

ment of other technical societies, rather than to claim pre-eminence for any organization; the work of each must speak for it.

Before referring especially to technical societies, a few thoughts may be devoted to the general tendency to form associations at the present time. Organizations may have been formed and are active in every profession and also in all branches of labor, trade, industry, commerce, manufacture, science and art. A record giving a list of such associations or the aggregate membership would be startling, and show how a large percentage of the population of North America is connected with one or more of these, but the figures cannot be even approximated.

The class of associations representing national, state or local trade interests, such as Boards of Trade, Chambers of Commerce, etc., may be used as an illustration. A late report showing that in the United States, there are over 1,100 of these, of which thirty are of national character, and more represent the interest of a State, or of districts including portions of a group of States.

Existing organizations may be divided into many classes, some of which are for mutual benefit in controlling rates, hours or character of labor, or for adjusting compensation paid or received for labor and materials. Others provide stipends for members during sickness or for their families in case of death, and another group seek to control the services of persons entering certain lines of employment, or fix standards for determining the qualifications of such. The proceedings of many associations are carried on in secret, others are more or less open, some use extreme scrutiny as to membership, and others may be included in the class, "omnium gatherum."

In all these forms of organizations, there is some good; any union for mutual advancement commands esteem, but in a number of cases, the better element of the membership is hidden or over-ruled by selfish purposes controlling the administration of affairs to the disadvantage of the mutual or progressive features. Probably no better evidence can be offered of the power of a few men to control others, or of the blind obedience of the masses to arbitrary dictation by leaders, than is presented by some of the popular trade organizations.

The class, however, in which we are especially interested includes those institutes or societies where professional and business men, recognizing the value of the interchange of ideas, assemble to discuss problems and processes, and while no comparison of the relative merits of various forms of organizations will be made, it may not seem ungenerous or exhibit vanity, to claim for those whose primary objects are the investigation and discussion of subjects in which the members are interested, and the publication of the proceedings or transactions for the general advancement of a special trade or profession, as being in the foremost class of associations.

The number of different societies which may be properly in the special class mentioned, is greater than is generally believed; for, if from the list of all kinds of associations, there were eliminated the social or secret organizations, all others, which in any way attempt to affect or control the rates of wages or the hours or kinds of labor, or to fix or adjust prices for commodities, all strictly commercial organizations, and all those which offer any money benefit to members or their representatives, or those formed to advance certain sects, parties, nationalities, or classes, there will still be found a considerable number of organizations representing constituencies of many thousands joined together for the purpose of mutual advancement and for improving special professions or businesses in which the members are engaged, by the interchange of ideas, and dissemination of thoughtful papers and discussions.

Diversified business or professional interests encourage a considerable number of persons taking part in several associations, more or less closely allied, thus forming many powerful organizations of manufacturers engaged in special lines, and also of men following various professions. Thus, the legal fraternity presents a liberal contingent of associations representing that branch of professional work. Officers and members of various churches are formed into clubs, independent of synods, classes, assemblies, etc., and geologists, chemists, journalists, architects, artists, and engineers each have special organizations. It is to the last named group that attention is particularly invited.

Nearly twenty-two years have elapsed since the American Institute of Mining Engineers was organized, and its score of original membership has increased, the rolls now containing nearly 2,400 names while the necrological data preserved in our records calls attention to the fact that over two hundred late members of the Institute have finished their earthly work and gone to their reward. In this list of the departed, are names of men who have done valiant service in the interests of mining and metallurgy, whose work lives and will live, and whose record is familiar, not only in their own, but in foreign countries.

Prior to the organization of the Institute, there was in the United States, but one national engineering society, and but few local organizations devoted to this profession, while the list of organizations in foreign countries was small. There are to-day in the United States, four engineering societies of national character, with memberships as follows:—

American Society of Civil Engineers, organized 1865, membership of 1,650.

American Institute of Mining Engineers, organized 1871, membership 2,400.

American Society Mechanical Engineers, organized 1880, membership 1,650.

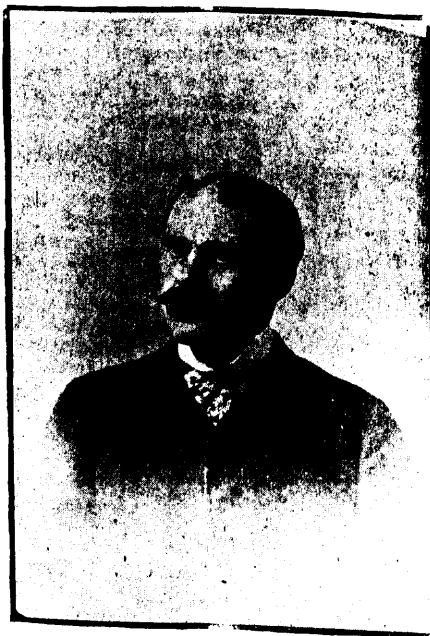
American Institute Electrical Engineers, organized 1886, membership 650.

The scopes of these national associations vary to suit the purpose of organization, and the policy pursued in each differs from that of the others, being presumably adapted for the membership, which has in each extended beyond the limits of the United States, embracing many of the prominent engineers in Canada, Mexico, and in foreign countries.

Therefore, the engineering profession in the United States is well equipped with national associations, in which those interested in any particular branch, or who desire to follow a special line of inquiry, meet with others having similar purposes for the reading of papers, or for the discussion of topics in which they are mutually interested; or if prevented from attending meetings, members can peruse the transactions as issued, from which information as to what has been presented and discussed is obtainable.

There are also national associations closely allied to engineering, which have obtained prominence and rendered much service to the members, or to the business represented, as well as to engineering; at the meetings of which papers are presented and discussed and publication made of matters of interest. Among such, are the associations of master mechanics, of railroad superintendents, car-wheel makers, car builders, founders, boiler makers and others.

To the national associations are to be added a score of local or district engineering societies or clubs, some of which have 500 names on the roll of members, possess excellent libraries, issue proceedings regularly and occupy commodious quarters in which the social intercourse of engineers is encouraged, as an incentive to professional advancement.



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Chairman, Ontario Committee.

The present meeting indicates that the Dominion is alive to the necessity of technical societies, for the Canadian Society of Civil Engineers, both by its membership (of 700) and its record is given a prominent place among engineering organizations, and the opportunity is cordially embraced of meeting with and learning of the General Mining Association of Quebec, the Mining Society of Nova Scotia, the Asbestos Club, and all other Canadian societies, who now meet in convention with the American Institute of Mining Engineers.

It is unnecessary to trace the history of foreign associations of engineers, beginning with the social club claimed to have been organized by Smeaton about 1771, nor to mention the number of associations devoted to engineering or kindred sciences, as given in the "Official Year Book of the Scientific and Learned Societies of Great Britain and Ireland." But in view of the courtesies which in late years have been exchanged between European and American engineers, the active interest in technical organizations in Europe will be recognized by reference to a few of the most powerful and well known societies.

The Institute of Civil Engineers of Great Britain reports a total of all classes of members exceeding 6,000.

The Société des Ingénieurs Civils, France, has over 1300 members.

The organization of Civil Engineers in the German Empire reports some 6,000 members on its roll, and the Mechanical Engineers have an association of about the same size.

The Iron and Steel Institute of Great Britain number 1,500.

The Verein Deutscher Eisenhüttenleute has over 1,000 members. In addition there are societies in Russia, Sweden, Australia and, to us, other remote parts of the world.

It is expected that delegates from most of these associations will take part in the Engineering Congress at Chicago, in August next; an occasion which should do much to advance the fraternal feeling and the professional interests throughout the world.

The numerous technical and semi-technical societies mentioned, have not grown nor are they sustained merely by the social features they offer, pleasant as these may be; their formation was encouraged by a desire to interchange ideas, and they are maintained because of the benefit to be derived from the papers presented and discussed.

A past president of the British Iron and Steel Institute refers to the visit of that organization to the United States in 1890, with sentiments which may properly be employed to express the purpose and results of meetings which various associations have held and will hold in different portions of the world, and which may certainly be quoted on the present occasion:

"These expeditions, through which we meet eye to eye, and voice to voice, our friendly competitors, to discuss the interests and the scientific aspects of the industry which absorb us, have been of great personal and national benefit. It is thus we learn how much has been accomplished by persistent and intelligent labour, how much remains to be achieved, and how by free exchange of ideas and of productions, friendly understanding is promoted and personal acquaintance is built up."

Those who have followed the growth of the American Institute of Mining Engineers, recognize its work in the contents of its transactions, but trace its influence, and that of kindred associations, in the advanced work in laboratories and engineering offices, in the growing appreciation of technical education, in improved methods of mining and metallurgy, and in a better understanding of geology, chemistry and other sciences.

Similarly much of the progress in applied science is directly traceable to other technical societies, and every branch of industry shows the good result of co-operation by those interested in special investigations.

In reviewing the history of the institute, it will be profitable to note the advances made in some special branches in which its members are directly interested; for the years covered by its life have been marked by great progress in the quantities of mineral won, metal produced and manufactured, and of a very great decline in the prices which the products of mine, furnace or factory command. Ample allowance may be made for the demands of a rapidly augmenting population, or for Governmental encouragement of industry, and yet the claim that a great part of this progress, both as represented by the increased production and decreased cost, is due to the development of technical societies, must be recognized. It is certain that in a number of known cases, men have been better equipped and better able to contend with the problems before them, because of their connection with technical societies, bringing to them the papers read and discussions had thereon, and much is undoubtedly due to close personal acquaintance and friendship resulting from association. A few facts selected from many which could be mentioned illustrate the progress made during the existence of the American Institute of Mining Engineers 1871-1893, and while the data presented refers to the United States, similar results, although possibly less pronounced in some cases, could be obtained for other countries.

The annual output of iron ore has increased from three millions to over sixteen million gross tons, making the United States the largest producer of this mineral, while for the past decade nearly a million tons of foreign iron ore per year found a market in the country. When the Institute was organized the Lake Superior iron district was producing slightly over eight hundred thousand tons of iron ore per annum and had up to that time shipped an aggregate of four million tons; it has now reached an annual output of over nine million tons, and in the twenty-two years existence of the Institute, it has furnished a total of seventy million gross tons. One and two-third million gross tons of pig iron (a) was the output of the blast furnaces of the United States, at the birth of the Institute, last year shows a total of over nine million gross tons (b).

New districts have been opened, and sections which supported iron industries of but small capacity, have grown to be large producers. In the early days of this society, the pig iron output was obtained from a number of small furnaces, and about one half was made with anthracite coal, three tenths with bituminous coal and coke, and one fifth with charcoal. Now three-quarters of the pig iron is produced with coke, the balance being divided into about the same proportion as in 1871, between anthracite and charcoal, but the quantities of each have been greatly increased, and owing to improved construction and methods, a smaller number of furnaces produce the larger quantity of pig iron.

The steel industry has, in twenty-two years developed from an annual output of seventy thousand gross tons to one of four million gross tons (a). When the first meeting of the Institute was held, the Bessemer steel industry was making its initial impression on this continent, while open hearth steel manufacture was a struggling infant. The former has advanced from an annual output of thirty-five tons to one exceeding four million tons (b) and while the latter has grown from three thousand tons to nearly six hundred thousand tons per annum (c).

In an interesting monograph, entitled "Twenty Years of Progress in the Manufacture of Iron and Steel in the United States," Mr. James M. Swank says (d): "It

(a) 28 per cent of what Great Britain then produced.

(b) A product of pig iron 20 per cent. greater than that of Great Britain in the same year.

(c) Bringing the United States in advance of the magnificent industry of Great Britain.

(d) A product nearly double that of Great Britain.

(e) This quantity is less than one half of the amount of open hearth steel made in Great Britain.

(f) Mineral resources of the United States 1891.