THE ORGANIZATION OF THE INSTITUTE

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The first three of these groups, with the President, constitute the Faculty, and its members are usually recruited by promotion of the junior teachers. The Faculty chooses its own officers—Chairman, Dean and Secretary—and makes its own rules. It is directly responsible for the curriculum and scholastic standards. Of the 90 members 54 are at present Technology alumni. Unlike the Corporation and the Executive Committee, the Faculty has no charter or authoratative definition of its powers and duties, these being defined, if at all, only by presedent and tradition. The moral weight which attaches to its decisions on all questions of educational policy is nevertherless very great, and its recommendations in regard to conferring the degrees of the Institute are invariably adopted by the Corporation. The President, as the presiding officer of both bodies, constitutes their official connection with each other.

With the increasing size of the Faculty it has become necessary to relegate as much of its business as possible to standing and special committees, and to the administrative officers whose duties are defined in the Faculty Rules. In comparison with other institutions it is note-worthy that universities as large as the Institute are ordinarily composed of several main divisions, often called colleges or schools, as of law, engineering, liberal arts, etc., each with a dean as its administrative head. The Institute not being thus divided, the office of dean has a distinct significance connecting itself mainly with matters of discipline, which are fortunately few and simple at the Institute, and with the very important personal relations with individual students, particularly in the first year.

Of the standing committees, the most important are perhaps those on Faculty Business on Advance Degrees and Fellowships, on the Conduct of Examinations, on Courses of Instruction, on Entrance Examinations, on Petitions, on Publications, on the Tabular View and Room Scheme, on Undergraduate Scholarships, and the three committees dealing with records of first, second and third-year students respectively. The chairmanship of any one of these committees carries with it considerable responsibility, and in many cases a large expenditure of time.

The educational function of the Faculty as a body is essentially one of coordination, actual teaching being necessarily in charge of individuals, grouped for the purpose in departments, professional or general. The Faculty and its officers and committees deal thus with matters of interdepartmental character, regulating, for example, the time which may be allotted for any professional course, and passing on all questions of redistribution.

The departments, as enumerated in the catalogue, number twenty, besides the research laboratories, but they vary widely not alone in subject matter but in size, development and organization. The largest numerically is Chemistry, with thirty-five persons on its permanent staff. At the other extreme, Military Science has but one; Physical Training, two besides the Dean.

As has been said of the Faculty, the departments have no authoritative definition of their powers and duties; they are subject to restriction or direction on the one hand by the Executive Committee of the Corporation through appointments and appropriations; on the other hand, by the Faculty and administrative officers in connection with the application of Faculty rules. Within the department, organization may be formal, or informal, democratic or otherwise, according to size and other conditions. In general the head of the department is responsible to the corporation for making recommendations in regard to nominations, promotions, etc.

Of the alumni and the undergraduates and their organizations important as these are to the Insitute it is not the purpose of this article to speak.

GENERAL USEFULNESS OF INDUSTRIAL CHEMISTRY

By PROF. W. H. WALKER

In the fall of 1907, the Institute established what is called a Research Laboratory of Applied Chemistry. But in the minds of many the terms "research" and "applied chemistry" present a paradox. How can there be any research involved in simply applying principles of chemistry already well understood? In order to get clearly in mind the functions of such a Liboratory, and the relation which it bears to the community, it will be necessary to inquire as to what research in applied chemistry involves, and how it differs, if at all, from research in any other field of chemistry.

If one may use a rough analogy, original or research work in chemistry may be compared to an exploration into an undeveloped country. The explorer will be guided by certain well-known land marks, but he will eventually come to a river which has never been crossed,—a problem which has not been solved. Research consists in building a bridge across this river over which any one may subsequently pass. Original work in applied chemistry does not consist, therefore in simply using the bridges constructed by others in traveling towards a definite goal, but necessitates the construction of many difficult bridges over rivers never before crossed.

Research in applied chemistry differs from research in what for want of a better term we call theoretical chemistry, however, in at least this particular:—in the case of theoretical chemistry, a bridge is built largely, if not entirely, because the builder elects to build it in a particular place, at a particular time, but without reference as to whether the bridge will be used by others in the immediate, or even in the remote future. In applied chemistry, on the other hand, the bridge is built because there is a demand for the bridge, and because when finished it will be immediately utilized. The bridges are built in the same way, by the same general methods, and with the same materials of construction. They differ fundamentally only in this one particular, namely, that the research worker in applied chemistry builds for immediate utilization, while the research worker in theoretical chemistry builds fo the future, whether it be immediate or remote.

Nor are the bridges which are most worth building in applied chemistry more easy of construction, or demand less application of true scientific spirit, nor are they less enjoyable in their building than those in others fields of chemistry. Because the bridge is to be utilized immediately upon its completion does not make it less worthy of building than one for which there is at present no apparent demand.

The Research Laboratory of Applied Chemistry was established by the Institute therefore, with two main objects in view. The first to attack some of the problems in chemistry for the solution of which there is at present an insistent demand, and second to provide a laboratory where the problems incident to the process and plant of individual manufacturers not possessed of adequate facilities can be investigated. Both of these lines of work are at present carrid on with a degree of success which would seem to have justified the establishment of the Laboratory. The work on the corrosion of iron and steel which has been done, and the methods of protecting steel structures by means of paint and other coverings, has attracted the active co-operation of two of the standing committee of the American Society for Testing Materials, and the aid of the Scientific Section of the American Paint Manufacturers' Association. A study of the principles underlying fractional distillation and their application to a differential condenser has obtained the support of certain large manufacturers and users of distillation apparatus.

Individual corporations have been sufficiently eager to take advantage of the facilities offered by the Laboratory for a study of some of their more important problems, to already overtax the available laboratory space. That there is a demand for such a Laboratory is beyond question, and that this demand is in some measure met is apparent from the ease with which the interest of manufacturing concerns has been enlisted.