compounds.
E. Ray Lankester—Observations with the Spectroscope on Animal Colouring Matters.
Professor Allen Thomson—To exhibit Microscopical Preparations of the Cochlea, of the Retina, and of Teeth of Fossil Fishes.
Dr Polli—On the Antiseptic Properties of the Sulphides.
Professor Cleland—On the Epithelium of the Cornea of the Ox in relation to the growth of Stratified Epithelium.
Professor Cleland—On some points connected with the Joints and Ligaments of the Hand.
Professor Cleland—To exhibit Microscopical Preparations of the Nerves of the Cornea.

SECTION E—GEOGRAPHY AND ETHNOLOGY.
(In the Albert Institute.)

Sir John Lubbock, Bart, F.R.S.—On the Origin of Civilization and the Early Condition of Man.
Messrs Wallace and Mayne.—A Peruvian Expedition to the River Ucayali.
Dr Collingwood—A Boat Journey round the northern end of Formosa.
Dr John Davy—On the character of the Negro, chiefly in relation to industrial habits.
T. Baines—On Wallfish Bay and the Ports of South Africa.
J. Crawford, F.R.S.—On the dissemination of the Arabian race and language.
H. H. Howarth, F.E.S.—On the Origins of the Norsemen.
H. C. Criswick—Life amongst the Veys.
Cyril Graham, F.R.G.S.—On Exploration in Palestine to the East of Jordan, and on future intended operations.

SECTION F—ECONOMIC SCIENCE AND STATISTICS.
(In Euclid Street Chapel.)

Alex. J. Warden—On the Linen Manufacture of Dundee.
James G. Orchar—On the Engineering Trade of Dundee.
Henry Gourlay—On the Iron Shipbuilding of Dundee.
James Yeaman—On the Seal and Whale Fisheries of Dundee.
Frank Henderson—On the Leather Manufacture of Dundee.
C. C. Maxwell—On the Confectionery and Marmalade Trade of Dundee.
A. Robertson—Statistics of the Social Condition of Dundee
E. Renals—On Arbitration in the Nottingham Hosiery Manufacture.
Patrick Matthew—Employer and Employed—Capital and Labour.
Dr Lauder Lindsay—On the obstacles to the utilization of New Zealand Flax.
A. Stephen Wilson—On the Measure and Value of Oats.

SECTION G—MECHANICAL SCIENCE.
(In the Watt Hall, Constitution Road.)

Report of Committee on the Patent Laws.
G. B. Galloway—On the application of the Funds derived from Patent Fees.
Wm. Fairbairn, C.E., LL.D., &c.—Report on Experimental Researches on the Mechanical Properties of Steel in its present improved state of manufacture.
General Haupt, U.S., America—On the application of Machinery to Boring and Tunnelling.
Dr C. Le Neve Foster—An Account of Bergsbroem's Boring Machine used at the Preseberg Mines, Sweden.
Joseph Mitchell, C.E., F.R.S.E.—On a new mode of constructing the surface of Streets and Thoroughfares.
James K. Caird—On an Iron Camb for Power Looms.
Ferdinand Kohn—On Iron and Steel at the Paris Exhibition.
Admiral Sir E. Belcher, K.C.B.—On the methods for testing the Speed of Vessels over the measured mile.
Latimer Clark, C.E.—On the Birmingham Wire Gauge.

CROWDED STATE OF THE TOWN.

On Saturday, the streets of the town had quite a metropolitan appearance. The principal streets were quite crowded, and in Princes Street especially it was a work of difficulty to force ones way either up or down. All the trains on the local railways were late, and the station officials say that they have seldom seen so many strangers come to the town in one day.

THE EXCURSIONS.

So far as we have heard, the general opinion is that the Excursions have been better managed in Dundee than in any other place before. The tickets were issued by preference to the strangers, without that pushing and struggling which were so disagreeable at Nottingham and other places during the past few years; and those who have enjoyed the excursions say they never remember spending more comfortable and interesting excursion days in connection with the British Association.

The gilt and enamelled caskets containing the burgess tickets to the Duke of Buccleuch, Sir Roderick Murchison, Sir Charles Lyell, and Sir William Armstrong, were provided by Mr Valentine, Dundee.

The addresses of Mr and Mrs Reid, Northumberland Street, Edinburgh; Mr and Mrs Japp, Alyth; Andrew Beath, M.D., Stirling (visitors), are Mr Christie's, 77 Murraygate.

Edmund Potter, Esq., M.P. for Carlisle, who has been the guest of Andrew Brown, Esq., Dundee, during the meeting of the Association, left for England on Saturday on urgent private business. We understand that the respected M.P. intends to return before the conclusion of the meeting if possible.

One evidence of interest in the proceeding of the British Association, which has not been shown in any previous year, is that the *New York Tribune* has commissioned a special correspondent to Dundee to furnish a general report of the interesting features of the Dundee Session of Science.

A very good mot relating to the success of the British Association meeting in Dundee is attributed to a learned Professor at present residing in town. He declared that the people of Dundee have been most successful in all their arrangements to give the Association a most splendid reception; that there is nothing wanting to complete its success except fine weather; but that if the people of Dundee could have arranged for that, he has no doubt they would have had it too!

SECTIONAL MEETINGS.

SECTION E—GEOGRAPHY AND ETHNOLOGY
(In the Albert Institute.)

President—Sir Samuel Baker, F.R.G.S.
Vice-Presidents—Admiral Sir Andrew Belcher; John Crawfurd, F.R.S.; Colonel Sir Henry James, R.E., F.R.S.; Sir Roderick Murchison, Bart, F.R.S.; Admiral E. Ommanney, C.B.; General Sir A. S. Waugh, F.R.S.
Secretaries—H. W. Bates, Assistant-Secretary, R.G.S.; Cyril C. Graham, F.R.G.S.; Clements R. Markham, F.R.G.S.; S. J. Mackie, F.G.S.; R. Sturrock.

This Section (which was the only one that met) resumed its sittings on Saturday morning at eleven o'clock. The attendance was again large, notwithstanding that so many excursions had been arranged to take place during the day. Sir Samuel Baker, the President, occupied the chair.

THE ANTIQUITY OF MAN.

Mr JOHN CRAWFURD, F.R.S., President of the Ethnological Society, contributed the first paper (which was read by Mr Bates), "On the Antiquity of Man." The writer remarked, in opening, that the discovery of human remains contemporaneous with those of animals long extinct in caves, and in lake pile buildings, attested the great antiquity of man, and it was equally attested by the discovery of tools, weapons, and implements unquestionably the work of his hands in the "drift" or loose alluvial gravel. Independent of that direct evidence, many facts connected with his progress towards civilization afforded proofs of his antiquity, and it was that class of evidence that he proposed to make the subject of the paper. Before entering on the main question, he offered a few observations on the causes that seemed to him to account for the admitted paucity of man's own remains. Down to the present time not a single human bone had been found in the "drift," and but a small number in caves. But taking into account the almost helpless condition in which man had to contend in the ordinary savage state, the wonder was that he should have been able to maintain existence at all. The first men struggling to maintain existence would have neither had time nor inclination to attend to the bodies of the dead, and would have abandoned them to be devoured by beasts and birds of prey. A careful attention to the remains of the dead, originating in a good measure in the rise of religious sentiment, must have been of later time than man's first and earliest appearance. Even among savage tribes still existing, funeral rites were carelessly performed. Those causes, to some extent, accounted for the scarcity of the remains of man. Man when he first appeared on earth was without articulate speech, and, like the lower animals, must have expressed himself by what was little better than mere interjection. He had, therefore, to frame a language—a seemingly difficult achievement, yet one which every savage tribe had been able to achieve, and that not in one place only, but in several thousand separate and independent localities. It followed, then, that, as every tongue was regularly constructed and perfect for its own purposes, many ages must have passed before language could have reached its present maturity. Even the languages of a people so low in the scale of humanity as the Australians, incapable of reckoning beyond duality, were found to be not only skilfully, but even completely constructed. It must be evident, then, what ages must have transpired from the first attempts to give names to a few visible objects, to the completion even of such rude languages as those of the Australians, Feejeans, and Esquimaux, and how many more must have passed before the discovery of the art of writing. Like languages, the ordinary arts bore abundant proofs of man's antiquity. They were not the results of instinct; but, on the contrary, bore indications of man's brain and hands. The distaff and the loom were as much inventions as the steam engine and telegraph. They had been invented in many independent localities, and at so early a time that in no instance had there been any record of their discovery. The discovery of metals, without a knowledge of which man must have ever remained a feeble savage, attested man's antiquity. The difficult art of making malleable iron seemed to have been immemorially known and practised, even by the rudest people of the Old World, but it might be fairly conjectured that the first discovery must have been made by natives who had previously made considerable advances in civilization, and that from them the art came to be disseminated among ruder tribes. He was led to entertain that opinion because the same word of the Malay or Javanese language was given to iron and even to steel in all the languages of the Malayan archipelago, and in the language of the savages of Borneo. Were the languages of the negroes of Africa investigated—the rudest of which are known to practice the art of fabricating malleable iron—it would probably be found that it was acquired from the Mauritanians, Carthaginians, and Egyptians on the western, and from the Hindus on the eastern side of the Continent. Cultivated plants and domesticated animals also yielded proofs of the antiquity of man. The writer then took into consideration the many ages that must have elapsed before man had acquired such knowledge and maturity of mind as enabled him to make a reliable and enduring record of his own actions. The countries in which—through the auspicious character of the physical geography and the intellectual quality of the races inhabiting them—the earliest civilization sprang up, were Egypt, Syria, the valleys of the Tigris and Euphrates, India and China; and, in a minor degree, Persia, the region lying between India and China, Japan, and one or two islands of the Malayan Archipelago. In all these writing had been early discovered and a kalendar formed—arts indispensable to the rudest record of human events. But it was not necessary alone that the capacity of framing a record should exist; it was not less necessary that the monument containing it should be of durable materials, and be under conditions favourable to its preservation. In regions subject to violent alternations of heat and cold, drought and moisture, the most lasting materials were in time decomposed, while in tropical climates the same destruction was produced by a rank vegetation. Hume made true history begin with the first page of Thucydides; but man's story went far back beyond the time either of Thucydides or Herodotus. Egypt was, far beyond all other countries, that in which the chronicle of civilised man could be carried to the highest antiquity. After many dynasties of gods and demigods, the earliest date which, with any show of antiquity, could be ascribed to the history of Egypt began with the first dynasty of civil writers, and the learned made that correspond with the year before Christ 8986, which would make the first dawn of reliable history 10,833 years old, reckoning to our own time. The Pyramids of the first dynasty were built, according to the same authority, Lesueur, B.C. 3460; the Great Pyramid, B.C. 3280—respectively 5327 and 5127 years ago. At the earliest of these dates the Egyptians were already a civilised people, in possession of a high scale of numbers, of a kalendar, and of the art of writing; while at the latest of them they were certainly a numerous people, skilled in architecture, and equal to the construction of gigantic monuments. The history of the Jews could pretend to no such antiquity as that of the Egyptians, or even as that of the Chinese. There was a general assent among critics in fixing the building of the Temple to the year before Christ, 1015—a date which would make it 2446 years later than the construction of the oldest of the Pyramids. Reckoning backwards, the Exodus preceded the building of the Temple by 480 years, and the bondage in Egypt was given as having lasted 430 years. There were other races of man which, from their conspicuous position, must have made a very early advancement, although probably not equalling that of the Egyptians. The valleys of the Tigris and Euphrates, from their climate, fertility of soil, and facility of investigation, with the genius of their inhabitants, were formed by nature to be the seat of a very early civilisation, and we have abundant evidence of such a civilisation having sprung up, rivalling that of Egypt in extent, and greatly surpassing it in power. Its perishable monuments, however, do not furnish us with the same satisfactory evidence of antiquity as do the enduring monuments of Egypt. After a reference to the civilisation of Assyria and India, the paper concluded as follows:—I may conclude this paper with a recapitulation of the conclusions which may, I think, be legitimately deduced from the facts stated in it. Man, although the latest creation of the class of beings to which he is most nearly allied, is yet of vast antiquity, although that portion of his history which has transpired since he acquired the art of making a durable and authentic record of his own existence forms but a very small fraction of it. From the time in which he acquired the skill to frame this record, we have to trace him back over the many stages he had to pass through up to the discovery of his remains in caves, and of those of his handiwork in the most recent geological formation, "the drift." We must, indeed, go beyond this, and up to his first appearance, when he was without speech, ignorant of every art, and, like the lower animals, chiefly guided by instinct. This is to be inferred from the fact that, where material evidence of man's presence exists, whether in caves or "drifts," he is already found in possession of implements of stone, implying a considerable step in advance. But the localities in which the physical geography of the land and the genius of its people combined to effect such an early social advancement as was necessary to the attainment of the skill indispensable to the production of a reliable and enduring record of human events, however rude and imperfect, have been few in numbers, and confined to such as I have endeavoured briefly to enumerate. Over the greater part of the earth's surface, auspicious locality and genius of race were not so combined as to have enabled mankind to reach that point. The red man of America, the shepherds of Tartary, the black races of Africa, never even approached it. The most highly endowed and the most happily situated of the nations of Europe had reached it only in comparatively modern times, and might not, indeed, have reached it at all, had they not borrowed largely from their more precocious neighbours of Asia. The physical geography of the wide region of Tartary, independent of the quality of race, has ever made it impossible that man should have advanced beyond the condition of migrating shepherds, who have now and then united in formidable hosts, and proved the scourges of civilised man. The peculiar privations, both as to locality and race, which characterise some regions of the earth, have made all advance in the arts beyond what was indispensable to a bare preservation of existence impossible, and of this we have examples in the land of the Esquimaux and of the Australians. In a few localities even this amount of skill had not been attained. Thus, Spitzbergen, Nova Zembla, and even Iceland, when first seen by civilised man, were uninhabited; and when we see the Esquimaux living and multiplying and spreading in equally rigorous or even more rigorous climates, it is hard to believe but that they must once have had an aboriginal population, seeing that at least animal food is abundant in them. If they had, they must have perished for want of skill to maintain existence. New Zealand would seem to have had no native inhabitants until it came to be colonised by savages and cannibals from the tropical islands of the Pacific. It is difficult in this case, too, to believe that prolific nature should have left so large a country without aboriginal inhabitants; yet here it is more probable that the aborigines were either extirpated or absorbed by the more powerful invaders, than that they perished from want of skill in the arts.

Sir JOHN LUBBOCK agreed most entirely and cordially with Mr Crawfurd in the main conclusion to which he had come, but there were one or two minor points on which he had a rather different opinion. First, he thought Mr Crawfurd somewhat underrated the quantity of human remains which had been found under circumstances which implied their great antiquity. It was quite true, no doubt, that in the drift beds, from which so many specimens of human workmanship had been obtained, no undeniable traces of human bones had yet occurred; but it must be remembered that many traces of human skeletons had been found, and that it was only on account of the extreme difficulty in every case of feeling quite certain that they belong to those beds in which they had occurred that Archæologists and Ethnologists had not felt justified in putting them forward as indubitable traces of human remains. After a reference to some human remains found on the Continent, which had given rise to much discussion, Sir John proceeded to say that when they came to researches which had been carried on in caves, there were very many cases on record of caves in which human bones had been found under circumstances which implied that they belonged to the same antiquity as the weapons which were found associated with them. They found as many remains of bones in such localities as they could expect to find, and he would even venture to go further than that, and to say that they found more than they might naturally have expected to find in caves which had also been used as the dwelling-places of man. Of course, it was natural that, under any circumstances, men were not buried in caves during the time these were occupied as places of habitation; but any difficulty they might have on that head was removed when they found that the Esquimaux, who lived under such very similar conditions, and with animals identical with those that were living with our earliest predecessors in the west of Europe, paid very little attention to the remains of their dead, allowing them to lie about neglected in the neighbourhood of their dwellings, and also that there were many races of men who were actually in the habit of burying their dead in the houses which they occupied when alive, so that the tomb was not only figuratively, but was literally "the house of the dead." Among many races, such as the Esquimaux, when a man died, his body was laid in the house which he had occupied, and it was shut up, and there were traces of the same thing in other parts of the world. It was, therefore, partly to be accounted for in this way that so many traces of human bones had been got in caves which had evidently been inhabited. Upon that point he could not help thinking that Mr Crawfurd would find that he need not explain or apologise in any way for any supposed absence or rarity of human remains in those caves which had latterly been examined with so much care. (Hear, hear.) Then he thought Mr Crawfurd had been rather unjust to the Feejeans. When they considered the canoes these people built, the arms and implements they formed, and even the language to which Mr Crawfurd had alluded somewhat uncomplimentarily, he thought they would find that the Feejeans were much more advanced than he appeared to suppose. He would say the same thing of the Esquimaux. No doubt they were very dirty, but one could not wash himself with ice, and they must remember that they lived in a country where very often it was impossible to get enough water for drinking purposes, and therefore the people could not be expected to use much of it for washing themselves. (Laughter.) Indeed, when the circumstances were considered, the Esquimaux would be found to have made the most of their opportunities, and he even thought that, if Mr Crawfurd himself, with his well-known ingenuity and his great perseverance, were to go to live in the far north among that people, he would find it difficult to carry on a more civilised state of existence than that in which the Esquimaux were found to be. Sir John further remarked that he thought Mr Crawfurd had been unjust to the ancient Britons also; and next, alluding to his reference to the Egyptian hieroglyphics, he remarked that the labours of Dr Young in that department ought to have been noticed. (Hear, hear.) The principal point, however, on which he differed from the author of the paper was that he (Mr Crawfurd) was a total disbeliever in the unity of the human race, whereas he (Sir John) was a firm believer in that unity. (Hear, hear, and applause.) In conclusion, he remarked that it had been said that there had been certain papers which had not been read on the present occasion, because the British Association was afraid or unwilling to excite anything like hostility among the people of Dundee. Now, he thought that this paper to which they had just listened was a very good answer to any remark of that kind. (Hear, hear.) He was quite sure that very few people would suppose that the British Association would pay so bad a compliment to the inhabitants of this part of our island as to suppose that they would meet with a different reception here from that which they were accustomed to meet with elsewhere in discussing such questions, or that the natives of this part of the island would wish the Association in any way to conceal those opinions which they honestly held, and which they had never hesitated to express elsewhere. (Applause.) Far be it from them to shrink in any way from fair discussion. They were most anxious, one and all, to hear everything that there was to be said on the other side, and it was a very bad compliment, either to the people of Dundee or to the members of the British Association, to suppose that these interesting and important questions could be discussed in any other spirit than that in which they had been ventilated in other parts of Great Britain. (Applause.) He was very glad from that point of view, that his friend Mr Crawfurd had brought forward this excellent paper; and he had not the least fear that the discussion which would take place upon it would be conducted in the true spirit of scientific inquiry. (Loud applause.)

Mr CYRIL GRAHAM called attention to the fact that the chronology followed by Mr Crawfurd was that of only one person. There were several other eminent Egyptologists who followed a different system, and there was great reason to believe that the Pyramids, which the writer of the paper spoke of as having been built so very long ago, had been built within a much more modern period.

Dr HUNT said he thought, in the first place, that the section were much indebted to Sir John Lubbock for his concluding remarks with regard to an impression that had gone abroad about the British Association being afraid to hear papers of this nature. He so cordially agreed with Sir John's sentiments on the subject that he took this opportunity to say most distinctly that he did not think the authorities of the British Association should at all have that charge brought against them with regard to papers of a really scientific character, for they were admitted—if there was room for them they were generally read. On that point he could very well say that, as long as six years ago, he himself had an opportunity of reading a paper on that subject at the Divinity Hall at Oxford, on the occasion of the meeting of the British Association, and he could say that there had been no exception taken to any really scientific paper on account of the opinions that had been therein advanced. (Applause.) At the time mentioned, Mr Crawfurd was, he thought, one of those who did not agree in the opinions he then expressed on the subject, and he was very glad therefore to have that opportunity of saying that he had listened to that gentleman's paper with the greatest pleasure and satisfaction, and found very little in it indeed with which to disagree. In fact he was far more in accordance with it than Sir John Lubbock seemed to be. Mr Crawfurd had alluded to the connection of evidence of the antiquity of Man, and all now agreed that the results of every branch of the science of man came to the same result, therefore it was that his paper was valuable, and for that reason he thought Mr Crawfurd had done good service in calling attention to it. There were some little difficulties in the paper which he should like Mr Crawfurd to explain. First, there was that with regard to the innate incapacity of the Australians. Mr Crawfurd went on to speak of the people who were once without speech and had only instinct—and he called these Men. Well, it was rather a difficulty if they were once without speech, and with only instinct, why he called such beings men. Mr Crawfurd had said that the Australians had the innate incapacity to accept civilization, and thus argued from that absolute original distinction. Now, he did not understand, but would be very glad if Mr Crawfurd would tell them how he came to call these people "men without speech and only instinct," because he was a little at a loss himself to know how such creatures, having no speech and having only instinct—how such creatures could be called men. Next, with regard to the other subject—that of Egypt. Bunsen was the first advocate for the unity of man, and he said it was utterly impossible to explain it in fewer than twenty thousand years. That was the opinion of one who was a firm advocate for the unity of man, and he boldly proclaimed that it was impossible to get reason out of unreason. Now, Mr Crawfurd seemed to be able to do that—to get reason out of unreason—and yet declared that the Australians were incapable of improvement. Mr Crawfurd had perhaps gone out of the field—possibly some of the facts he had brought forward had not a very strict bearing on the antiquity of man—but he had much pleasure in saying—though he often differed from Mr Crawfurd—that he cordially agreed with him on this occasion.

Mr CRAWFURD was much obliged to those who had listened to his paper, and greatly obliged to the two gentlemen who had made remarks on it for the courtesy they had shown. He begged in the first place to reply to the question raised by Sir John Lubbock. Sir John was of opinion that his information on geology was not very complete; but he had to say that most of it was taken from Sir John Lubbock's own works. (Laughter.) As to the Feejeans, he looked upon them as a race very low indeed in the scale of civilisation. Some of the races in the South Sea Islands were a more civilised and ingenious race—he meant the fair-haired race—but not so the Feejeans. A commission sent out by our Government to the Feejee Islands reported expressly that 500 of the fair-haired race would, in a war against the Feejeans, be able to turn the scale of success against 20,000 of them. These people were wholly uncivilized. They killed and banished their aged fathers. In fact, he was glad he was not a Feejean himself, or he would no doubt have been banished long ago. (Laughter.) The fair haired race were a most ingenious people; they continued to live in a country in which no other human beings could subsist, for when the red American Indian endeavoured to live in their country it was found that he could not exist among them. As to the unity of the human race, of course he did not believe in that. His friend believed in the theory of special selection, and he hoped to be able to hear Sir John describe his theory of the human species, to explain how he discovered the missing link, how a monkey became a man, and how all the different races of men had undergone the change they had now done. He would like to see a single particle of evidence to show that a black man became white, or a white man became black, or how a black woman could be compared to the women he saw before him. (Laughter.) With respect to his countrymen, the people of Dundee, he had not the least fear of them misunderstanding him. He trusted them entirely—(applause)—and had come among them perhaps for the last time. He had stated frankly what were his opinions, and he had endeavoured to do so without giving offence to anybody, and he had not the slightest apprehension that the inhabitants of Dundee—he had been too long away from them, and he was sorry for it, but, of course, it was now too late to repent—would misinterpret his meaning. Mr Graham stated that he had not agreed with certain Egyptologists. Now, he found that Egyptologists had not agree among themselves, and he had taken the best authority he could, and he was satisfied that the chronology of Egypt was of great antiquity. He did not quite understand what his friend Dr Hunt had said about speech. He had made remarks upon the difference between speech and instinct——

Dr HUNT—You stated that there were men without speech, and with only instinct, and I asked how you could class these creatures as men?

Mr CRAWFURD replied that he had not stated any such thing, and Dr Hunt had only misconceived what he did say. He said that there was capacity for speech, but that they could not speak, because they had never learned. In the same way they could not use gunpowder or steam engines because they knew nothing about them. He thought he had said enough in reply, and had no doubt they would be anxious to hear the next paper. (Applause.)

After a few remarks from General Cotton and the Chairman, the discussion terminated.

THE COASTS OF VANCOUVER'S ISLAND AND BRITISH COLUMBIA.

A paper by Mr P. N. Compton was read by the Secretary on the coasts of Vancouver's Island and British Columbia. It described at some length the geographical conditions of these places, their industrial development, and the character of the natives. Looking at British Columbia (including Vancouver's Island) from an economic point of view, he firmly believed that there was every probability of it becoming a very flourishing and valuable colony. It would never become an agricultural country in a large sense, but the timber was of an immense value, and the facilities for communication by water were extremely valuable. Next in importance to the timber trade, there were extensive coal fields, which only required capital to yield a profit. Besides these important sources of wealth, there were the fisheries, by means of which, a salmon, weighing from 10 to 15 lbs., could be had for a shilling. He concluded by saying that, when, by a simple and inexpensive form of legislation, the taxes in these colonies were lowered from their present exorbitant rates, and when people, instead of rushing blindly to the gold regions of Carriboo (which were only remunerative to those with large capital), were content to take things quietly, and not to expect to make a fortune in a week, then the colonies would open up a large field for industry and capital which, if not taken advantage of by natives of Great Britain, would speedily be so by natives of the United States.

Captain VERNEY made a short statement of his experiences in the colonies, particularly confining himself to the character of the natives, of whose habits he gave some interesting particulars. The subject then dropped.

THE SETTLEMENT OF NEW SCOTLAND.

Mr J. J. PRATT, Consul for the South African Republic, submitted a Paper, which was read, on "The settlement of New Scotland, in the South African Republic, commonly known as the Transvaal." His reasons for bringing this part before them were that the land of the colony was eminently suitable for the purposes of sheep-farming and the growth of cereals common to temperate climates, and consequently afforded a field where the sons of gentlemen or farmers could well establish themselves in a useful and honourable position, with sure prospects of success. He showed the position of the country, that the climate was salubrious, healthy, and agreeable to Europeans, that there was a fibrous plant growing wild, which promised to become an article of large export, and valuable to home manufacturing districts; that there was great mineral wealth in copper, lead, iron, coal; and that there was the probability of the construction of a railway from D'Urban to Transvaal; and gave extracts from letters written by gentlemen of great experience on the subject, who, during seventeen days, had made personal and thorough inspection of the lands on behalf of a Sheep Farmers' Company, which had been privately formed in Glasgow a short time previously, and was still in successful operation. In one of these Mr Gunn wrote:—"I consider the whole tract inspected by us eminently adapted for sheep farming, or the growths of cereals common to temperate climates. The high lands farther west are more especially suited, from the fact that they contain throughout a short, close, and sweet veldt or description of grass, best adapted for sheep-grazing, and from their also containing so many fair lakes, some of which are quite salt, and consequently highly conducive to the health of all kinds of stock. In regard to water, the land is everywhere abundantly supplied—indeed, in my estimation, the only want I could see was the lack of timber, of which the tract is destitute. This, however, is compensated for by the presence of surface coal indications in several localities. From this source the wants of settlers, in the way of fuel, can be abundantly supplied. In conclusion, I would add that I have had experience in sheep-farming, on a large scale in Australia, for upwards of twenty years, and have also visited the sheep districts of New Zealand, River Plate, and the Cape Colony, and am convinced the lands we inspected are fully as well adapted for sheep as any I have seen in either of these countries." Mr Pratt also explained that the President, Government, and people of the republic were anxious to do all in their power to encourage suitable settlers from Great Britain, that Mr M'Corkuidale, the founder of the settlement, had got an amicable arrangement with these, and that a body of Scotch emigrants had arrived at Natal who would shortly occupy the territory recently purchased by Mr M'Corkuidale.

Mr CRAWFURD (who was now in the chair) explained that the colony did not belong to Britain, but was in the possession of the independent Boors, and then remarked that as to the formation of a railway spoken of in the paper, he did not see why they should lay out British capital on that. At home they did not themselves seem to manage these matters very well—for comfort they succeeded pretty well, but as to commercial profit it was far otherwise. (A laugh and applause.) He had no doubt they would give hearty thanks to Mr Pratt for his interesting paper. (Applause.)

SKIN, HAIR, AND EYES AS TESTS OF THE RACES OF MEN.

Mr JOHN CRAWFURD read a paper on "The skin, hair, and the eyes as tests of the races of men." At the outset he remarked that the skin, hair, and eyes, taken either separately or conjointly, formed but a very ambiguous test of the races of men, seeing that some of them are common to several races in all other respects widely different. The complexion or colour of the skin, so far as the integuments were concerned, was the most conspicuous distinction of race. It was white, of many shades in Europe, including the neighbouring portion of Western Asia. There was no evidence that a black or brown native race ever existed in Europe, or a native white race in any other part of the world. The eye, in a great measure, followed as to colour and complexion. With respect to position, the eye was more or less deep seated, or had more or less prominent properties, which did not appear to be characteristics of any particular races. In the European races, and those of Western and Central Asia, it was horizontal, while with the Chinese and races of Tartary it lay obliquely in its socket, the inner angle being depressed, while the outer was elevated. This character, however, belonged more or less to other races equally with the Chinese, so that it was not of much value in the discrimination of races. Some had fancied that colour in men depended on climate, or that a powerful sun made the complexion more or less black, while a weaker one left it to improve in fairness in proportion to its feebleness. This popular error arose out of the narrow experience of our ancestors. The author then went on to state that on the continent of Australia the native inhabitants are of the same unvarying black from Cape York in the 11th degree of latitude to Tasmania in about the 43d degree. They had here, then, an exclusively black complexion, while in other parts of the world, with corresponding climates, they had fair, brown, yellow, and black complexions. Such incontestable facts as these disposed at once of the hypothesis of climate being the cause of colour in the human complexion. If, then, the variety of colour were not the effect of climate, from what cause was it derived? This was one of the inscrutable mysteries which they could not solve any more than the varieties of colour in the lower animals. In conclusion, he remarked that Nature had made colour a distinction of species in the lower animals, and it had done the same, although not less definitely, in the races of men, and in both cases men were equally ignorant of the grounds on which it has done so.

Mr CRAWFURD then said he would be glad to hear any remarks on this paper, and first he would ask for the opinions of the founder of the Anthropological Society.

Dr HUNT was most happy to accept the invitation to make a few remarks on this interesting paper on one of the greatest difficulties in the whole range of the science of man. Mr Crawfurd had wound up his paper by saying that as yet science was unable to account for the distinction of colour. Well, they had been at that for the last half century; attempts had been made to correlate the different races or species of men with their particular physical differences. Still, up to the present there was very little advance or large generalisations which had been arrived at. Dr Pritchard had said that climate would account for it, and endeavoured to illustrate this, but before he concluded his labours had to give that up, and acknowledge that great generalisations offered too many exceptions. For instance, a skull was shown at last meeting of the British Association which was from Madagascar, but it was found to have a slight resemblance to that of an East African. There were not such differences between bare skulls that they could not be used as a basis of classification, and he held that of the colour of skin, eyes, and hair, the structure of the latter was the most important for this purpose. Mr Crawfurd held that there were exceptions, and he had pointed out these, and though he did not know that gentleman's present opinion with regard to the number of special creations of man which he required to explain the present difference in mankind, he knew that four years ago Mr Crawfurd believed forty to be necessary.

Mr CRAWFURD—I have sixty now.

Dr HUNT—He has got up to sixty since then. (A laugh.) I have not been in communication with Mr Crawfurd much of late, but the addition of twenty new species in four years is, on the whole, a satisfactory rate of progress. I think this subject is one of the most important in the whole range of Anthropology—I beg your pardon, the science of Man. (A laugh.) Dr Hunt then continued to explain that, of late years, attempts had been going on to make examinations in different counties and countries and prepare tables of the results, so that a general broad classification might be arrived at. The subject would be a matter of difficulty for many years. He had found as great difference amongst the colours of hair in Norway as there was in this country, and he hoped that by the investigations now going on they would be able to correlate the structure of most of the races of Europe. Mr Crawfurd had admitted, as all must, that Science was not yet in a state to show the cause of physical, mental, and moral differences in mankind, and he had said, too, that they could give no reason for such differences. In the latter he was perhaps going rather too far, as he (Dr Hunt) held that man's progress in the scale of civilization, accompanied with other things, would show a relation between dark shades and characters; but he held that none of the characters on which Mr Crawfurd dwelt could be relied on alone as a basis of classification. They only become valuable when combined with other characters.

Mr CRAWFURD said there seemed to be no very material difference between the President of the Ethnological Society and the President or Director of the Anthropological Society, and he was sure they would be all very glad that such was the case. With respect to colour, Dr Hunt assigned inferiority to dark skin. He (Mr Crawfurd) would deny that. (Applause.) Napoleon had dark hair and a dark skin too, and he did not conceive that a better specimen, so far as the mere humanity was concerned, had ever been produced. Of course, he meant the first Napoleon. (Laughter.) The third Napoleon was not a very genuine Italian or Corsican—there was something Teutonic about him, too, he was told. Now, with respect to the inferiority of the black people, although the Hindus were black they were incomparably superior and in a far more advanced state of civilisation than the brown-complexioned Malays. He would advise the Dr. to give up the black inferiority altogether—(laughter)—for he had nothing whatever to stand upon. (Continued laughter.) With respect to the races being distinguished by hair or complexion, differences were to be found in the same family in the prosperous town of Dundee, by the same father and the same mother. (Laughter.) Suppose a family of seven daughters. (Laughter.) There might be cases of the kind, and he hoped there were. (Laughter.) One had dark hair and a dark complexion, another was fair-haired, and a third was reddish, or, to be more genteel, auburn. (Loud laughter.) There was not the slightest superiority in the dark-haired and dark-complexioned daughter as compared with the lighter-haired and clear-skinned members of the family. (Laughter.) There were cases of every sort of hair and every sort of complexion being found in families by the same father and the same mother. How could they make out that? (Laughter.)

Dr HUNT said perhaps Mr Crawfurd would point out where a race was to be found of equal intellectual power to the fairer races with dark colour combined with straight hair?

Mr CRAWFURD replied that he knew of the dark colour being combined with wool—(laughter)—and he had known some very pretty people have curly hair. (Laughter.) Dr Hunt said he would not condemn every one. That was very well put on his part, for in Dundee they could find beauty and talent in every department of colour. (Loud laughter.)

Dr HUNT, in reference to Mr Crawfurd's remark in respect to wool, explained that he did not make use of the word wool, because wool was not hair. (Laughter.)

Mr CRAWFURD remarked that hair was not wool, and wool was not hair—(laughter)—but they were pretty nearly the same thing. (Laughter.) There could be no distinction drawn between wool and hair, except what was obvious to the eye. They could make the same use of the one as of the other, though he would be sorry to see wool upon a pretty young lady. (Laughter.)

Dr HUNT replied that a dark colour of hair and eyes, combined with curly hair, was always a mark of mental inferiority, and he challenged Mr Crawfurd or any one else to bring forward an exception to this generalization.

The discussion then terminated.

THE SUPPOSED ABORIGINES OF INDIA.

Mr CRAWFURD read a paper on "The supposed Aborigines of India, as distinguished from its Civilized Inhabitants." In many parts of India there existed, he said, rude and even savage tribes, differing widely in manners, customs, religion, and not unfrequently even in language, from the great body of the civilized inhabitants. People in that state of society were found only in hilly or mountainous districts, more or less inaccessible to conquest, and by their comparative sterility holding out little temptation to conquest and occupation. They were never seen in the fertile and well-watered alluvial valleys of the great rivers, which, on the contrary, were inhabited by civilized nations, however differing among themselves in manners and language. Linguists and craniologists had invented a theory to account for this state of things, which supposed the rude mountaineers to be the sole aborigines of India, while it imagined the civilized inhabitants to be intrusive strangers, who in a remote antiquity invaded India, conquered it, and settled in it under the imposed names of Aryans for Northern, and Turanians for Southern India. This view appeared to him utterly groundless, and he went into a lengthy description of the history of the people, their manners and mode of life, and quoted several accounts of the several tribes, in order to refute the view which he had mentioned. After an elaborate paper he concluded:—The mind may safely carry us back to a time in which the social state of India was similar to that of America, when the civilised tribes were few in number, and the wild or savage formed the majority. The Hindu is, beyond all question, a far more highly endowed race of man than the Red man of America; and civilisation would probably spring up earlier, at more points, and attain a higher maturity in India than it did in America. We may even point at the localities in which civilisation is most likely to have had its earliest seats. Separate and independent civilisations would probably spring up in the plains watered by the "Five Rivers," in the upper valleys of the Jumna and Ganges, in the central and in the lower valley of the Ganges, and in the valleys of the rivers of Southern India, such as that of the Nerbudda, the Godavery, the Kistna, the Cavery, and the Taptee. These nascent civilisations would be independent of each other, and for a long time be as unknown to each other as were the Mexican and Peruvian. All this most probably happened long before there was an Aryan invasion, or a religion of Bramah. The state of India at such a time would be a parallel to that of America on its discovery; the wild and savage tribes would be numerous, and the civilised few in number. Proportionate to its extent, it would have as many small tribes, speaking as many distinct languages as America itself. India has still a score of nations with written languages, but the number of its wild tribes have not yet been counted.

General COTTON remarked that each of the races referred to was deserving a separate study. Some of them were so like each other that the inexperienced would naturally suppose them to be one of the same tribe, but so great was the distinction that the one was in actual terror of the other.

CHANGES OF SURFACE AFFECTING ANCIENT ETHNOGRAPHY.

A paper on the above subject, by H. H. Howarth, F.E.S., should have been read, but as it was nearly three o'clock, the Secretary merely gave an outline of it. Mr Howarth endeavoured to show that the capacity of ancient Scandinavia for producing the swarms of barbarians deduced from it by popular historians had been grossly exaggerated—that the accounts of the classic geographers making this area an archipelago in their day were in the main sustained by modern geology, and that the area of land in Northern Europe and Southern Asia must be immensely curtailed in order to allow their ancient ethnography to be understood.

Mr CRAWFURD remarked that Mr Howarth deserved the thanks of the Section for contributing the paper. He was a very young but most promising member of the Association. On Monday a paper of his would be read on "The Origin of the Norsemen."

The Section then adjourned till eleven o'clock on Monday.

EXCURSIONS.

Saturday is now by common consent become a half-holiday; but on Saturday last Dundee presented the appearance of a town wholly given over to an entire holiday. There were four excursions for the members of the British Association, viz.:—To Rossie Priory and Fingask, to Glamis Castle, to St Andrews, and to Falkland Palace; and for all there were hosts of applicants. We give a notice of each excursion, with a sketch of the favoured spot:—

FINGASK CASTLE AND ROSSIE PRIORY.

This excursion was almost too much for the most determined pleasure-seeker—for it included a visit to two of the most charming residences in the country, and two of the most eminently comfortable *home* residences anywhere. There were 100 guests invited to both places—the one (Fingask) the seat of Sir Patrick Murray Threipland, and the other (Rossie Priory) of the Right Hon. Lord Kinnaird. A special train left the Perth Station at a quarter-past one, which stopped at Errol Station, where omnibuses were in readiness to convey the party to Fingask.

Mr Wm. Thoms had charge of the party, among whom were the following:—Mr William Ancell; Mr A. Gray; Mrs Duncan Morison of Naughton; Miss D. Morison, do.; Miss Pitt; Mr Darnton Lupton, jun., Leeds; Mr James Wyatt, F.G.S., Bedford; Mrs Jellicoe, Alexandra College, Dublin: Miss Blyth and her Friend; Mr W. Ladd, microscope maker, &c., London; Mrs Hamel, Nottingham; Mr S. Hamel, do.; Mr W. P. Hierz, Caius College, Cambridge; Mrs Hildesheim, Dundee; Mr D. Hildesheim, do.; Mr L. H. Mills; Mr Bazalgette, engineer, London, and Mrs Bazalgette; Mrs Griffith, Harrow; Rev. Wm. Caine; Mr Augustus Hunt, chemist, Newcastle; Mr James Ritchie, C.E.; Dr Thos. Miller, Perth; Mr A. A. Murray Ker, Dublin; Mrs Murray Ker, do.; Mrs Hawkey; Mr Isaac Latimer; Mr Joseph Garside; Mr Edward C. Mercer; Mr Henry Rance, Cambridge; Mrs Rance, do.; Miss Rance, do.; Mr C. Allusen, Newcastle—largest chemical works in the world; Professor Sylvester, Royal Military Academy, Ulvalmith; Mr J. H. Athertone, Nottingham; Mr E. C. C. Stanford, Glasgow; Miss L. Howorth; Miss F. Howorth; Mr H. H. Howorth; Miss K. Brierly; Mr Henry Lawrie; Mr James Story, London; Brigadier-General Lefroy; Mr E. Macrory; Mr W. K. Bridgeman; Mr H. J. Halton; Mrs H. J. Halton; Mr Kelburne King; Mrs K. King; Mr C. B. Rose; Mrs Rose; Professor Liveing, Cambridge; Mrs Liveing, do.; Mr Wm. Sissons; Mr J. P. Gassiot, London; Miss Gassiot, do.; Mr Charles B. Truman; Mr Fred. Dobson; Mr Richard Fitzhugh; Mr Henry Dawson; Mr James Leishman; Mr Henry Grimmond; Rev. Dr Ginsburgh; Mrs Palmer; Mr Michael Palmer; Miss Palmer; Mr J. R. Mortimer; Mr Richard Davidson; Mr Thomas D. Watson; Mr Alex. Parker; Mr Wilson Burgess; Mr John Sterriker; Mr F. H. Storer; Mr W. A. M. Storer; Mr R. H. Hobbs; Mr William Smith; Mr A. S. Hobson, F.C.S.; Mr William Thorp, jun.; Mr A. B. Were.

With the exception of one 'bus, which broke down (compelling its party to walk), the excursionists reached Fingask most comfortably, and met with a reception exceeding all that could have been anticipated. Sir Patrick and the two Misses Threipland—than whom there is no family more beloved in Perthshire—exerted themselves to the utmost to make their visitors feel at home. The rooms were thrown open to all, and the fine old castle was placed at the disposal of the excursionists for the time being, in order that they might familiarise themselves with the artistic and archæological treasures which it contains. The Castle is not only a place of extraordinary beauty, but one of great attractions for persons of historical and antiquarian taste. The family occupying it, now represented by Sir P. M. Threipland, Bart., befriended the House of Stuart through all their troubles, and aided them in all their efforts to recover the Throne. It is a wonder, after forfeiture and exile, to find them still in possession of all their lands, and still full of feelings of sympathy for both the old Chevalier, who spent a night in their house, and his more gallant son, for whom a scion of the house fell at Prestonpans. The singular collection of portraits of the latter Stuarts, of bijoux sent or given to them by the same persons, and of historical curiosities generally (all of which were exhibited to the excursionists), make their fine old castle perfectly unique. The baronetcy was conferred by James II., and restored by George IV., after being upwards of a hundred years in abeyance. The present holder of the honour, one of the most accomplished and esteemed country gentlemen in Perthshire, is the fifth of the series.

On Saturday, the entire suite of rooms was thrown open—and the visitors were thereby enabled to inspect at leisure the many objects of interest with which the Castle is filled. The Entrance Hall and Staircase, leading to the public suite, and hung with ancient armour, were an interesting foretaste of what awaited the party; but when the upper hall had been gained and the crimson drawing-room entered, the admiration of the company knew no bounds. When, further, they proceeded into the great drawing-room, with its famous views from both windows, the warmest enthusiasm was enkindled. The great drawing-room at Fingask is noted throughout the two counties for the exquisitely beautiful views to be obtained from its windows, and for the refined and yet simple taste which have presided over its decoration and arrangement. To the south, the broad champaign of the Carse extends between the spectator and the Fifan hills, edged by the blue waters of the Tay—while in the north-eastern corner is a large window of a single plate of glass, through which the visitor enjoys a view which, for picturesque and sylvan beauty, is not to be surpassed in the two counties, save and except by the world-renowned romance of Craighall itself. Turning from the views to the internal attractions of the room, it may be stated that a table in the centre, extending nearly the length of the room, was filled with a most valuable and unique collection of Jacobite relics, miniatures, medals, and other curiosities—Anglo-Saxon and Roman—portraits of the Stuarts and other historical personages on the walls.

Passing through the small drawing-room, in which, also, were many objects of interest, we come to the saloon, which is in itself a museum, containing Scottish armour, old musical instruments, old dresses, sconces, and other quaint objects of interest. Leaving the saloon, we enter the dining-room, the walls of which are hung with family portraits, and in which room refreshments were laid out. At the far end of the dining-room is the conservatory, through which there is access to a beautiful flower-garden, laid out in the old Dutch style, with its quaint clipped bushes and straight terraces, and which transports one generations back.

Passing through the library to an upper room, we there find the camp bed of Prince Charles Edward Stuart, a bust of Mary Queen of Scots, &c.; an old wardrobe containing dresses worn ages ago at the Court of the Stuarts in Holyrood; and many other objects of curiosity and interest.

After inspecting these and the other Jacobite relics, the party, by the invitation of Sir Patrick, adjourned to the bowling green, where they formed in a large circle, and, joining hands, engaged in the fine old Scottish song—

"Happy may we a' be—
Ill may we never see!"

which was led off by Miss Threipland. At the end of each verse, the company (who had each other by the hands) changed hands on a sudden—a move which was productive of great amusement—more especially as a stout lady and equally stout gentleman were unable to cross and clasp hands, and had to get a thin person to come between. After this ballad was sung, "Auld Langsyne" was commenced, led off by the Misses Threipland and chorussed by the company. Brigadier-General Lefroy then stepped forward, and on behalf of the company returned Sir Patrick thanks for the hearty Scottish welcome they had received. Sir Patrick replied, and expressed his own regrets, and those of his sisters, that the company could not stay and spend a whole day in inspecting the treasures of the Castle, and wandering about through its grounds. Three hearty cheers were then given for Sir Patrick, and one cheer more for the ladies, after which the party drove off for the Priory. The drive along the Braes of the Carse was most delightful—the weather being all that could be desired, and the talk the most of the way was of the charming reception they had met with at the Castle, and its natural beauties as a place of residence. About five o'clock (nearly two hours behind the stated time), the party arrived at

ROSSIE PRIORY.

The Priory is the family seat of Lord Kinnaird, and, with its extensive and beautiful grounds, contributed to render this excursion one of the most eagerly desired. The Priory lies about nine miles west from Dundee, on the south slope of the Carse hills, and has one of the most beautiful exposures for beauty and fertility which could be desired. The noble pile of the Priory, built by the father of the present Lord, from the designs of Mr Atkinson of London, is situated at the base of Rossie Hill, which, wooded to the top, protects it from all the northern and north-eastern blasts, and forms a picturesque background. The house is one of the finest specimens of domestic Gothic in this quarter—the grand suite being a singularly beautiful and imposing range of rooms. For several months past his lordship has been preparing the Priory and grounds for his guests at the meeting of the Association, and quite a troop of tradesmen have been employed about the place. Last year a large and very handsome picture gallery or saloon, with conservatory adjoining, was added to the Castle; and it is in this saloon that his lordship intends to give luncheon to the British Association party. A large and valuable collection of paintings affords the artistic visitor to the Priory great pleasure, though at present a number of the finest have been sent to grace the exhibition in the Volunteer Hall.

Visitors to the Priory, whether agricultural or not, never fail to be struck by the marks of advanced cultivation which are to be seen on his lordship's estates. In this there is a great improvement since his lordship has had the management of the estates. In 1826, when he succeeded, the village of Inchture was a collection of mud built houses, with thatched roofs, but now the village of Inchture has been entirely rebuilt, the cottages being built of stone from the same quarry as the church adjoining the village. Inchture has a very neat and clean appearance, and is evidently the object of Lord Kinnaird's watchful care and patronage. The Parish Church, which was built since 1826, and is a very neat specimen of what may be called Presbyterian Gothic—i.e., Gothic adapted to preaching purposes—is certain to attract the attention of the visitor. Its erection marked a new era in the history of modern Presbyterianism, for it marked the introduction of something like architectural pretension into modern Presbyterian buildings. The stone of which it is built is of a deep red colour, and will doubtless be of considerable interest to geologists, as it is full of white spot of various sizes, and is itself evidently a sort of clay. From the formation of the ground from the Carse hills down to the river, along the whole of which county this stone is found, it is apparent that this must have been at one time the bed of the river, or of the firth. A number of specimens of this stone are to be seen at the Priory, with ripple marks, sun cracks, and other interesting indentions upon them. Lord Kinnaird is presently working a quarry of this stone to the west of the church, where geological visitors can inspect the formation for themselves. Archæological visitors will perhaps be more interested by a large stone which was discovered in a wall in the church, in which there are two hollows about 2 inches in diameter, and which, though of very scanty depth, are without doubt the work of art. The stone was recently visited by Mr John Stuart, the Secretary of the Society of Antiquaries in Scotland, and was considered by him, as well as by other archæologists who have seen it, to be one of the Druidical stones used for sacrificial purposes. The hollows or cups are supposed to have been used as receptacles for the blood which flowed perhaps from human sacrifices. To the east of the church a new entrance lodge and gallery are being erected at the commencement of an avenue which has only recently been opened up to the house. This avenue is peculiarly well designed, and is very effective in opening up the beauties of the policies. A few hundred yards from the entrance there is a sheet of artificial water, full of very fine trout, and which in winter is utilised as a curling pond. To the right of the avenue is an old ruin, which will be interesting to archæologists, having been the ancient stronghold of the Moncur family in feudal times, into which the family of Kinnaird intermarried. The Castle is now nothing but a ruin—it having been burned down—but there is still sufficient to show, by its yawning fireplaces, ornamented lintels, and walls of tremendous thickness, it was possessed by a family of great power and possessions. Up to recent times, traces of the moat were to be seen around the Castle, but they have been almost obliterated in the course of the alterations on the Park. Proceeding up the avenue to the western gate of the policies, we come upon the pretty little village of Balledgarno, which is the residence of the labourers and outdoor servants upon the grounds. This village was built by the grandfather of the present Lord, who removed to it the inhabitants of the little village of Rossie, which in course of time had come to be in the centre of the Park. The houses are in one long route along the side of a rivulet which here emerges from the "den" or dell. A very fine piece of ground on a slope behind is set apart as garden ground for the cottagers, who seem to be very comfortably situated. The name "Balledgarno" is derived from "Bal," a village of "Edgar," King Edgar—i.e. the village of Edgar. The hill above is called Castle Hill; King Edgar had a castle here. There is also a tradition that it was at Castle Hill a number of the barons in this quarter subscribed the "Ragman's Roll" in the time of King Edward the first. Geologists will be interested to learn that the formation in the "den" shows a great convulsion of nature, the ordinary formation being violently upheaved and the trap having come up through. It is thus a specimen of what Geologists call a "trap dyke." From this part of the den the visitors will likely proceed to his lordship's home farm of Castle Hill, which is a model farm. The manner in which motive power is economised is very interesting. There is machinery for grinding beans for the cattle, machinery for crushing oats, machinery for cutting oil cake, machinery for cutting hay, machinery for cutting turnips, machinery for washing them, &c., &c., &c. All this is driven by water; and one man can do as much work with them as many could by the hand. One important feature in this steading is a Turkish Bath for cattle, heated by means of hot air pipes, the smoke of which is utilised by being passed in to the floor of a kiln above. The Turkish Bath has been often used, and found to be very successful in cases of pleura-pneumonia, scouring, inflammation, and every other species of inflammatory disease. It has also been used for horses, with equal success.

The feeding byres and stables are objects of considerable interest to scientific visitors, as in them Lord Kinnaird has wrought out his theories of cleanliness and ventilation for cattle, as well as human beings. The ventilation is by the roof, which is high, and permits a free circulation of the air, which enters by one of the planks of the roof being lifted a few inches, and by the current of air being directed upwards into the byre. The stalls are fitted up with enamelled white earthenware troughs, into each of which a water tap is led, so that pure water to an almost unlimited extent can be turned on. By this means the whole stock last year was kept upon cut hay and water, with a very small proportion of cake, the turnips having run short. The experience already had of the water supply is that it is invaluable. The byre is also heated by steam pipes, which serve a double purpose by preventing the ordinary water pipes from freezing up in the winter time. None of the cattle are tied up to the wall—there being a space between the head of the stall and the wall, down which the attendant can walk and give the animals their food with the greatest rapidity.

Leaving the steading and returning to the house, the visitor passes along the more private policies and through the gardens, which at this season of the year are very beautiful. Here also preparations are being made by the erection of grottoes, fountains, &c., and a new walk is about completed from the gardens to the house. On the line of this walk there are very fine specimens of the Douglasie and Taxodium. In the forcing houses the ventilation is well worthy the attention of men of science. The introduction of fresh air, and the abstraction of the contaminated or exhausted air, is as necessary for the health of plants as of human beings; and it is provided in these houses by the fresh air being introduced over the hot air pipes, so that it enters in a heated state; and the exhausted air is drawn off by the "syphon ventilator."

Another novel feature in the gardens is a glass coping to the fruit-tree walls. Some years ago Lord Kinnaird observed that the pear trees in front of some of the farm-houses bore better fruit than some of those in the garden, which were tended with every care. He called in the aid of an eminent arboriculturist to solve the problem, and after driving round the estate, they came to the conclusion that the greater fertility of the farm-house trees arose from the coping of the walls up which they were trained. It was accordingly determined to give a coping to the fruit-tree walls, to keep off the drip, and prevent the action of the water and frost on the bark in the winter. Lord Kinnaird resolved that, instead of a stone or wood coping, one of glass would be much better, as it would not only prevent the drop from falling on the tree, but allow light to reach the topmost boughs. The plan has succeeded admirably, and improved the fruit in the manner it was expected to do.

Returning to the Priory from the gardens by the new walk already referred to, if the visitor goes round by the back he will come upon the charming new conservatory adjoining the Picture Gallery, towards which it opens by sliding doors, and with which it forms a most elegant combination, skirting the immense pile, and coming round by the east end, we find that his lordship has had the old conservatory fitted up as a fernery, with running water, and a pool. The entrance is under an archway of rude stones, built in imitation of a grotto. In the interstices of the grotto are different kinds of fern and moss—the whole having an effect charming in the extreme. But it would be endless to enumerate the objects of interest and attraction about this truly princely mansion. In the grounds to the east is the restored chapel of Rossie, a relic of Catholic times, but which is now sacred as a mausoleum to the House of Kinnaird. There are, however, several fine ancient sculptured stones in the church-yard, and there is some very fine memorial sculpture in the chapel. Leaving the church, the visitor has a delightful walk up the burn side, which brings him into the shrubberies, where, thanks to Lord Kinnaird's philanthropy and kindness of heart, all who apply for liberty may wander at their own sweet will.

The party were received at the grand portico by Lord and Lady Kinnaird, the Earl of Enniskillen, Sir Philip Egerton, Sir Henry James, Captain Verney, &c., and Mr Rogers, of St Andrews, was stationed on the ground in front of the entrance in order to photograph the party. This he was able to do in two groups, after which they were detailed under guides and shown over the house and gardens.

At seven o'clock, they assembled in the grand suite, and were then ushered into "The Cloisters," or great corridor, which runs along the centre of the main building, and, judging by the eye, is about 130 feet in length. In the centre a table extended from end to end, which groaned under the load of viands provided for the party. The appearance of the table was in itself a most artistic sight, for his Lordship had gasaliers specially fitted up for the occasion, and the table was adorned with a display of gold and silver candelabra, which gave it a most *recherché* appearance. It was the general opinion that his Lordship must have got some artist to superintend its laying out, but it was stated that to Mr Willsher, the butler, the credit of this artistic display was due. What with the gorgeous appearance of the tables—with gilt gasaliers, golden candelabra, flower vases, ornamental trees placed bodily on the table in pots, and the thousand elegant monuments with which rank and riches decorate their tables—the effect was most magnificent; and the entertainment was fully equal to the promise of the tables. It was remarked, indeed, that though his Lordship had been entertaining a hundred peers, instead of a hundred members of the British Association, he could not have feasted them in a more princely manner; and with that sincere testimony to the sincerity and character of his welcome, we may well close our description.

After dinner, Mr Gassiot proposed the health of Lord and Lady Kinnaird, and thanked them for their kindness; but the personal nature of the toasts, in a private house, forbids us to give the speeches at length. Suffice it to say that to their honoured host and hostess the most sincere tributes of admiration were paid, and that Lord Kinnaird, in reply, while taking some little credit for the arrangements for the party out of doors, attributed entirely to Lady Kinnaird the success of the arrangements within. His Lordship sat at the centre of the table, the Hon. Arthur Kinnaird being seated at one end, and Major Ogilvy, his Lordship's son-in-law, at the other. Several toasts were afterwards proposed, and, after three enthusiastic cheers for Lord and Lady Kinnaird, the visitors again entered their vehicles and drove home to Dundee.

GLAMIS CASTLE.

One of the most delightful of the excursions on Saturday, in connection with the meeting of the British Association, was that to Glamis Castle, the seat of the Right Hon. the Earl of Strathmore and Kinghorn. The attractions of Glamis are many, and not the least among them is that Shakespeare immortalised it in Macbeth. All the tickets for the excursion were early taken up, and a distinguished party—numbering about 160—left East Dock Street Railway Station a little before two o'clock for the Castle, by way of Arbroath and Forfar. The weather was all that could possibly have been desired—bright, and warm, and clear. Everyone anticipated a day of real enjoyment, and we are glad to say that this anticipation was most fully realised. After a pleasant journey through smiling landscapes and harvest fields, the train drew up at Glamis Station about three o'clock, and shortly afterwards the party arrived at the Castle, and were very graciously received by the Earl and Countess of Strathmore, and a party assembled in front of the principal entrance. Here also was stationed the Earl's fine brass band, which, under the leadership of Mr Anderson, discoursed an excellent musical welcome to the strangers, and several well-known airs in the course of the afternoon. Among the visitors at the Castle were the following:—General Sir Andrew Waugh; Admiral E. Ommaney; Sir Charles Lyell and Lady Lyell; Sir Walter Elliot; Colonel Kinloch of Kilry; Col. Drummond Hay, Seggieden; Provost Hay, Dundee, and Miss Hay; E. T. Watson, Esq., Mayor of Norwich; Provost Mitchell, Montrose; Professor Newton, Cambridge; C. Collingwood, Esq.; Henry Dirks, Esq., London; Rev. H. B. Tristram, Grantham Vicarage; G. Newton, Esq., Mauritius; W. E. Scott, Esq., and Mrs Scott, London; Rev. W. Macintosh and Mrs Macintosh, Buchanan Manse; J. V. N. Bazalgette, Esq., and Mrs Bazalgette; D. Dalrymple, Esq., Norwich; W. Weldon, Esq., and Miss Weldon, London; James Oldham, Esq., Hull and Mrs Oldham; W. Sharp, Esq., Mirfield, York; J. Handcock Richardson, Esq., Newcastle; Dr Shaw, Boston; Dr Bower, R.N.; J. T. Anderson, Esq., Pau; Dr Parnell, Edinburgh; Dr Steele, Forfar; S. Wood, Esq., Croydon; G. J. Holyoak, Esq., *New York Tribune*; J. M. Gale, Esq., and Mrs Gale, Glasgow; Dr and Mrs Heaton, Leeds; W. S. Mitchell, F.G.S., Caius College, Cambridge; C. H. Cholmsley, Magdalen College Oxford; W. R. Birt, Esq., F.R.A.S., London; Patrick Don, Esq., London; John Don, Esq., Dundee; W. G. Don, Esq., Broughty Ferry; Dr Duncan and Mrs Duncan, Dundee; Dr Wemyss, Broughty Ferry; Mr and Miss Anderson, Lindores Abbey, Newburgh; Rev. J. G. Shaw, Forfar; Mr Whyte, Forfar; J. H. Bell, Esq., Dundee; T. W. Thoms, Esq., Dundee; Henry Thoms, Esq., Dundee; Robert Walker Esq., Newport; D. Alexander, Esq., Newport; J. H. Walker, Esq., Newport; Thomas Cargill, Esq., Dundee; Miss Brand and the Misses Brand, Dundee; Alexander Laing, Esq., Newburgh, &c., &c.

On arriving, the Earl of Strathmore shook hands with Provost Hay, who introduced the Mayor of Norwich to his Lordship, and also a number of other visitors. Shortly afterwards, the party began to disperse in numerous groups—wandering through the gardens, inspecting the Castle, and all delighted with the cordial welcome they had received. Those of the party who had not previously seen the ancient Castle of Glamis, examined the building with much interest, and those to whom it was familiar found much to admire in the various alterations and improvements that have been lately made both within and without the princely pile. The bard of Avon, describing Glamis Castle, says:—

"This Castle hath a pleasant seat; the air
Nimbly and sweetly recommends itself
Unto our gentle senses,"

and this aptly expresses the pleasant sense of refreshment experienced on Saturday by the visitors who strolled across the rich and extensive lawns, or wandered along under the shade of the lofty trees, or enjoyed the splendid prospect to be seen from the battlements of the Castle.

Glamis Castle, as most of our readers are aware, is one of the most magnificent in the country, and the family of the noble Earl is one of the most ancient in Scotland. Whether or not Macbeth was thane of Glamis, Shakspeare was indebted for the ground work of his tragedy to our countryman and historian, Hector Boece, and it is certain that Glamis was a thanedom at a very early period, and that the old chronicles say that Malcolm II. died at Glamis, while the tradition is that he was murdered in an upper chamber and thrown into the courtyard below. We know that Glamis was a Royal manor as early as 1263—and in 1371 we find that King Robert II. granted the thanedom of Glamis and Tannadice to Sir John Lyon, who married the King's second daughter, the Princess Jane, and from that time till the present the Castle has been in possession of his descendants. The son of Sir John Lyon was present at the battle of Harlaw, and his son Patrick—ennobled about 1445—was the first Lord Glamis. The second Lord Glamis was the first proprietor of Kinghorn of the name of Lyon, the Castle of which he obtained by charter in 1463. The third Lord Glamis founded a chapel at Glamis in 1487, and two of his sons fell in the fatal field of Flodden. The widow of the sixth Lord—a Douglas—was burned to death on the Castlehill of Edinburgh, in 1537, for witchcraft, and the Castle was forfeited to the Crown. This lady is described as having been very beautiful, defending herself with eloquence, and meeting her doom with the fortitude of innocence. Not long after her cruel execution, her innocence was fully established by the confession of the person who had informed against her; the estates were restored to her son, and a descendant of his became Earl of Strathmore in 1672.

The Castle, which has been in the family of the present Earl for nearly five hundred years, bears many traces of the alterations that at different times have been made upon it. It partakes of the Norman, and several later styles of architecture; and portions added in the fifteenth and sixteenth centuries partake of the French order, which came into vogue about the latter date. The building consists of a massive round turret standing at the intersection of two square towers at right angles, and this part is very remarkable from the large number of small turrets, and pinnacles that cluster round the building, giving it a very grand appearance. The buildings and other offices are very extensive, and the interior of the Castle is magnificently furnished. The drawing-room is particularly superb, being hung with numerous family and other valuable historical portraits, and this apartment and its contents greatly delighted all who visited it. The whole Castle was thrown freely open to the visitors, who thronged the halls and rooms and stair-cases inspecting the numerous and interesting relics of former times with which Glamis Castle abounds.

The kindliness and attention of the Earl and Countess charmed every one. The frank and hospitable manner in which they welcomed and attended to their guests was remarked by many, and every one felt completely at home, which is saying a great deal. The Earl frequently and freely conversed with members of the party, showing them many curious articles, and explaining and commenting upon them with the greatest affability; and indeed his Lordship appeared to enjoy the animated appearance the Castle presented fully as much as any one. Mr Ralston, factor to the Earl, was exceedingly attentive, by showing the party the grounds and garden. These are of great beauty and extent; and we may remark as to the latter that this occupies what little more than a twelvemonth ago was moorland, covered with the yellow broom and golden furze. Now it is a beautiful level, laid out with much taste. The wall, which is of brick, is on one side above thirty feet high, and is of a most substantial character, fitted to last like the Tower of Babel. It encloses within a square above four acres of ground, which is intended principally for kitchen garden, fruit trees, and

(For continuation see page 6.)

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