

act the untwisting of the rope and their outer wires are made tighter. As a result of the excellent manner in which it is standing up under severe service, the 6 x 7 Lang-lay ropes are preferred in slope shafts provided with well-proportioned head-sheaves and hoist drums.

Table I. gives a record of service of various types of rope with the corresponding foot-tons of work performed. These ropes were taken out of service when the appearance of a number of broken wires in proximity made this safety precaution appear advisable.

ANNUAL MEETING OF THE COMMISSION OF CONSERVATION

Subjects of interest from an engineering standpoint occupied a prominent place on the programme of the Commission of Conservation at its annual meeting on Tuesday and Wednesday, November 27th and 28th. The sessions were well attended, frequent reference being made to the effectiveness of the work being done by the Commission.

Among the prominent engineers and technical men present were Sir John Kennedy, R. A. Ross, Dr. Frank Adams, A. V. White, C. A. Magrath, S. T. Dodd, of General Electric Co., Schenectady, N.Y., E. J. Zavitz, Dr. Howe, Dr. Haanel and J. P. Babcock. There was a large attendance of commissioners.

Sir Clifford Sifton, chairman, after explaining the reasons for calling the annual meeting at the present time, and referring to the large attendance, read his annual review of the activities of the commission and of the general position of conservation and development of natural resources in Canada.

In a very able manner Mr. Arthur V. White, consulting engineer to the commission, dealt with the water power situation on the St. Lawrence, particularly with that phase of it which is of an international character. The recent application for permission to construct a dam at the Coteau Rapids has directed attention to this question.

Sir John Kennedy, in discussing the above paper, referred particularly to the difficulties of development on the St. Lawrence and ice troubles due to the fact that the river flows from the warmer to the colder areas and consequently causes an early break-up of the ice and resultant high water. Sir John suggested the establishment of an international commission of engineers to develop a scheme for the utilization of St. Lawrence powers on the international section, on completion of which it could be handed over to a body similar to the International Joint Commissioners for administration. On the power being developed, if Canada did not require all her share of the power it could be exported, but only upon such conditions as would be satisfactory to Canada, and upon short-term leases only.

Mr. R. A. Ross, C.E., of Montreal, in further reference to the paper by Mr. White, corroborated to a large extent the remarks of Sir John Kennedy. Referring to the utilization by electro-chemical works, he advocated the idea of a general survey of the water-power resources, and the allocation of certain powers for electro-chemical industries which would not likely be required for domestic or manufacturing power, the essential of a successful electro-chemical plant being a large amount of power at a low cost.

C. A. Magrath, fuel controller, gave in a concise manner a resumé of the fuel situation. He dwelt upon the demand for economy in the use of fuel, the difficulties of

transportation, the arrangements made and profits allowed to the coal dealers, and the necessity for sifting of ashes by consumers. Where wood could be secured he advocated its use. Mr. Magrath evidently has the situation well in hand and predicts, with the exercise of economy, that all will have a sufficiency of fuel this winter.

Dr. Haanel discussed fully the development of the peat fuel industry, dwelling at length upon the necessity for only fully qualified peat engineers undertaking the planning and equipment of peat fuel plants. He cited several instances in which large expenditures of capital had been wasted and much plant discarded owing to errors by inefficient engineers. Dr. Haanel maintained that the only feasible way of drying peat is by natural means, the spreading out of the moist peat on portions of the area and allowing the sun to evaporate the moisture. The peat fibre is of such a nature that pressure would not effect the result required. The increased use of peat as fuel was strongly advocated, one of its chief advantages being its combustion with only a small ash residue. Its bulkiness, however, is a drawback where storage of fuel is necessary.

Dr. C. D. Howe, of Toronto University, very clearly elaborated the condition of our wood pulp resources. The necessity for their conservation was emphasized if Canada is to continue a pulp and paper manufacturing country. Protection of forests from fire, scientific methods of cutting, and the replanting of cut-over areas were means suggested for perpetuating this, one of Canada's greatest natural resources.

Mr. S. T. Dodd, electrical engineer of the General Electric Co., Schenectady, N.Y., very ably and technically discussed the electrification of railways, dwelling principally upon the results secured upon the Chicago, St. Paul & Milwaukee Railway mountain section. The development of water-powers, the concentration of many individual plants under one controlling system, he emphasized, was necessary for efficient operation of railways by electric power. Mr. Dodd had with him many slides and moving picture films which he used to illustrate his address.

Ontario's new forest protection programme was outlined by Mr. E. J. Zavitz, provincial forester. Ontario has at last taken up in earnest the protection of its remaining forest areas, and many new plans are being put into effect. Sir Clifford Sifton took occasion to impress upon Mr. Zavitz, and through him upon his superior officers, the necessity of all appointments to the forest service being based upon merit only; political appointments only leading to the abuse and neglect of the forest protection systems.

The production of sulphate of ammonia in the United States in 1916 is estimated to have been 325,000 tons, an increase of 75,000 tons over that of 1915. Of the 1916 total, 272,000 tons are credited to coke-ovens, and 53,000 tons to gasworks and bone carbonizing plants. The 1916 output of coke in the United States was a record for both beehive and by-product ovens, amounting to over 54,000,000 tons.

The power transmission lines of the Nevada-California Power Company's system are said to form the longest chain yet projected, being about 666 miles from north to south. The current is generated by water power, an interesting feature of the plant being the utilization of two high heads differing by 530 ft. in the same power-house and on the same 8,000 horse-power impulse wheel.

Latest statistics show that 23 new steamships and 13 sailing vessels were built in Holland during the first six months of this year, as compared with 16 steamships and eight sailing craft during the same period in 1916. The total number of new vessels for the Dutch flag built up to July 1 this year was 38, 24 steam and 14 sail, having an aggregate tonnage of over 81,000 tons, as compared with 54,000 tons built in 1916.