its different branches in Germany. After a man has passed his examinations he may often have to wait for years and years before he gets an appointment; but the love of the woods, the poetry which time has woven around the solitary *forsthaus* amidst the trees and animals of the woods is so great they do not mind waiting a long time. In conclusion, Baron Herman said he was in America to see what trees could be transplanted with success to Germany.

After a paper on the present condition of the forests of America, the following resolutions were adopted, among others:—

"That the American Forestry Association join with the New York Chamber of Commerce and Board of Trade in hearty advocacy of the establishment of a forestry commission of three members to make a thorough investigation of the public forest lands, and to make recommendations concerning their disposition and treatment, and the executive committee is hereby directed to represent the Association in support of such legislation."

"That the American Forestry Association recognising that a practical advance in rational forestry methods requires the services of men trained in forestry practice, endorse the legislation proposed in the last congress, and expresses the hope that the same will be enacted during the coming congress."

"That the knowledge and extent and conditions of our forest resources is a necessary basis for intelligent forest legislation, and that therefore the American Forestry Association recommends the co-operation of various government departments as far as practicable in ascertaining their areas and conditions, and especially recommends that both a topographical and forestal survey of the national forest reservations be instituted."

Sixteen papers were read before the American Mathematical Society, and two topics were discussed, viz. (1) a general subject catalogue or index of mathematical literature, and (2) the mathematical curricula of colleges and science schools. With reference to the former subject, it was resolved that the Council of the Society consider the desirability of offering their co-operation to the Mathematical Society of France in the work of classifying and indexing mathematical literature.

The American Chemical Society was presided over by Prof. E. F. Smith; and among the subjects of papers read before it were: an electrical process for the production of white lead; the heating effects of coal; speed of oxidation of chloric acid; reaction between copper and concentrated sulphuric acid; use of aluminium for condensers in the distillation of alcohol, ether, chloroform, benzine and similar liquids. Prof. Norton, who read the last-named paper, stated that the equipment of the chemical laboratory of the University of Cincinnati includes aluminium supports, rings, clamps, burners, water-baths, air-baths, hot water funnels, &c., in all of which connections the lightness, conductivity, and freedom from rust render the metal superior to iron or bronze.

The Botanical Society of America, which was organised in Brooklyn last year, held its first annual meeting on August 27 and 28. Mr. William Trelease presided. The officers elected for the ensuing year are: President, C. E. Bessey; vice-president, W. P. Wilson; secretary, Charles R. Bainer; treasurer, Arthur Hollick.

Prof. G. F. Swain opened the proceedings of the Society for the Promotion of Engineering Education with an address on the relation between mental training and practical work in engineering education. The papers read before the Society, and the discussions to which they gave rise, will do much to indicate what should be the scope of engineering and technical schools, and the places of different subjects in an engineering education. The units of force best adapted for use in the teaching of mathematics formed the subject of a discussion between the physicists and engineers. At the end of the meeting, Mr. Mansfield Merriman was elected President.

ON RECENTLY DISCOVERED REMAINS OF THE ABORIGINAL INHABITANTS OF JAMAICA.[1]

THE circumstances under which the human remains now exhibited to the meeting were discovered, are narrated in a communication by Mr. F. Cundall, Secretary to the Jamaica Institute, published in the *Journal* of the Institute for April 1895, and also in a letter by Mr J. E. Duerden, Curator of the Museum, in NATURE of June 20. From the former I extract the following description of the discovery:—"On the 10th April, a labourer, whilst cutting stakes on the Halberstadt Estate (a wild, rocky part of the Port Royal Mountains, about 2000 feet above the sea-level, and two miles from the shore) on the estate of Mr. B. S. Gossett, a quarter of a mile east of the Kalorama Mission Station, discovered on the hillside a human bone. This led the Rev. W. W. Rumsey to make a search on the following day, when he discovered a small aperture 25 inches wide, and less than 2 feet high, in the face of the limestone rock, and blocked by boulders; on removing these, and passing through which, he discovered a cavern with water-worn sides, partially covered with stalactite deposits, penetrating into the rock for a distance of about 20 feet, about 5 feet across at its widest part, and not more than 2 or 3 feet high. The floor was covered with a deposit about 12 inches thick, of a fine light yellowish dust, but the remains were superficial."

In addition to the human bones, to be presently described, were found a considerable portion of a cedar-wood canoe, about 7 feet long, fragments of pottery, including two, nearly perfect, earthenware vessels similar to those known to have been made by the Arawak Indians, an outer portion of the trunk of an *arbor-vitæ*, probably serving at one time as a "mortar," scarcely showing any sign of decay; the perfect skulls and other parts of the skeleton of a rodent (the so-called Jamaica coney, *Capromys brachyurus*); two large marine shells (*Fusus* and *Murex*), the soft parts of which are still eaten by the natives, numerous land shells (*Helix*, &c.). A flint implement is also mentioned in Mr. Duerden's account.

The only portion of the contents of the cavern submitted to me for examination consist of the human bones, and as they only arrived in London a few days before I was leaving town, at present I have only been able to make a general examination of them, without any detailed measurements.

Their principal interest consists in the circumstance, proved both by the conditions under which they were found, and by their own characteristics, that they are the remains of the race which inhabited the island previous to its discovery by the Spaniards, by whom they were in so short a time barbarously and utterly exterminated.

Whatever condition the bones were found in as they lay in the cave, they are now completely mixed up, and it is impossible to put together anything like complete skeletons, or even, except in very few cases, to associate the bones of individuals; and the number of odd bones and fragments show that large portions of the individuals who were buried or died in the cave are now missing. Their general condition of preservation, colour, &c., is nearly the same in all, so there is no reason to suppose that they were not contemporaneous. None of the bones show any wounds or marks of violence, but all appear to be those of persons who have died a natural or slow death. Both sexes and almost all ages are represented, from children of four or five years to very old persons, the proportion of the latter, as will be seen, being remarkable.

Of the crania, there are six complete, all those of fully adult or aged persons, and two calvariæ (without the facial portion), both of children. There are also fragments of six others, giving evidence of fourteen individuals.

Of the adult skulls three appear to be masculine and three feminine in type.

Five of these show evidence of artificial depression of the frontal region in various degrees. In two it is very marked; in the others less so. In the sixth, though the frontal region is low, no effects of artificial deformation are evident. Both the children's skulls are very broad and flat, but whether naturally so, or whether this character has been exaggerated artificially it is difficult to say. The mode of depression, when it occurs, is similar in all, evidently produced by the flat board upon the forehead—the commonest custom throughout so large a portion of the ancient inhabitants of the American continent.

Although there is a considerable general resemblance between these skulls, they present strong individual characters; but their whole aspect, taken together, is characteristic of the American type. The retreating forehead, well marked supraciliary ridges, round broad arch of the palate, round high orbits, narrow nasal aperture, and especially the narrow prominent nasal bones, causing a high bridge to the nose during life, are very characteristic. There are, however, two rather remarkable exceptions to this form of nose, in which the breadth of the aperture and flatness of the

[1] Read before Section H of the British Association at Ipswich, September 12, by Sir William H. Flower, K.C.B., F.R.S.

nasal bones almost recall those of the negro; the nasal index being as high, respectively, as 542 and 563. These are both feminine-looking heads, and one of them is the most and the other the least deformed of the set. Whether this form of nose is met with in any other undoubtedly aboriginal American crania, is subject for investigation. Apart from these, the skulls are remarkably like the majority of those which I have seen of Peruvians, Mexicans, and the ancient mound-builders of the United States.

Of lower jaws there are in all twenty-two, a number which indicates that many of the crania must now be missing from the collection. They are interesting as showing age, and peculiarities of dentition; nineteen are adults, and three young. The youngest has the milk teeth only—the first permanent molar, and first incisors being just about to appear (about six years old). One is a little older, the first molar being fully in place with the two milk molars. Another has all the permanent teeth in place, except the last molars (wisdom teeth), which are still in their alveoli.

In all the others the permanent teeth appear to have been fully in place, but the number of losses sustained during life is remarkable. As so many of the teeth have dropped out since death, it is mainly by the condition of the alveoli that their presence or absence during life can be judged of, for in only two or three do all appear to have been retained. Two are absolutely edentulous. In eight, not one of the true molars remain, the whole available dentition being represented by the incisors, and in a few cases by an isolated canine or premolar. Seven had lost one or more of the true molars. All the teeth, except those of the very young individuals, are much worn, but scarcely any show signs of disease or decay, there being only three small carious cavities among them all. Yet the milk molars in both the child's jaws, which were soon to be shed, have their crowns deeply excavated.

The only dental anomaly is that in one of the skulls the right upper wisdom tooth is placed horizontally, its crown projecting outwards through the surface of the maxillary bone, its lower edge two millimetres above the alveolar border.

The limb bones indicate an average height rather below the middle size, but, as just stated, I have not yet had time to make accurate measurements and calculations.

Clavicles, 7 right, 10 left, all adult. *Scapulæ*, all more or less broken; fragments of 15 right and 11 left adult, and 1 young. *Humeri*, right, 5 adult and 2 young; left, 10 adult, 1 young (not corresponding with either of those of the opposite side). *Radii*, right, 14 adult, 3 young; left, 17 adult, 1 young. *Ulnæ*, right, 14 adult, 2 young; left, 10 adult, 1 young. *Pelvic bones*, mostly very fragmentary, but showing evidence of at least 9 adult males, 5 adult females, and several children. *Femora*, as with the other long bones, there are very few pairs, thus showing that there were more individuals than the actual number of bones would indicate: right, 11 adult and 2 young, 1 nearly full grown, but without epiphyses, 1 younger; left, 17 adult and 6 young of various ages, from quite small children upwards. None of these six have corresponding bones of the opposite side, so there is evidence from the femora of at least 23 individuals. *Tibiæ*, 18 right and 19 left, all adult. *Fibulæ*, 12 right and 11 left adult, and 3 young.

One of the largest of the femora has the head greatly enlarged and deformed by chronic rheumatic arthritis. The lower articular surface was mostly broken away, but the portion that remained appeared healthy.

One of the left tibiæ shows throughout the shaft marked evidence of chronic periostitis, the surface being thickened and vascular. A bone of the opposite side, which might have been of the same individual, shows the same condition in a less marked degree.

These are the only pathological conditions observed in any of the bones.

The question that naturally occurs after the examination of these remains is, How did they get into the cave? The condition of the bones, and of the objects which were found with them all, point to their belonging to the native Indian inhabitants, and not to any of the races which have been introduced into the island during the last four hundred years. A cave of such small dimensions, in which a man could not stand upright, could scarcely have been the regular habitation of such a large number of persons. It might have been a place of sepulture, but from its inaccessible position it seems more likely to have been a refuge to which the young, the feeble and the aged of a tribe had fled for safety, and in a vain endeavour to escape the horrible massacres by which we know the great bulk of the native population perished, had met a scarcely less miserable fate. Other similar discoveries, which will doubtless be made in the future, may throw light upon this question, and it is satisfactory to know that the authorities of the Jamaica Institute are now alive to the importance of carefully examining and preserving all such evidence as may still remain of the ancient history of the island and its inhabitants. The communication was illustrated by sketches of the cave, made by Mrs. Frank Cundall.

ELECTRIFICATION AND DISELECTRIFICATION OF AIR AND OTHER GASES.[1]

§ 1. EXPERIMENTS were made for the purpose of finding an approximation to the amount of electrification communicated to air by one or more electrified needle points. The apparatus consisted of a metallic can 48 cms. high and 21 cms. in diameter, supported by paraffin blocks, and connected to one pair of quadrants of a quadrant electrometer. It had a hole at the top to admit the electrifying wire, which was 5·31 metres long, hanging vertically within a metallic guard tube. This guard tube was always metallically connected to the other pair of quadrants of the electrometer and to its case, and to a metallic screen surrounding it. This prevented any external influences from sensibly affecting the electrometer, such as the working of the electric machine which stood on a shelf 5 metres above it.

§ 2. The experiment is conducted as follows:—One terminal of an electric machine is connected with the guard tube, and the

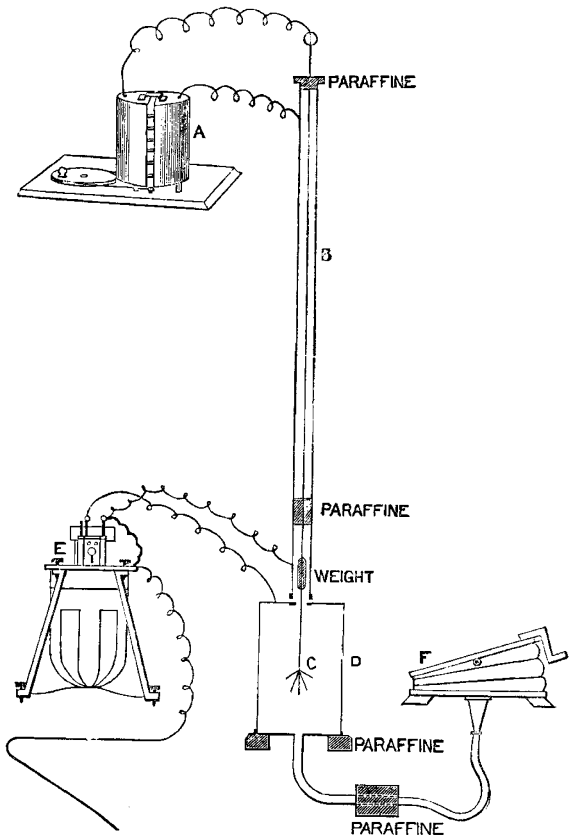

FIG. 1.—Connected with guard screen (not shown in diagram).

other with the electrifying wire, which is let down so that needle is in the centre of the can. The can is temporarily connected to the case of the electrometer. The electric machine is then worked for some minutes, so as to electrify the air in the can. As soon as the machine is stopped the electrify-

[1] Abstract of a paper, by Lord Kelvin, Magnus Maclean, and Alexander Galt, read before Section A of the British Association.