

ing ratios of length to diameter. In order to do this it was found necessary to construct a new type of instrument with which these experimental results could be ascertained. The instrument known as a "sphingometer" could be quite easily used for purposes to which an ordinary extensometer was put. Arrangements were made in the experiments to secure axial loading. In the early experiments he was surprised at the wide range of value for E obtained for steel, and old records recorded the same results, notably those given by Professor Woodward. It would appear that the value of E (for tension) for good wrought iron might be taken to lie between 25,000,000 pounds and 30,000,000 pounds per square inch. The attention of engineers was drawn to the problem of the design of struts by the Quebec bridge disaster. One of the reasons suggested for the collapse was that Euler's formula only took into consideration E , and did not involve the strength of the material. It was probably the yield point of the material rather than the ultimate strength which should be taken into account, and as a matter of fact the ultimate strength of material in compression was very hard to define. With regard to the time effect on strains, the effect of continued flexure upon steel columns had not been closely observed, but it seemed certain that the molecules under the greatest stress were inclined to flow over each other to some extent, and probably the fatigue of metals was intimately associated with this phenomenon. Guest had advanced as the result of experimental work on ductile materials the somewhat startling theory of elastic strength that the condition of yielding was the existence of a shearing stress of specific amount, and belief in the truth of that statement had gradually gained ground. There was considerable diversity of opinion as to what really was the yield point, and as this was becoming an important factor in specifications too much importance could not be attached to the necessity for having some well-defined, generally-accepted yield point. It could, he thought, be best defined as the load at which the specimen continued to stretch without further increasing the load, and that continuous strain could be readily observed in the sphingometer.

American Chemical Society.

An important step in the development of engineering chemistry in this country was taken at the recent New Haven meeting of the American Chemical Society by the organization of a Division of Industrial Chemists and Chemical Engineers. Arthur D. Little, of Boston, was elected chairman of the Division and vice-president of the Society, and indicated in his address the broad field awaiting development by the new organization.

The Division will include a large proportion of the membership of the Society and especially those engineering chemists whose work is directly concerned with industrial development and progress. The Division will begin the publication at an early day of *The Journal of Industrial and Engineering Chemistry*, for which a strong board of editors was elected.

The Western Canada Irrigation Association.

The Western Canada Irrigation Association held their second annual convention at Vernon, B.C., August 11th. About one hundred delegates were present, the large majority coming from British Columbia, Alberta, Saskatchewan and Manitoba.

The convention adopted resolutions in favor of creation of water municipalities; that the Dominion and Provincial Governments be requested to undertake the topographical and hydrographical surveys to obtain information as to the amount of water available for irrigation of irrigable land; that the Government in its contemplated legislation provides protection for owners of water in storage in carrying it to their ditch heads.

The motion in favor of Government ownership of irrigation was lost by a vote of 26 to 20.

Mr. J. S. Dennis, of Calgary, gave an address in which he urged that all water records not being used should be snuffed out. He favored a commission of experts to examine the streams to determine what water they would provide and stop all over recording. He condemned the Provincial Water Clauses Act and said the miners' inch was useless as a water

measure. He believed in irrigation by private enterprise rather than Government ownership.

Hon. F. J. Fulton said he would not favor the Government undertaking irrigation schemes in a hurry, for if one part of the province got it all the other dry districts would want it and even to make a beginning would cost between four and five millions. He thought the Water Clauses Act required considerable amendment, as the records at present were obscure and clouded and should be cleared.

The appointment of a commission of experts on streams might be a good plan and the Government would carefully consider it. It would also consider carefully the proposal of undertaking irrigation but would not make a definite promise. He could not agree with all Mr. Dennis has said, but was grateful for the suggestions.

Price Ellison, M.P.P., urged the Government to take up these enterprises directly, as the security furnished by the land so improved was more than ample, and both residents of the locality, the province at large and the Government itself through the enlargement of taxation receipts would be immensely benefited. He knew that this was the general feeling of the farmers of the Okanagan Valley, and the expenditure of even four or five millions upon undertakings so enormously beneficial would be a mere bagatelle compared with the benefits conferred. He gave great credit to the Government for the work already done, approved of their caution in committing themselves without the fullest consideration to assuming these works and these obligations, and trusted that they would soon see their way clear to meet the strong desire of the people of the Okanagan Valley.

Mr. Robinson, of Summerland, said that property worth \$200,000 had through irrigation been advanced in value to two millions, and said his company was now considering the obtaining of money in the East to reach further sources of supply of water, which they would abandon if the Government took up this business. If, however, they carried the project through the people could depend on it that the company would make every cent out of their enterprise that they could possibly put in their pockets.

Prof. Carpenter, of Colorado, addressed the convention. He began by expressing unqualified admiration for the district and said the values in irrigated countries were entirely in the water and not in the land. The cost of irrigation was paid back a hundredfold, and one can hardly form a fair conception of what can be taken off an acre of irrigated land.

The next meeting will be held at Lethbridge.

The officers elected are: Hon. President, Governor Bul-yea; President, J. S. Dennis; First Vice-President, Hon. F. J. Fulton; Second Vice-President, P. L. Naismith, Lethbridge; Secretary-Treasurer, J. L. Fairfield, Lethbridge.

MILEAGE OF THE I.C.R.

The present total mileage of the Intercolonial Railway is 1,468.65 miles, as shown by surveys recently completed by the engineering department. Since last winter these surveys have been in progress, and every inch of railway including main lines, branches, spurs, and even little wharf branches have been tramped over and accurately measured by employees of the department. Recently these surveys were completed. It was found that from Halifax to Montreal, the main line is 836.34 miles in length, and the second greatest distance is between Truro and Sydney, which line is 215.33 miles long.

The total revenue from woods and forests of Ontario for 1907 was \$1,210,051.32, consisting of: Bonus, \$152,222.24; timber dues, \$908,863.15; ground rent, \$65,084.38; transfer fees, \$2,879.85.

The output of the mines and mineral works of Ontario for 1907 was of greater aggregate value than in any previous year, exceeding the output of 1906 by \$2,618,109. The largest item in the total of \$25,006,492 was the production of silver, of which the mines of the Cobalt camp yielded 10,028,259 ounces, valued at \$6,157,871.