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The editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

MOSELY ON AMERICAN COMPETITION.

In our issue of May 23 we briefly reviewed the report of the Mosely Industrial Commission and the preface thereto by Mr. Mosely himself. It will be remembered that this commission was made up from officials of the various trades unions of Great Britain, and that it visited this country for the purpose of reporting on American industrial conditions, particularly as they affected the keen commercial competition between this country and Great Britain, which, by the way, is being felt so sharply as to act as one of the chief factors in bringing the question of protection prominently into British politics. In a recent issue of our esteemed contemporary the Engineer there is a not unfriendly discussion of Mr. Mosely's report, in which the editor complains that, in spite of the wide field that is covered, and the scope and variety of the observations recorded, the report still leaves the question very much where it found it. Mr. Mosely, says our contemporary, "is one of those who urge that something must be done, but what that something is we cannot quite determine;" and as an instance of this, it quotes the following from the report: "One of the principal reasons why the American workman is better than the Britisher is that he has received a sounder and better education, whereby he has been more thoroughly fitted for the struggle;" and asks, "In what respect does this American education differ from that which is open to all in this country? What is the United States average boy taught in the average school?" The complaint is made that on this point no definite information is supplied either by Mr. Mosely or the delegates. Some of the delegates maintain that "attendance at continuation technical schools should be compulsory. All this argument and pleading is worth nothing in comparison with the value of a simple definite statement of what the average American boy of fifteen or sixteen knows as compared with the average British boy of the same age."

Now it is evident that the Engineer is asking altogether too much. The object of the Commission was to inquire into industrial conditions and indicate the advantages or disadvantages under which the American artisan labored, pointing out the secrets of the industrial success of the United States, and securing a symposium of observations by practical men, which, in the total, should constitute an extremely valuable commentary on a much-debated subject. It seems to us that the Mosely Commission has followed out this programme to the letter. It visited this country to study conditions, ascertain facts and classify them and present them in succinct form. Among other things it learned that the American artisan was better educated than his British brother, that he was better paid, treated with more consideration, and encouraged by prospects of promotion; and having learned these facts, and presented them in an official report, the commission has done all that was asked of it.

It is for others to press the inquiry further, to study the underlying causes, and suggest just what means should be adopted to improve existing conditions in Great Britain, and where they have been found to be inferior, to bring them up to the American standard. The task of ascertaining the fundamental facts of the industrial problem was a great one in itself, and to ask the Commission to follow the hundred-and-one lines of inquiry opened by this investigation, is to ask it to go entirely outside its province and undertake a truly Herculean task. Mr. Mosely surely deserves the thanks of his countrymen for securing an impartial expression of opinion from a body of workingmen, who, without his generous purse, would never have had an opportunity to personally investigate this great international problem, and give an intelligent expression of opinion from the standpoint of labor. It remains now for other industrial bodies, or for the government itself, to follow up the work which the Mosely Commission has begun, and make that more detailed investigation of the subject which the Engineer mistakenly supposes to have been the object of the Mosely Commission itself.

THE HIGH-SPEED TURBINE AS AN AIR COMPRESSOR.

The most important of the later developments of the turbine is the discovery that the high-speed steam turbine may itself be used as an air compressor, with results that are comparable in point of efficiency and general utility with those obtained in the best types of steam turbines. The air turbine, as it may very properly be called, is constructed much in the same way as the steam turbine. On a prolongation of the shaft of the steam turbine is fixed a series of moving blades which are placed alternately with rings of stationary blades, or "guide blades," as they are called, which extend inwardly from the walls of the air turbine cylinder. The action of the air turbine is, of course, the reverse of that of the steam turbine, the first ring of the blades forcing the air forward parallel with the axis of the turbine at a low pressure, and the succeeding circles of blades increasing its pressure, until, at the exit, it issues at the maximum designed pressure in a continuous steady blast. These machines are of the Parsons type, and bear their inventor's name. It is not necessary, of course, that the air turbine should be driven by the steam turbine, as described above, and, indeed, there is now at work in a lead works on the Tyne, England, an air turbine which is driven by an electric motor and supplies 3,500 cubic feet of air per minute under a pressure of 4 inches of mercury. According to Parsons, this plant showed an increase of 30 per cent in output of the furnace due to the installment of the turbine blower, an increase which was probably due to the increased steadiness of the blast. All the advantages of economy and convenience which are present in the steam turbine are shown in the air turbine. The repair bill is as light in the one case as in the other, and the compressor is in every respect as efficient. There is now nearing completion for a mine at Johannesburg, a turbine, high-pressure, two-stage air compressor, which is designed to show an output of 4,000 cubic feet of air per minute at a pressure of 80 pounds to the square inch.

A NEW NIAGARA POWER CANAL.

The Electrical Development Company, of Ontario, Ltd., has entered into a contract with A. C. Douglass, of Niagara Falls, N. Y., for the construction of a new power tunnel on the Canadian side at Niagara. In this contract the Electrical Development Company of Ontario, Ltd., is supposed to represent the Toronto and Niagara Power Company, which latter company has secured a franchise from the Victoria Park Commissioners permitting the development in question. The supposition is that the Electrical Development Company of Ontario, Ltd., is to the Toronto and Niagara Power Company what the Cataract Construction Company was to the Niagara Falls Power Company during its initial development.

The new tunnel will have a length of 2,100 feet, while its height will be about 25 feet and its width about 20 feet. Thus in length it will be a little less than the tunnel of the Canadian Niagara Power Company and less than a third of the length of the tunnel of the Niagara Falls Power Company, but its interior dimensions will be slightly larger than either of the tunnels referred to, and it is expected to have tailrace facilities for the development of 125,000 horse power. It will be lined from end to end with concrete or brick.

As a site for its power house the Toronto and Niagara Power Company has selected a spot above the station site of the Canadian Niagara Power Company and below the forebay of the Ontario Power Company. From the point where the company's wheelpit will be sunk the tunnel will run right under the riverbed to the gorge and lower river, the outlet or portal of the tunnel to be behind the sheet of water of the Horseshoe Fall. In order that the work may progress with all possible speed, Contractor Douglass will sink a shaft 8 by 16 feet to a depth of 180 feet at the shore line above Table Rock, and from the bottom of this shaft he will run a lateral tunnel out under the river about 700 feet to the line of the main tunnel. This lateral tunnel will be 10 by 14 feet, and with the shaft will form an important work in itself. When the lateral tunnel has been driven to the line of the main tunnel under the riverbed, headings will be driven in both directions, upstream and downstream, and in this way the main tunnel will be driven, the excavated material being raised to the surface through the lateral tunnel and connecting shaft. It is understood that the contract price on the tunnel is about $575,000. It will take more than two years to build it.

Contractor Douglass is now at work lining the tunnel of the Canadian Niagara Power Company, and as he excavated this tunnel, he has his plant all on the ground ready for work on his new contract.

SCIENTIFIC EXPEDITION TO THE BAHAMA ISLANDS.

An expedition recently left Baltimore for the purpose of making an exhaustive study of the Bahama Islands. Its members will spend about two months amid the group and the result of their labors will be compiled in a volume which will be donated to the United States government. The expedition, however, might be termed international in character, since it has the hearty co-operation of Great Britain and the governor of the Bahama Islands will place all of the facilities he possesses at its disposal. The expedition, which originated with Prof. George B. Shattuck, of the faculty of Johns Hopkins University, goes under the auspices of the Geographical Society of Baltimore, which defrays a portion of its expenses. Some of the principal lines of research will be amid the animal and plant life of the islands, which is known to exist in great variety. The geology of the group will also be examined, and a bench mark will be left with the view of ascertaining to what extent, if any, the Bahamas are sinking or rising above sea level. The industries will be made the subject of a special chapter of the reports, as well as the physical condition of the inhabitants, the extent of the commerce of the principal towns, and any other economic features which may suggest themselves.

The expedition will go to the Bahamas in a sailing vessel especially equipped for the purpose. It is provided with a steam launch for journeying between the islands to be visited, while a member of the Geographical Society has donated a glass-bottomed boat to aid in examining the extensive marine growth. One of the cabins of the vessel has been converted into a dark room for photographic work, as the camera will be used very largely in various phases of the investigation. An elaborate outfit of scientific apparatus for studying the meteorology and climatic conditions, also for microscopic examination, has been provided, and an ample store of provisions will be taken so that the investigators can be provided for while visiting uninhabited islands of the group.

The diseases which may be prevalent and general sanitary conditions will be included in the investigation. This portion of the work will be in charge of Dr. Clement A. Penrose, of Baltimore, assistant director of the expedition, who has arranged an elaborate equipment for this purpose.

Although within a short distance of the mainland of the United States, the Bahamas are comparatively little known from a scientific standpoint, and it is believed the expedition will result in some very interesting disclosures being made. At present about twenty of the islands are inhabited, the principal population being at Nassau, the capital. Less than 50,000 persons, however, reside on the group and only about 11,000 of these are whites. Among the industries which will be investigated are the sponge and pearl fisheries, the production of sisal fiber, salt making, and the cultivation of pineapples and oranges. An effort will be made to verify the claim that Watling Island is the San Salvador which Columbus discovered in 1492, and the expedition will give considerable attention to this island.

ON A SINGULAR RADIATION PHENOMENON.

It has frequently been observed that photographic plates will undergo in the dark a most noticeable blackening under the influence of certain metals and organic bodies. Russell ascribes this phenomenon to a direct chemical action of the superoxide of hydrogen, causing a fairly strong veil to appear after development on the plates placed in its neighborhood. Though the same observer states this effect to be capable of traversing numerous solid and liquid bodies, no radiation proper is supposed to exist, but the formation of H_2O_2 is thought to propagate, owing to the water or camphor contained in these bodies.

This explanation, however, is contradicted by numerous facts. First, thin metal films are found to be permeable as well. Moreover, the effect is by no means lessened when the surrounding vapors are blown away by means of an air current. L. Graets, in an article published in No. 5 of the Physikalische Zeitschrift, therefore suggests that the blackening might be due to an emission of particles of an unknown nature.

The author records a similar, particularly striking phenomenon: When exposing, in absolute darkness, a photographic plate to the action of H_2O_2 by placing the sensitive face at a distance of some centimeters above the liquid and putting a metal piece of any shape, e. g., a copper cross, on the opposed face, an image of the metal is found after development, though the latter was not in the way of the rays. This faint but clearly distinguished image appears bright on a dark background. This phenomenon the author terms *retrograde reproduction*, as it is a production from