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1946

MEMORANDUM ON ENLARGEMENT OF FACILITIES
OF THE
KETTERING LABORATORY OF APPLIED PHYSIOLOGY
IN THE
COLLEGE OF MEDICINE, UNIVERSITY OF CINCINNATI

The increase in the size and facilities of the Kettering Laboratory, contemplated and planned in accordance with a previous memorandum (1944), submitted to various sponsors of the activities of the Laboratory, and acted upon favorably in 1945 by Ethyl Corporation and a number of other industrial groups (see attachment), has now been visualized in terms of the architects plans and specifications. Since the initial discussions, the situation with respect to the cost of constructing the addition to the Laboratory, as well as the cost of purchasing and installing equipment, has undergone changes which, while familiar to industrial management, are so significant as to necessitate the re-examination of the entire project. The purpose of this memorandum is to review the facts, so far as they are now available, as a means of providing the information on which the advice of sponsors of the Laboratory can be obtained. It is necessary to decide whether the program as originally contemplated, should be and can be carried out, whether it should be modified, or whether all plans should be held in abeyance at this time.

I. The plans and specifications of the architect involve the construction of an addition to the Laboratory that will double (approximately) its floor space. This space is not designed to duplicate the present facilities of the Laboratory, but rather to

augment them in accordance with the needs demonstrated by the experience of the past several years, as well as those foreseen in terms of present developments in this field of investigation. For example, one of the most serious limitations to both volume and precision in such experimental work has been found to be the size and design of animal quarters. One entire floor of the new addition, together with certain facilities situated upon the roof, has been allocated to the purpose, and the arrangement of this space has been planned upon the background of our years of experience. Every facility of the space has been laid out in line with maximum efficiency, economy and adaptability, so far as our best judgment will permit. An additional fourth of the new space is taken by the clinical and experimental facilities required for the study of human subjects and patients, the need for which is acute, as shown by our previous experience. Much needed information in connection with basic problems of human physiology is unobtainable at present because of the lack of these facilities. One other highly significant phase of our work is in urgent need of extensive expansion, namely, examination into the effects of prolonged occupational exposure to low concentrations of dusts, fumes, vapors and gases. The first step in this work is the careful study of experimental animals over long periods of time. This involves the use of much space and elaborate equipment. We have planned to double and also to improve the design of our facilities for this purpose, thereby taking up another fourth or fifth of the additional space. The remaining space of the addition is intended for offices, certain centralized receiving and storage facilities, an enlarged library and conference room, and one lecture room.

All but a very small portion of the new space will be occupied as soon as it can be made available, for the conduct of work which is now in progress or being held in abeyance for lack of facilities. There is, therefore, nothing visionary in the program and nothing in way of luxurious accommodations is contemplated. It might be thought that the use of air-conditioning to the extent contemplated is somewhat extravagant were it not for the fact that the control of environmental temperature is a strict necessity in connection with many types of animal experimentation. Under these circumstances the additional expenditures required to assure reasonable comfort for a large proportion of the staff of the Laboratory is not great.

II. The cost of this addition to the building and of certain items of fixed equipment originally contemplated was estimated at about \$250,000.00 of which \$50,000.00 was to be allocated to equipment. Since these estimates were made, building costs have increased phenomenally, and even now seem not to have become so stabilized that a firm bid can be obtained. However, the architect has received a proposal from the Ferro Concrete Construction Company, reliable and conservative local builders, to build the building for a fixed fee of \$20,000.00, the estimated but unguaranteed cost to be \$250,000.00 including the fixed fee. This does not include electrical work closely estimated at \$39,000.00, air-conditioning \$48,000.00, heating and ventilating \$20,000.00, plumbing \$30,000.00, two elevators and dumb waiters \$40,000.00. Nor does it include engineers' and architects' fees, exterior grading, planting, sodding and a contemplated improvement of roadway and parking space. Moreover no allowance has been made for equipment which we intend to procure ourselves at an estimated cost of \$40,000.00 to \$50,000.00.

Doubtless, opportunities will be found to economize on certain matters. I have found, for example, that we can cut \$6,000.00 from the cost of elevators, by simple changes (in speed of carriage) that will not discommode us. It will be possible to forego the expenditures outside the building, and to reduce the amount of fixed equipment to that absolutely essential at once. By such means we can keep within \$500,000.00, but it seems highly improbable that we can do much better than this.

III. A decision as to whether or not to go ahead must be made with reasonable promptness. Unfortunately this is not as simple as it might appear, and therefore the factors, other than those of enthusiasm and good will, need to be weighed, not so much by representatives of the University of Cincinnati as by the industrial organizations who have approved the project in its earlier form.

The important factors, as we see them, are, (1) the opportunities which now present themselves now, for enlisting the interest and financial support of other industrial groups in the current work of the Laboratory; and the question of how long such opportunities will continue to exist; (2) the probable duration of the present period of high building costs. Our judgment on the first of these factors, in terms of recent events, may be of use. On the second, we have no opinion and need advice.

Since the submission of our first memorandum on this subject in 1944 several things have occurred to demonstrate the trends in industrial planning in this field. One group of industrial organizations (Aluminum Company of America, Pennsylvania Salt Manufacturing Company, E. I. du Pont de Nemours and Company, Reynolds Aluminum

Company, and probably two others) have decided to pool their contributions to a fund for a five-year (or more) program of investigation of fluorides in relation to public and industrial health, the cost of which has been estimated at \$15,000.00 per year. We have been asked to consider, (we shall probably decline) a comprehensive investigation of aluminum therapy in silicosis, the cost of which would approximate \$20,000.00 per year. Three large companies in the chemical field, not formerly associated with us, have asked us to make plans to carry out the major toxicologic investigations which will be required in connection with their research and development work. Three other large producers of chemicals, who have sponsored work regularly for some years, wish to expand their experimental programs in our hands by 50 to 100 percent over that of previous years. Other groups have brought problems of variable scope and importance, the result being that we have a waiting list that is formidable, despite our having pointed out that we cannot even consider the problems in question for six months or more. There has never been anything like the present demand for this type of work, and although we cannot think of investigating a large proportion of the problems that arise, it is a serious question as to whether we should be unduly long in making an appropriate response to this demand. Obviously, large corporations will create their own facilities of this type if they cannot obtain the service they require elsewhere. This in my opinion, would be bad for us, for them, and for the proper development of this professional and scientific field, for there is little doubt that such work generally can be done better and cheaper in a medical center such as this, and that when so done it will have more value to everyone concerned.

Moreover, the duplication of such facilities in industrial establishments is uneconomic and also wasteful of scientific personnel, especially that trained in medical and physiological work.

From the viewpoint of Ethyl Corporation and other sponsors of our work up to this time, it would appear that something might well be gained by an investment now which would take advantage of the present interest of other industrial organizations in work of this type. It may well be that some plan could and should be worked out whereby present expenditures for building and equipment could be shared by all subsequent sponsors of the work in the form of an overhead charge made against all projects, other than those conducted on behalf of the contributors to the first and the present building fund. In any case it is apparent that those whose original contributions were responsible for the creation of this laboratory, and whose further contribution will have enlarged it, will be entitled to every consideration, in keeping with their larger share in the burden. Unquestionably we shall have to set limits upon the scope and character of our investigations. Those having the greatest hygienic significance, and those adequately financed so that they can be thoroughly pursued, will have first claim upon our interest.

No university worthy of its name can be expected to ally itself with or merge its interests with those of an industry or group of industries. Nor do I, as the representative of the University of Cincinnati, wish to make a plea for special consideration for myself and my associates or for the University. I believe that this relationship between industry and this University is a mutually beneficial one and I cannot see any manner in which it can be

maintained except by the understanding coöperation of both. In the long run no industry can justify expenditures for this or any other purpose unless they are productive. Therefore, this Laboratory must solve the problems it deals with in an effective manner, and must aid in putting the solutions into effect, if the staff must enter the market place to do so. This must all be done at a cost within the limits which a prudent industrial organization can afford. We believe this has been accomplished in the past, and that it can be accomplished even more effectively in the future with the additional facilities. The present question, as we see it, is whether the cost of new facilities, as now estimated, is exorbitant, not in absolute terms, but in relation to present and anticipated returns. The proportion of the total contribution that should be made by individual industrial organizations would seem to require reconsideration at this time, in view of recent developments, and advice will be sought on this point. At present, however, the primary question is that of the wisdom of going ahead at once.

Signed: _____

Robert A. Rehoe, M. D.

October 1946