Unwin, one of the engineering experts who counseled the Cataract Construction Company when Niagara was harnessed; Sir Bosdin Leech, chief engineer of the Manchester Ship Canal; Prof. James Bryce, author of "The American Commonwealth;" and sixty or seventy others, who enjoy a high reputation in England, Scotland or Ireland, by reason of their professional activity in some department of science. A great many public and social or semisocial functions, with various excursions to different points of interest, including a visit to the Niagara Falls power plant, were pleasant features of the occasion, into which all seemed to enter most enjoyably.

In his opening address the president, Sir John Evans, said that he would undertake no general review of recent scientific progress, but would discuss a question belonging to his own special field of study.

ARCHÆOLOGY.

The relations which chemistry, mineralogy and history bore to this science, he said, were important, but the aid of geology and paleontology was imperative, if one inquired into the antiquity of man. When in 1859 human remains were found in the valley of the Somme, in France, in gravels that also yielded bones of the mammoth and the woolly rhinoceros, the coexistence of man with these animals in the quaternary period was established for a time. After the first excitement had subsided, there was a tendency among scientists to cut down the lapse of ages necessary to account for the changes in the earth's surface which had occurred since those gravels were deposited. He, however, sympathized with the view taken by Sir Charles Lyell that such penuriousness was a mistake. Many at the present day had got over this feeling, and of late years the general tendency of those engaged on the questions had been in the direction of seeking for evidence by which the existence of man on earth could be carried back to a period earlier than the quaternary gravels. The speaker cited some of the attempts in this direction. He was himself not satisfied with the supposed discovery of flint implements in pre-glacial deposits in the eastern counties of England, because they resembled too closely those of post-glacial times there, nor could he yet accept the evidence of the Norfolk Pliocene forest bed, where flints had been found within a few months that looked as if they had been worked by human hands. This alleged discovery and similar ones in France, Italy and Portugal were accepted by some geologists, but they were too few and too isolated to satisfy Sir John. Nevertheless, he did not despair of obtaining proof of man having lived in the tertiary period. Sir John did not indulge in specific figures, but effectively emphasized the remoteness of time to which belonged the earliest blunt stone implements of the paleolithic era in western Europe. He believed, however, that man existed before this in southern and eastern Asia. This, in fact, he considered the birthplace of the race, and he favored special investigations in that part of the globe.

This address will be published entire, as well as the other most valuable papers presented at the meeting, in current issues of the SCIENTIFIC AMERICAN SUPPLEMENT.

GEOGRAPHY.

Before the geographical section, Dr. J. Scott Keltie, for many years secretary of the Royal Geographical Society, said he considered the present problem of this science in Europe, the region most in need of exploration being Albania. In Asia there was work to be done in the Malay Peninsula and Southern and Central Arabia. But the chief stress was laid upon the district lying between the Himalayas and the forbidden city of Lhasa, in Thibet. Parts of China, too, were still a blank on the maps, and there was something to learn about the source of the Irrawaddy River. In Africa it was desirable to explore the Central and Western Sahara, the region south of Abyssinia and northwest of Lake Rudolf and the highlands of British East Africa. On the latter Dr. Keltie remarked that it might be necessary to find homes for future generations when the United States and Canada became over-populated. The discovery by the young geographer and biologist, Moore, of salt water fauna near Lake Tanganyika, showing that that country had once been beneath the ocean, was an important revelation and indicated what fine surprises yet awaited the intelligent investigator. In the Arctic region the archipelago of North America was one now most needing attention. The speaker enlarged also on the desirability of studying Antarctic territory.

MATHEMATICS AND PHYSICS.

In this section Prof. A. R. Forsyth, of Cambridge University, made a forcible plea for the study of mathematics, not only in its relation to other branches of knowledge, but for its own sake. Lord Kelvin dwelt on the immense practical importance of mathematics, and said such work as harnessing Niagara was impossible without a thorough grasp of the higher mathematics. He dwelt, too, on the rapid spread of the study of this science by engineers in the last twenty years. An hour later an eminent city engineer of Liverpool, George Frederick Deacon, uttered an opinion seemingly contradictory to Lord Kelvin's. Mr. Deacon once worked in the laboratory of Sir William Thomson (now Lord Kelvin), and accompanied the latter on the expedition which laid the first successful Atlantic cable, in 1865. As president of the mechanical science section he discussed the education which young engineers ought to have. He commended the technical schools of the United States and Canada as superior to many in England in extent of the workshop practice provided for students. This he considered more valuable than some of the mathematical training given them. College bred men were not always the most successful engineers. Well directed observation and long experience were secrets of success.

THE WORLD'S FUEL SUPPLY.

At another session of this section, Lord Kelvin discussed the world's fuel supply and air supply in a highly original manner. By fuel he meant not only heat, coal and oil, but existing forests and mould; in fact, all ancient and modern vegetation. Referring to the familiar phenomenon of plant life, that it absorbs carbonic acid and throws off oxygen, he argued there was possibly, even probably, a distinct relation between the amount of oxygen gas in the earth's atmosphere and the amount of vegetation past and present. Three tons of oxygen are required to burn one ton of standard fuel. Consequently, he would assume that for every three tons of oxygen in the air one ton of fuel had come into existence. The outcome of this rough computation was 340,000,000 tons of fuel.

PROF. RAMSAY LOOKING FOR ANOTHER ELEMENT.

Prof. William Ramsay, of London, who divides with Lord Rayleigh the honor of discovering the new element in the atmosphere which they named argon, presided over the chemical section. His address was devoted to showing why he expected still another element would in time be found resembling both helium and argon in some respects. Chemists were familiar with several groups of three elements each, in which the difference in atomic weight between the first and the third members was 36. The atomic weight of helium was first placed at 4, and that of argon at 40. Eventually both of these figures would be reduced somewhat, but the interval would probably remain about the same. He was thus led to believe that another member would be found for this group to fill a vacancy between helium and argon. Such discoveries, based on Mendeleef's "Periodic Law," have been predicted and made before this. Prof. Ramsay and his assistant have already examined an extraordinary number of substances in the hope of finding the unknown gas, but so far without success. The speaker expressed his own confidence in the soundness of Mendeleef's law, in spite of some discrepancies between the actual atomic weights of many elements and the weights which the theory demands.

THE HUMAN STRUCTURE.

In the anthropological section, its president, Sir William Turner, of Edinburgh, spoke of "Some Distinctive Characters of Human Structure." Some of the peculiar features of man's frame, he said, are the curvature of his spine, the crooked way in which the thigh bone fits into the hip, thegreater freedom and grace of the movements of the legs than are possible with apes and lower animals, the more highly developed hand and certain characteristics of the foot. All of these, interesting and significant as they are, are overshadowed by the superiority of the brain in relative weight and in complicated structure. Boys' brains at birth weigh more than girls'. The brains of men of intellectual eminence weigh fifty-five or sixty ounces on the average, while imbeciles may have only thirty ounces. The mean internal capacity of the craniums of adult Europeans is about one thousand five hundred cubic centimeters, and in Australian aborigines one thousand two hundred and eighty. That of adult male gorillas is about four hundred and ninety.

THE PARIS EXPOSITION OF 1900.

The French stand easily first among the peoples of the world in the matter of getting up fetes and shows and in arranging pageants which shall have the highest spectacular effects. The world of fashion has always looked to Paris for its leaders, and those in pursuit of pleasure for its own sake have made their Mecca on the banks of the Seine. How much of the idea of the Paris Exposition of 1900 is to be attributed to the desire to make of it something far larger and more splendid than ever before achieved, with the view of making Paris itself more attractive, and how much is due to French ambition for a comparison of their educational, industrial and material progress with the best the world can show, it is not at all important to define. The French government and people are working to make the exposition one which will far surpass all its predecessors, as well in the extent and variety of the exhibits as in the pomp and magnificence of the splendid accompanying fetes and entertainments, and it is safe to say that never before were plans for such a project more thoroughly elaborated or more completely worked out, down to the finest detail.

The importance of a good representation of the United States at the exposition is generally conceded, primarily, from the fact that our growth in many lines of manufacture has now reached such proportions that further material increase cannot well be looked for, unless we can sell largely in foreign as well as the home markets.

Our ability to successfully compete with foreign manufacturers in their own markets, in many lines of manufactured goods, cannot be doubted, and some efforts in this direction have already met with marked success, but the exposition will afford an opportunity to put such representation on a better basis, and to effectively bring American goods more thoroughly before foreign buyers than ever before. To the end, therefore, that our participation in the exposition may be fully representative, and that American manufacturers may have sufficient space allotted them, Major Handy, the United States commissioner, intends to apply for 500,000 feet to be devoted to exhibits from the United States.

Commissioner Handy sailed for Europe last week, intending to return and report to Congress at its next session, giving all available information to intending exhibitors, and asking for a liberal appropriation from the government, that the United States may be creditably represented.

MOUNT ST. ELIAS ASCENDED.

Prince Luigi of Savoy and his party of Italian mountain climbers are now on their way back to Italy after accomplishing the feat of scaling Mt. St. Elias. The party included Prince Luigi, Lieut. Cagni, Dr. Phillippi and Vittorio Sella, the well known photographer of mountain views. The expedition sailed from Seattle in June and reached Yakutat Bay on July 22. A landing was made with some difficulty and the overland trip was begun. They took with them over 6,000 pounds of provisions. After six days travel inland Malaspina glacier was reached. The glacier is twenty miles wide, and it took four days to cross it. They crossed various other glaciers and passes and finally reached Mt. St. Elias. At the foot of Mt. Newton glacier the American party of Mr. Bryant was met; they had abandoned the project and were returning. Here the Italian members of Prince Luigi's party were left. The prince was, it seems, jealous that any save his countrymen should have the honor of climbing with him the summit of the lofty mountain, which was ungracious, to say the least.

The ascent of Mt. St. Elias began on Friday, July 30, and after seven hours hard climbing they arrived at the top of the divide; here a tent was pitched and a few hours of much needed rest were taken. Then the ascent began again, and four hours from the divide saw them standing on the top of the mountain. About two hours were spent on the peak, and during this time much was done in the way of scientific observations and Signor Sella secured some very fine negatives from the summit. The descent occupied about two hours, the mountaineers sliding most of the way down, and the camp was reached at nightfall. The dreary backward journey over the glaciers was accomplished without accident. The actual height is, according to Prof. Davidson, 18,060 feet. A number of previous attempts have been made to ascend Mt. St. Elias, which was discovered by Behring on St. Elias day, 1741.

WILL ASCERTAIN THE VALUE OF CALCIUM CARBIDE.

The American Druggist and Pharmaceutical Record, under the head of "Tariff Problems Considered," says the Treasury Department will send out a special agent to make an investigation of the value and market price of calcium carbide. This article is used in the manufacture of acetylene gas, a product which is now being extensively exploited by a large syndicate, which controls the patents under which it is manufactured. The tariff law levies an ad valorem duty on this product, and, as it has been brought in at several ports, collectors have varied more than 200 per cent in their valuations; but in all cases have materially exceeded the invoice valuation. The company controlling the patents have an important interest in keeping the apparent cost of the article as low as possible, as they are disposing of royalties in nearly all the States, and the economy of production necessarily depends upon the cost of the raw material. In view of the limited supply and circumscribed market, the department sees no way of ascertaining the value of the article without a special investigation.

The American and British Associations' Addresses and Papers.

Attention is called to the fact that in the SUPPLEMENT of last week and in the current issue there are a number of addresses and papers which were read at the meeting of the American Association for the Advancement of Science and at the British Association. Thus in the current number will be found a continuation of Prof. Gill's "Edward Drinker Cope, Naturalist," the presidential address by Sir John Evans before the British Association and the conclusion of Prof. W J McGee's "The Science of Humanity." In next week's SUPPLEMENT these papers will be continued and others will be begun.