ON THE TRAINING OF SANITARIANS

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INTRODUCTION

A recent editorial by Hatlen (4) brought forth an appeal for the recruitment of "qualified" college trained personnel. The problem of providing adequately trained sanitarians is a serious one, and it is of concern to at least three large groups. First, to the schools which provide formal training for potential sanitarians, it is a problem of providing the best possible curricula. Secondly, to department heads of regulatory agencies and industrial organizations who hire sanitarians, it is a problem of securing an individual best trained to meet their particular needs. And thirdly, it is a problem to the sanitarians themselves as they strive to better their profession.

The objectives of this study are to present: (a) a review of the present professional status of sanitarians and various activities which are directed toward its betterment; (b) a review of recommendations which have been made for training sanitarians; and (c) a survey of opinions relative to the type of training most desirable for sanitarians.

Definition of a Sanitarian

What is a sanitarian? The Committee on Professional Education of the American Public Health Association (1) proposed the following definition of a sanitarian:

"A public health sanitarian is a person whose education and experience in the biological and sanitary sciences qualifies him to engage in the promotion and protection of the public health. He applies technical knowledge to solve problems of a sanitary nature and develops methods and carries out procedures for the control of those factors of man's environment which affect his health, safety, and well-being."

This definition appears to be quite adequate.

Duties of a Sanitarian

Sanitarians are the second largest group employed in official health agencies and are exceeded in number only by public health nurses. The complexity of the sanitarian's duties touches all phases of community life, draws upon knowledge of the physical, biological, engineering and social sciences, and is interwoven in nearly all activities of a complete public health pro-

gram. In addition to educational duties, the sanitarian is required to interpret and enforce public health laws, ordinances, and regulations. He is in close daily contact with dairy farmers, milk and food plant operators, and proprietors of all types of retail food service establishments. His work requires investigations of domestic water supplies, sewage facilities, and the disposal of other community wastes. He is concerned with insect and rodent control and with sanitary conditions at hotels, motels, trailer parks, resorts, recreational camps, swimming pools, and bathing areas. Home safety and accident prevention, assistance in epidemiological investigations, civil defense planning, and evaluations of sanitation laws and regulations may be included among his duties.

Motivating Factors

FOR SELECTING A CAREER IN PUBLIC HEALTH

Men enter the field of Public Health Environmental Sanitation with a wide variety of educational backgrounds. This is generally not true among the other professions making up the public health team.

A survey by Stiles and Watson (8) has shown that students in the schools of medicine, dentistry, and nursing list the following as the three primary motivations for choosing their profession: (a) native interest and aptitudes which make it natural to pursue this field in preference to all others, (b) expectation of a substantial financial income and economic security, and (c) expectation for advancement in position, social prestige, or responsibility. Graduate students in the School of Public Health of the University of California at Berkeley and San Francisco, however, rated the following factors to be of much greater significance than those selected by students enrolled in other professional schools: (a) previous experience in an occupation closely related to the expected career, (b) an agreeable opportunity which materialized unexpectedly, and (c) close relationship of this vocation to another which could not be attained for some reason. Public health students gave considerably lower rating to such motivations as "expectation of substantial financial income and economic security", or to "expectation for advancement in position, social prestige or responsibility".

Another study recently completed in California (3) has further minimized financial considerations as an incentive by pointing out that sanitarians' salaries in

1 A report of the Committee on Education, Minnesota Sanitarians Association, and based on data gathered by George W. Hanson in connection with work leading to the degree of Master of Public Health, University of Minnesota. Presented at the Annual Meeting of the Minnesota Sanitarians Association, St. Paul, September 18, 1959.
that state, during the last four years, lagged by about 35 percent behind the annual wage increase for workers in general. However, the situation relative to salaries of sanitarians is not entirely discouraging. A study made in 1956 by the Conference of Municipal Public Health Engineers (7) indicated that since 1954 the salaries of the sanitarians have risen more rapidly than those of public health engineers.

In summary, it would appear that, in general, personnel are attracted to the public health field late in their college programs or even after they have completed their college education.

NECESSITY FOR TECHNICALLY TRAINED SANITARIANS

The most important reason for college level training is that advances in technology have added to the complexity of the sanitarian’s general program. New areas challenge his skills. Some of these areas are: radiological health; industrial sanitation; air pollution control; urban fringe sanitation; accident prevention; housing; and developments in food production, processing, and distribution. Knowledge made available through research can be applied toward producing a healthier environment. Proper use of this new knowledge, however, requires adequately trained and competent personnel.

PROFESSIONAL STATUS OF SANITARIANS

Advancement to Professional Status

Sanitarians are seeking professional status. They look to the recognition and dignity now enjoyed by health officers, engineers, nurses and other members of the public health team. Generally they realize that professional recognition will not become a reality until adequate standards in education and training are established which will provide the basis for competency in performing the work of a sanitarian.

Some indication of the present status of qualifications specified for sanitarians is contained in a report of the Committee on Salaries, Association of Municipal Public Health Engineers (7). This report stated that one-third of all the vacancies for sanitarians consists of positions for college graduates with no experience. On the other hand, the report indicated that nearly 50 percent of all sanitarian positions at the local level now require a college degree.

Some degree of professional recognition already has been obtained. This has been fostered largely by two professional societies, the International Association of Milk and Food Sanitarians, Inc., and the National Association of Sanitarians. Activities of these organizations are reflected in the general upgrading of sanitarians. As public understanding grows, undoubtedly there will be further demands for more and better trained men. Professional recognition should increase and it is likely that there will be more active participation by sanitarians in community programs.

Many sanitarians now realize that registration, whether voluntary or mandatory, can be helpful in attaining professional status and increased proficiency. Registration should be based upon high-level qualifications and ability, and should not be used as a device to insure job security or to protect mediocrity.

It is an accepted fact that practically all present state registration laws emphasize education and training of the sanitarian as fundamental to his professional development. It is also recognized that most of these laws promote a reciprocal interchange of personnel between states with similar acts, thus eliminating employment barriers which now exist in some areas.

Jones (6) in a report presented to the 44th annual meeting of the International Association of Milk and Food Sanitarians, Inc., indicated that there is a definite trend in the United States to establish some form of state legislation for registering qualified sanitarians. He further stated that eleven states and one territory have enacted legislation to establish legal procedures for registering sanitarians. They are: Oregon, Georgia, California, Wisconsin, Colorado, Utah, Louisiana, Oklahoma, West Virginia, Arkansas, Massachusetts, and the Territory of Hawaii. In addition, the state of New Jersey requires the licensing of Sanitary Inspectors.

Several other state governments including Arizona, Connecticut, Florida, Missouri, Ohio, Texas, Washington, and Minnesota have considered but have failed to act upon similar registration bills. These failures, in most cases, were apparently due to insufficient "grass roots" education at both the public and legislative levels.

Voluntary registration of sanitarians, utilizing standards equivalent to the compulsory regulations, has been established in Indiana, Ohio, and Pennsylvania.

These various registration acts are a step in the right direction, but maximum recognition, prestige and uniformity of standards will be attained only by (a) well qualified, dedicated and competent personnel available for this type of work, and (b) a voluntary national registration plan or a uniform registration law in each state. Those applicants who fail to meet established minimum standards or qualifications must, however, be screened out.

RECOMMENDATIONS WHICH HAVE BEEN MADE FOR TRAINING SANITARIANS

Since 1950, three study groups have made recommendations pertinent to the educational qualifications of sanitarians. A summary of the recommendations of each of these follows:

1. **Recommendation for Technical Training**
   - Requires a college degree.
   - Emphasizes professional recognition.
   - Encourages advanced education.

2. **Registration Requirements**
   - Registration based on high-level qualifications and ability.
   - Reciprocal interchange of personnel.
   - Employment barriers eliminated.

3. **Voluntary Registration**
   - Established in Indiana, Ohio, and Pennsylvania.
   - Requires dedication and competence.
   - Uniform standards desired.

4. **State Legislation**
   - Eleven states and one territory have enacted legislation.
   - Registration laws in place in Oregon, Georgia, etc.
   - New Jersey requires licensing.

5. **Educational Requirements**
   - College degree standard.
   - Technical training emphasized.
   - Professional status recognized.

6. **Professional Recognition**
   - Organizations like the International Association promote recognition.
   - National Association of Sanitarians involved.

7. **Mandatory Registration**
   - Discussion of mandatory registration laws.
   - States with similar acts.

8. **Conclusion**
   - Recognition and dignity now enjoyed.
   - Committee on Salaries report.
   - Further demands for trained men.

9. **Future Prospects**
   - Increased professional status.
   - Community participation.
   - Establishment of legal procedures.

10. **Critical Needs**
    - Well qualified, highly trained personnel.
    - Uniform standards.
    - Reciprocal interchange.

11. **Policy Recommendations**
    - Clearly defined professional status.
    - Adequate standards for personnel.
    - Support for educational qualifications.

12. **Summary**
    - Professional recognition increasing.
    - Educational qualifications important.
    - Future opportunities for sanitarians.
Working Conference on Undergraduate Education in Sanitary Science

This Conference (5) was sponsored by the Kellogg Foundation in 1951. The purpose of this conference was to provide an opportunity for institutions offering an undergraduate degree in public health to exchange views on their programs of study. Emphasis was placed on the importance of principles for future planning rather than attempting to develop a stereotyped pattern of education. In Appendix A of their report, they listed the following suggested program based upon semester credits:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Course</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>English</td>
<td>6</td>
</tr>
<tr>
<td>Chemistry</td>
<td>6</td>
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<tr>
<td>Physical Ed.</td>
<td>6</td>
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<tr>
<th>Sophomore Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Biology</td>
<td>8</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Physical Ed.</td>
<td>3</td>
</tr>
<tr>
<td>Political Science</td>
<td>4</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>35</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Course</td>
<td></td>
</tr>
<tr>
<td>Bacteriology</td>
<td>4</td>
</tr>
<tr>
<td>Quantitative Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>Sanitary Science</td>
<td>6</td>
</tr>
<tr>
<td>P.H. Organization</td>
<td>3</td>
</tr>
<tr>
<td>Physics</td>
<td>4</td>
</tr>
<tr>
<td>Parasitology</td>
<td>3</td>
</tr>
<tr>
<td>Entomology</td>
<td>3</td>
</tr>
<tr>
<td>Statistical Analysis</td>
<td>3</td>
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<td></td>
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<td></td>
<td>33</td>
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</table>

<table>
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<tr>
<th>Senior Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td></td>
</tr>
<tr>
<td>Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>Sanitary Science</td>
<td>18</td>
</tr>
<tr>
<td>Physics</td>
<td>4</td>
</tr>
<tr>
<td>Human Relations</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>36</td>
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</tbody>
</table>

It is interesting to note that the foreward of the conference report included the following quotation:

"In the training of a sanitarian the first objective is to produce an educated individual, a person who has developed competence in the formulation of intelligent judgments, and secondly to provide a person qualified to enter the field of environmental health."

At the present time there are 16 colleges or universities which have curricula similar to that suggested by this committee. These are: University of California, University of Denver, Florida State University, University of Florida, Indiana University, University of Massachusetts, University of Michigan, University of North Carolina, University of Oklahoma, Rutgers University, San Jose State College, Southern Illinois University, Tulane University, Utah State Agricultural College, State College of Washington, and the University of Washington.

Committee on Professional Education, American Public Health Association

The report of this committee (1) recommended that undergraduate study follow a similar type of program as that proposed by the "Working Conference" mentioned above. A summary of their recommendations is as follows:

The first two years — English, economics, government, sociology, anthropology, social institutions, speech, etc.; and sciences such as mathematics, elementary bacteriology, chemistry, physics, psychology, zoology or physiology or general biology.

The second two years — Advanced general bacteriology, medical entomology, and/or parasitology; public health courses to include communicable disease control, public health administration and law, health education, principles of environmental sanitation, epidemiology, biometry, principles and practices of water supply and sewage disposal, control of production and distribution of food and milk; laboratory procedures used in the maintenance of a sanitary environment; approximately three months of supervised field training in branch offices of a state health department or in local municipal or county health departments.

This committee also proposed five basic levels or classifications for the public health sanitarian, the least of which requires a Bachelor's degree. (See Table 1).

<table>
<thead>
<tr>
<th>Title</th>
<th>Education</th>
<th>Minimum public health experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Health Sanitarian I</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Public Health Sanitarian IIa</td>
<td>Bachelor's degree</td>
<td>1 year</td>
</tr>
<tr>
<td>Public Health Sanitarian III</td>
<td>Bachelor's degree</td>
<td>3 years</td>
</tr>
<tr>
<td>Public Health Sanitarian IV</td>
<td>M.P.H. (desirable)</td>
<td>4 years</td>
</tr>
<tr>
<td>Public Health Sanitarian V</td>
<td>M.P.H.</td>
<td>6 years</td>
</tr>
</tbody>
</table>

a Graduates with a B. S. degree in sanitary science and public health, because of specialized preparation and field training, should start at the Sanitarian II level.

Report of Directors of Full Time Local Health Departments of Michigan

This report (2) consisted of a recommendation to the Commissioner of Health of the State of Michigan that recognition be given to a two year course at the technician's level for persons who may be interested in the field of environmental sanitation. This group would be known as "Sanitarian Technicians". This plan is now under consideration by the Ferris Institute in Michigan for it was proposed that this institution provide such training. These recommendations are opposed by the Executive Board of the International Association of Milk and Food Sanitarians, Inc. who object to the "trade school" approach of such a program. This objection is substantiated by the recommendations contained in the committee report Educational and Other Qualifications of Public Health Sanitarian (2) previously discussed.
A Survey Of Opinions Relative To The Type Of Training Most Desirable For Sanitarians

Procedure

In view of the growing interest in providing better training for sanitarians, a survey was made to obtain the opinion of agencies employing sanitarians relative to the training qualifications desired. Generally there appear to be two distinct college curricula that are utilized by college students planning a career in, or who eventually find themselves engaged in, public health work as sanitarians.

First, there are the four-year science graduates often with majors in applied fields such as Dairy Technology, Food Technology, Bacteriology, etc. Such graduates have been the major source of college trained sanitarians in the past. They have had little or at best only rudimentary training in the broad area of public health prior to employment; however, generally they are well grounded in fundamental science courses and many have proven themselves adept in applying this training in the field of public health.

Secondly, there are the college graduates with a degree in Sanitary Science. Such individuals have received specific training in public health with a great deal of emphasis on methodology, but they frequently lack knowledge relative to applied fields wherein public health principles are of major consideration.

Therefore, a questionnaire (see Appendix) was designed to obtain information as to which of the above two types of training programs was preferred. This questionnaire in letter form was sent to environmental sanitation sections of all state and territorial health departments, to some of the district United States Public Health Service offices and to a number of larger city and county health departments, as well as several large industrial food processing firms.

The questionnaire requested the recipient to indicate the type of college level training preferred in a man they would like to hire as a sanitarian, and to give the reasons for their choice. It also requested information as to whether or not their department presently employed sanitarians and, if so, how many. In all, 100 questionnaires were mailed. Answers were received from 66 of the parties contacted. According to the answers received, these 66 departments were directly or indirectly responsible for hiring and placing some 1727 sanitarians. The large number of returns reflects the general interest in the training of sanitarians.

In preparing the questionnaire, every effort was made to eliminate bias. Also, it was sent to all parts of the United States in an effort to balance out any bias that might exist in any one portion of the country. It is recognized that it was not possible to control any bias of individuals who answered the questionnaire. Furthermore, various departmental policies relative to training qualifications could, in those cases not set forth by regulation, change with succeeding directors.

Comments from Those Favoring Sanitary Science Curriculum

The sanitary science curriculum leading to a B.S. degree was indicated as first choice by 45.4 percent of all department heads answering the questionnaire (see Table 2). Representative comments taken directly from the answers to the questionnaire are presented below:

Table 2 — Preferences Expressed In Replies From Public Health Agencies Relative To College Curricula For Sanitarians

<table>
<thead>
<tr>
<th>Curricula</th>
<th>Choice No.</th>
<th>% of sanitarians employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary science</td>
<td>30</td>
<td>45.4</td>
</tr>
<tr>
<td>Applied science</td>
<td>24</td>
<td>36.3</td>
</tr>
<tr>
<td>Other than above</td>
<td>12</td>
<td>18.3</td>
</tr>
<tr>
<td>Totals</td>
<td>66</td>
<td>100.0</td>
</tr>
</tbody>
</table>

"Sanitary science because they have better background in the specific subjects dealing with environmental sanitation."

"On-the-job training time is greatly reduced and this is a big advantage to the employer."

"They have a knowledge of prevention and control of preventable diseases by environmental control measures as well as a knowledge of people, their standards of living and their needs with respect to their particular environment."

"Most sanitarians have difficulty from the public relations standpoint, rather than from the technical standpoint. We would hope that any graduate in sanitary science would be able to recognize problems that he is not equipped to handle and would call upon those who could advise him for assistance."

"Sanitary science graduates can always acquire techniques of the science graduate, but the science graduate never does acquire the broad training of the sanitary science graduate."

"A curriculum leading to the B.S. degree in sanitary science embodies a carefully planned balance in the science courses, whereas the four year science graduate is likely to have had all or most of his technical training on only one, or at best two, science fields."

"We feel that college graduates in sanitary science would be better qualified and might obtain a preference in employment as sanitarians. We do not feel that the employment should be limited to such persons since the demand for sanitarians is more than could be supplied from such sources."

"The sanitary science graduate would know the value of the other members of the public health team and therefore would think in terms of the overall public health program."

"From the point of view of early competence in the field of public health, the person graduating in sanitary science seems to make a better sanitarian than one from the general
biological sciences. However, whether the more specialized training in sanitary science will stand him in good stead later on, we do not know as we have no sanitarians with this type of training in our higher-level positions."

Comments Relative to Shortcomings of a Sanitary Science Curriculum

In spite of the many reasons listed above, sanitary science continues to supply only about 10-15 percent of the graduates needed annually to fill vacancies in the field. The following are a few of the comments received; these indicate some of the possible shortcomings of such a program and may help clarify the reasons for this shortage:

"The sanitary science graduate is specifically trained in a very limited field of endeavor. Should he become dissatisfied with his work, he may find it difficult in making a change. Also, by directing one curriculum to a specific field, such as public health, you limit the health departments to a lesser number of personnel which, by no means of the imagination, could be considered the best of the students available."

"The chance for advancement for the sanitarian is somewhat limited. His original employment position is often the highest position he can hold without further academic training. This may not be true in the larger governmental agencies or in the larger industries, but is certainly true in the majority of the vacancies; and that except in a few special cases, the lack of professional recognition makes him 'low man on the totem pole' in the public health team. Therefore, if one knows in advance that he is going to enter the public health field, perhaps it would be better to choose a recognized professional field."

"The principles taught in restricted sanitation courses often are in conflict with the ideas of the agency employing the sanitarian. As a result, unlearning is necessary."

"A person with this background may lack enthusiasm for his work. Some have the feeling that they are completely trained men and can learn very little more from a health department or the community." (This comment from a department which has employed seven sanitary science graduates in the past six years.)

"The men in sanitary science have not received good basic training in fundamental science courses but have, to some extent, been 'trade schooled' in some narrow fields of environmental sanitation. It is often difficult to distinguish between the quality of work, basic knowledge, etc., of the sanitarians who are not specifically trained in sanitary science and those who are. When giving promotional examinations prepared by the American Public Health Association, it was found that the sanitary science majors did not necessarily show up any better than those who received the fundamental science courses. This is also found to be true in the oral examination when an attempt was made to determine such things as a man's reasoning powers."

Comments of Those Favoring an Applied Science Curriculum

Results of the survey showed that 36.3 percent of those answering the questionnaire indicated this curriculum as their preference. This would seem to indicate a nearly even split in opinion between the two choices. This second type of college personnel are the four-year science graduates often with majors in applied fields such as Dairy Technology, Food Technology, Bacteriology, and Biology. Such graduates have been the major source of college trained sanitarians in the past. Some of the reasons cited in preference for this group are as follows:

"Graduates from a four-year course in science with emphasis in basic science are more valuable than those that have received more general training in public health methods. Adequate preliminary training in basic sciences is most important." (This comment from a person who taught sanitary science for three years.)

"Specific training in the more detailed work in the various fields of environmental health should come in graduate study."

"Any broad training in science provides a good background for sanitation since in-service training is a necessity for all new sanitarians. Regardless of background, no one just out of college is equipped to handle the complex field of public health."

"It is felt that many schools today are limiting employment for graduates by constructing restrictive curricula rather than providing them with the broad base upon which they may be employable in more fields! Accordingly, it is primarily necessary for a man to have a background in the basic sciences and having broad educational experience rather than having specific training in public health with a great deal of interest on the principles of public health. With the man with a basic science degree, a health department can provide him in many ways with the necessary public health academic training and experience which he requires, if and when he comes into the field of public health. If the undergraduate program has been sufficiently broad, it will have provided a base for graduate study at a later date to prepare the individual for health work as a sanitarian supervisor or specialist sanitarian."

"The man with a degree in basic science is preferable. He is more willing to learn and carry out the division's programs without the feeling that he is a completely trained man and can learn very little more from this department or the community. With an eagerness to learn coupled with some in-service training in fields of his endeavor, he is doing a fine job. On new problems in the field, his wider background in fundamental science has enabled him to more easily reach a satisfactory solution. The sanitary science man seems to be at a loss to apply the practical knowledge." (This comment from a department employing more than 50 percent sanitary science graduates.)

"There is a basic need for adequate training in the fundamental sciences with less emphasis during the undergraduate training on principles and methodology. The latter can be developed through proper organized orientation, supervised experience and in-service training after employment."

"The smaller states have to work their sanitarians into many roles not specifically along the lines of strict sanitation. When this is true, they would prefer a man trained in Food Technology or Bacteriology. Having this background they can then train them in the specific or varied fields that are involved."

Comments Relative to Shortcomings of an Applied Science Curriculum

Some of the replies relative to the shortcomings of an applied science curriculum were the following:

"The individual with a B.S. degree in applied fields has no actual training in public health and does not think in terms
of the overall public health programs."

"A large portion of the background courses a basic science student would receive would not be applied or be useful in the field of environmental sanitation."

"The four year science graduate is likely to have had all or most of his technical training on only one, or at best two, scientific fields."

(Reference should be made to those comments listed as advantages under the sanitary science curriculum.)

Comments from Those Not Specifically Favoring Either Type of Training

Twelve of the questionnaires returned failed to: (a) specify the type of training they desired; (b) approved of both types; or (c) approved of neither type. Some comments from this group are as follows:

"The comparison between the two is a toss-up."

"Both courses are necessary in the field of public health. For top level positions you need men with schooling in Dairy or Food Technology, Bacteriology, and Entomology. Secondly, you need men schooled in sanitary sciences who can operate on a broad scale."

"With the requirements for conducting both specialized and generalized programs, it is necessary to conduct the personnel accordingly. Experience shows that a graduate holding a degree in sanitary science is often no better prepared for environmental sanitation work over a graduate in related sciences because of the special emphasis so often presented in the undergraduate curriculum, i.e., milk and food, sewage and water, bacteriology, and housing."

"We have had experience with sanitarians with training in both types of college curricula described. Generally speaking, there seems to be no obvious difference in performance between the two types after a few months period of on the job training. Much of the difference in performance seems to be the result of the individual's ability to apply his academic training to the specific practical problems he meets in the field."

Other Information of Interest

Several other items of interest brought to light by the survey may be of general interest.

Post-graduate training. Twenty-three percent of the answers received indicated the desirability of graduate training toward the M.P.H degree regardless of the background of the individual.

In-service training. Nearly all of the replies stated the existence within the respective departments of on the job training opportunities and regular periodical in-service training courses regardless of the background of the individual.

Individual abilities. Several answers indicated that individual personality and salesmanship was of primary importance above any type of training. To quote just one answer as an example: "I once had a technician working for me that could appear before a group and do more harm in ten minutes than we could cure in a year. Yet, he was excellent so far as technology goes."

Summary and Conclusions

Sanitarians, together with interested groups, have begun the task of improving their professional status. Generally, they realize that professional recognition will not become a reality until adequate standards in education and training are established which will provide the basis for competency in performing the increasingly complex duties of a sanitarian. The principal methods presently being utilized are: (a) registration based upon high-level qualifications and ability; and (b) encouragement of studies pertinent to the educational qualifications desirable for sanitarians. In this connection, the 16 colleges and universities offering a B.S. degree in Sanitary Science are providing a curriculum quite similar to that recommended by the "Working Conference" (5) and the Committee on Professional Education, American Public Health Association (1).

In view of the growing interest in providing better training for sanitarians, a survey was made to obtain the opinions of agencies employing sanitarians relative to the training qualifications desired. Answers were received from 66% of the organizations to which questionnaires were mailed. Those replying included departments which are directly or indirectly responsible for hiring and placing some 1727 sanitarians.

The choice of desirable college curricula, as indicated by the returns, was so evenly split between applied science graduates and sanitary science graduates that no definite conclusion can be drawn as to which would be most desirable. It does appear from the comments received, however, that both curricula are presently being utilized and are providing the means for adequate training of sanitarians. The survey also revealed that in some instances there was a tendency toward the use of applied science graduates in public health areas allied to the individual's specialization, and the use of the sanitary science graduate in the general sanitation program.

Other interesting information obtained through the survey included: (a) the desirability of graduate training toward the M.P.H. degree as indicated by 23% of the answers; (b) the need for regular periodic in-service training courses regardless of the background of the individual; and (c) the desirability of individual attributes fundamental to the enhancement of good public relationships.

It is apparent that a variety of training is possessed by personnel serving as public health sanitarians. This includes: (a) relatively inadequately prepared individuals holding jobs as "political appointees"; (b) individuals with limited professional training but possessing extensive experience gained through long serv-
ice; (c) well educated individuals with little formal training in the public health field; (d) college graduates having pursued curricula in sanitary science or in several areas of applied science; and (e) individuals holding graduate degrees in public health or specialized areas related thereto.

In view of the above, there appears to be a need for additional constructive thinking and planning on the part of educators in the field of public health toward the objective of providing the kind of professional training for public health sanitarians that would be the most adequate.

APPENDIX

The following was contained in the questionnaire addressed to various public health agencies and several industrial food processing firms:

"Generally there appear to be two distinct college curricula that are utilized by college students planning a career in, or who eventually find themselves engaged in, public health work as sanitarians."

1. "There are the four-year science graduates often with majors in applied fields such as Dairy Technology, Food Technology, Bacteriology, etc. Such graduates have been the major source of college trained sanitarians in the past. They have had little or at best only rudimentary training in the broad area of public health prior to employment; however, generally they are well grounded in fundamental science courses and many have proven themselves adept in applying this training in the field of public health."

2. "Secondly, there are the college graduates with a degree in Sanitary Science. Such individuals have received specific training in public health with a great deal of emphasis on methodology, but they frequently lack knowledge relative to applied fields wherein public health principles are of major consideration."

"We would like to have your opinion as to which type of training you feel would be most advantageous to an individual seeking employment as a sanitarian. We would appreciate your indicating briefly your reasons for your choice. Also, does your department presently employ any sanitarians? If so, how many?"

"Please give your answer on the reverse side of this sheet. A self-addressed, stamped envelope is enclosed for your use. We would appreciate the return of this questionnaire at your earliest convenience."

"We wish to assure you that all comments will be kept confidential."

REFERENCES


