We shall begin our discussion of this assignment by considering how Webster defines the word philosophy. Among several uses, we find this one:

The body of principles or general conceptions underlying a given branch of learning, or major discipline, a religious system, a human activity, or the like, and the application of it; as, the philosophy of history, Christianity, or of business.

In terms of every-day language, our inquiry might read, "What is a sanitarian, what does he do, and why does he do it?"

Development of Sanitation

The attention which is now being given to hygiene is one of the spectacular developments in present-day public health practise. After increasingly effective epidemiology had revealed the grosser etiological agents in the spread of disease and thus made possible their control, we discovered new factors that contributed to the well-being of mankind. One of these was the subject of environmental hygiene. Its importance does not lie so much in its demonstrated direct etiological influence in the public health as it does by an indirect effect.

This indirect effect is twofold in nature. First, there is the powerful force of cleanliness—a sort of negative health factor in that it minimizes the baneful effects of dirt, vermin, foul air, polluted water, contaminated food, and poor lighting. Second, by reducing the number of infecting microorganisms it seeks to make our environment attrac-

tive, to make our world a nicer, more comfortable, healthier place in which to live. This latter factor is largely an emotional matter, but powerful in its stimulus to encourage man to engage in outdoor healthful activity, to live in pleasant surroundings, to enjoy his increasing leisure, to live under conditions of decreased health hazards, to be free from irritating factors which militate against public decency and healthy living—sometimes called aesthetic considerations but important nevertheless.

The personnel of a health unit who engage in this work are the sanitarians—formerly called inspectors. These are the men who used to constitute the political appointees, the "faithful" who were rewarded for getting out the vote by being given jobs. The marvel is that these men became earnest, faithful, devoted public servants who learned their duties the hard way. Gradually they lived down their humble (unprofessional) background, and rendered service which is the foundation on which much of our present utilization of sanitarians is built. In Canada, such health work still is done by sanitary inspectors, called in this country sanitarians.

Duties of Sanitarians

Sanitarians constitute the second largest group engaged in public health activities in official health departments. They are employed to carry out inspectional and educational duties, and to enforce laws in the field of environmental sanitation (1).

"Their work, more than that of any other group except public health nurses, brings them in close daily contact with the general public and consequently has great influence on the public's judgment of the entire depart-

*Presented at the in-service training course for sanitarians, University of Massachusetts, September 13-17, 1948.
ment." Under the guidance of more highly trained personnel the type and quality of sanitation service rendered by this group today bears but little resemblance to that of a decade or two ago (2). The men formerly had to use strong arm methods many a time; they had to call on the police for protection from physical violence; they were trail blazers in hacking a path of sanitation consciousness through the wilderness of public ignorance, apathy, and self interest.

These men, together with the nurses, constitute the health department in action. These men do what the health officer would do if he could be in a hundred places at the same time. They bring the principles of good public health practise right down to where the people live. It is they who must "sell" the idea of good health to the public. It is they who largely make or break good health administration. They get the kicks, the curses, the hard knocks, sometimes the thanks, occasionally the praise for their work.

The multiplicity of functions of a modern public health organization now touches all phases of community life, and must maintain this contact in the community where conditions of living continue to change in the direction of increasing this complexity. The field recognized as coming within the purview of this personnel has been well outlined by the Canadian Public Health Association (3).

Communicable disease
Food and food sanitation
Milk
Housing
Lighting
Nuisances
Plumbing and drainage
Public health organization, administration and legislation
Refuse
Sewerage and sewerage systems
Ventilation and heating
Vital statistics
Water

In this country the duties of sanitarians have been defined by the Committee on Professional Education of the American Public Health Association as follows (4):

1. Under the supervision of the health officer or public health engineer or other person designated by the health officer, the public health sanitarian carries out inspectional, educational, and investigational duties, and assists in the enforcement of the law in the field of environmental sanitation. His activities include assistance in the control of domestic water supply and sewage disposal; wastes disposal; swimming pools and recreational areas; dairies and milk-handling plants; manufacturing, processing, storage, handling and distribution of foods; housing; industrial sanitation; school sanitation; rodent and insects and nuisances. He also participates in the inspection of institutions and assists in the control and epidemiological investigations of communicable diseases.

2. As a member of the team composed of the health officer, public health engineer, and other members of the health department staff, his responsibilities relating to the list of duties above include the conducting of surveys and the analysis of information obtained thereby; the determination of sanitation problems, education of the public in regard to them, and development of programs for solving them; the evaluation of laws and regulations and the formulation of recommendations for necessary changes and additions; assistance with the organization of community groups interested in sanitation programs, and the promotion of sanitary practices through use of the various publicity media; study and research in the sciences and techniques of public health for the increase of knowledge and a better understanding; and the administration of field and office work.

In brief, the above defines a wide field of inspection and supervision in general environmental hygiene practices, and also participation in the development and administration of new applications, education, and legislation. Obviously, such a program must be directed by personnel with high professional qualifications, often a sanitary engineer. The closer the sanitarian can approach to the education and experience necessary to execute such a program, the greater will be his value.

In industry the sanitarian has a secure place. He may never be labeled as such but his work locates him. He is responsible for the so called good housekeeping of the plant. Often his
duties are broader than those of the public health sanitarian in that he administers the quality control program, both of raw materials as well as finished product, and is responsible for the sanitation of the plant. Industrial quality control includes such organoleptic factors as appearance, taste, appearance of package, color, constancy of composition, proper labeling, and other such practical measures.

The sanitarian supervises vermin control, waste disposal, employee hygiene. He is the liaison officer between the company and the health department, often including in his portfolio the handling of customer complaints. The sanitarian in commercial employ is no longer a window-dressing luxury, a sort of necessary expense as prophylaxis against the punitive action of regulatory officials. He is needed on his own account because of awakened awareness in management of the need for the kind of service he renders, and for the demands of the public that safety and quality be guaranteed.

Educational Requirements

An analysis of present educational requirements (5) of 138 positions listed by the merit system revealed the following average situation: approximately 33 percent of the positions required public health training courses at a college level (experience in substitution thereof accepted to only a limited extent).

Breaking down these positions into three grades, the requirements were as follows:

<table>
<thead>
<tr>
<th>Education (college)</th>
<th>Experience</th>
<th>Special public health training courses in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Grade</td>
<td>4 years</td>
<td>5½ years</td>
</tr>
<tr>
<td>Intermediate Grade</td>
<td>3.8 years</td>
<td>3.4 years</td>
</tr>
<tr>
<td>Lowest Grade</td>
<td>2 years</td>
<td>1.6 years</td>
</tr>
<tr>
<td>6 out of 10 positions</td>
<td>15 out of 34 positions</td>
<td>24 out of 92 positions</td>
</tr>
</tbody>
</table>

The states of California, New Jersey, and New York have legal requirements which specify educational and experience standards for the employment of sanitarians by local health units.

On the basis of these findings in current practise, the Committee on Professional Education of the American Public Health Association recommends that the educational requirements for Assistant Sanitarian and Sanitarian be:

The minimum qualification should be two years of college work with emphasis on biological and social sciences.

The desirable qualification should be a basic educational preparation including the physical engineering, biological, and social sciences leading to a bachelor's degree from an acceptable institution.

The program of instruction for the bachelor's degree is recommended to be set up as follows:

The first two years:
- Cultural courses such as:
  - English, mathematics, economics, geography, anthropology, social institutions, etc.
- Sciences such as:
  - Mathematics, elementary bacteriology, physics, psychology, zoology or physiology, or general biology.

The second two years:
- Advanced general bacteriology, medical entomology, and/or parasitology, and public health courses to include elementary public health, communicable disease control, administration, health education.
- Principles of environmental sanitation, epidemiology, biometry.
- Principles and practices of water supply and sewage disposal.
- Control of production and distribution of milk and food.
- Salvatory procedures used in the maintenance of a sanitary environment.

Personal qualities should consist of:
- Initiative
- Tact
- Good judgment

The states of California, New Jersey, and New York have legal requirements which specify educational and experience standards for the employment of sanitarians by local health units.
A small but increasing number of sanitarians with a bachelor's degree find such satisfaction in public health that they seek further academic training at the graduate level (6). Some go on in bacteriology, health education, medicine, veterinary medicine, and engineering.

A few accredited schools of public health will admit sanitarians with a bachelor degree for work toward a master degree, providing they were adequately grounded in the basic sciences and at least three years experience.

Accredited schools of public health are:

- University of California School of Public Health.
- Columbia University School of Public Health.
- Harvard University School of Public Health.
- The Johns Hopkins School of Hygiene and Public Health.
- University of Michigan School of Public Health.
- University of Minnesota School of Public Health.
- University of North Carolina School of Public Health.
- University of Toronto School of Hygiene.
- Tulane University School of Medicine, Dept. of Public Health.
- Yale University School of Medicine, Dept. of Public Health.

Industrial firms employing sanitarians (or quality control men) are not limited to the above schools but employ their men from many other institutions of learning. These schools have set up courses in food technology; this was a broad coverage of all aspects of food handling including many of the subjects included in the purview of the official public health sanitarian. Usually they go deeper into the question of production, quality control, and plant sanitation than do the schools that are accredited in public health. Both groups overlap over a broad area. My latest published list is as follows (7):

- Brooklyn Polytechnic Institute.
- Bucknell University.
- College of the City of New York.
- Illinois Institute of Technology.
- Iowa State College.
- Massachusetts Institute of Technology.
- Michigan State College.
- Ohio State College.
- Oklahoma A. & M. College.
- Oregon State College.
- Pennsylvania State College.
- Rutgers University.
- Texas A. & M. College.
- University of California.
- University of Georgia.
- University of Illinois.
- University of Maryland.
- University of Massachusetts.
- University of Minnesota.
- University of Missouri.
- University of North Carolina.
- University of Tennessee.
- University of Washington.
- University of Wisconsin.

My latest addition is the University of Denver. This institution is inaugurating courses for sanitarians at both college as well as junior college level. It is particularly designed to supplement the training of pre-medical and pre-veterinary men who have completed their preliminary training but who are unable to gain admittance to the medical schools.

Numerous articles in the Journal of Milk and Food Technology describe in detail the work that sanitarians in the industries must perform or supervise.

Professional Development

Inasmuch as the sanitarian is associated with physicians, engineers, nurses, chemists, bacteriologists, and other such professions, he is developing a feeling that he too should be given professional recognition. This is a commendable ambition when it is predicated on a sound basis of education, experience, and personal service. Unfortunately, this desire has been abused by some moves savoring of trade unionism. These serve to discredit the work of sanitarians in quarters where respect should be cultivated.
Professional people who have earned their position the hard way by years of extensive study and experience cannot be expected to sympathize with such attempted short cuts to barnstorm into the circle of professional recognition.

What is a profession? Webster says:

The occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes oneself; a calling in which one professes to have acquired some special knowledge used by way either of instructing, guiding, or advising others or of serving them in some art; as the profession of arms, of teaching, of chemist.

Attainments in the above examples can be acquired only by long study in standard courses. So sanitarians must expect that in order to secure professional standing, they must expect that the world will demand an education that the academic world will accept.

Personally I am confident that the sanitarian will attain this position because I am seeing this very thing work out in the field of food technology, and am observing similar processes in the case of the veterinarians and nurses. Subprofessional groups gradually acquire professional recognition as increasing qualification requirements exact more investment in education and experience. New professions are being created by the inauguration of new techniques and the development of new know-how's.

First of all, we sanitarians must agree on what we shall include in the curriculum that leads to this education. Obviously the field is so broad that no one man can be expected to be professionally competent in all—allegous to the situation in engineering, medicine, chemistry, and other such fields. It would seem that the engineers and the home economists have shown how we might go about this.

These professions have grouped their subjects into several broad classes. In the case of the engineers, we have the civil, electrical, mechanical, mining, chemical and other classifications—all based on a standard basic course, common for all. We can group all the listed duties of sanitarians into possibly four divisions, namely, industrial, health, water supply, and food, maybe another or so—all built on a common basic curriculum of the sciences and liberal arts.

It may be argued that such a setup, based on a four year academic curriculum, will lead to the same training as that of sanitary engineer or that of food technologist. In the former case, the curriculum will constitute the path of development—certainly not to engineering—and in the latter case I think that the adequately trained food sanitarian is indeed a food technologist. My reason for the latter statement is the result of years of experience in public health and industrial food control work. I have learned (and no doubt others have also) that education of the public and industry can be best done when the inspector (if you will) or the sanitarian (now) knows more about the product or operation that is under control than the plant operator does. This relationship is essential for leadership. The leader must be ahead of his crowd. He must be in a position whereby the industry and public heed what he says, not just because the exercise of the police power forces adherence but because the correctness and scope of his knowledge together with his pleasing personality, convinces them that they ought to do so and so in their own interest—and like it. The same principle prevails in industrial work: the plant sanitarian must know his plant process in order to secure the compliance of the plant operators.

The great changes that are taking place in our living and industrial conditions are bringing in new problems (and eliminating some old ones). This means that regulatory procedure must not be allowed to become static. The regulatory officer must grow with the times. He must modify his emphasis to meet the new situation, and not feel
embarrassed because he does things differently today from what he did a few years ago. What is standard today may not be so tomorrow. This calls for seminars, refresher courses, reading the literature, attendance at meetings of professional associates. My old professor of physical chemistry used to say, "If you want to learn a subject, write a book on it." This drives you to the literature, and you will be surprised (I was) to find how much you don't know in fields that you thought your information was continuous.

Dale Carnegie is reported to have said, "A man rarely succeeds at anything unless he has fun doing it." Of course this means that the sanitarian succeeds in a large way only when he puts his whole heart and soul into his work (true of any occupation). Fortunately there seems to be something about public health work, whether official or industrial, that commands a man's allegiance to the cause. Sanitarians are the only group that I know of who are so interested in their work that many travel long distances to meetings, often at their own expense, holding three sessions a day— "hogs for work" as somebody has put it.

Sanitarians are by the very nature of their employment the employees who are directed by professional groups, particularly the health officer (physician) and the engineers. This keeps them at the lower salary levels. This in turn limits their efforts to improve their technical knowledge and to raise their professional status. But none have any excuse to hide behind this situation and use it for neglecting to grow in knowledge. "Knowledge is power." Journals, books, conferences, in service training courses, Social Security funds for special courses, all are available to the ambitious sanitarian.

There is another aspect of the work of the sanitarian about which nothing is usually said. This is its most important one, namely, the character of its service to the public. Disease is an insidious enemy. It attacks man like a snake in the grass—suddenly, unannounced, deadly. No wonder that early man attached a mysterious significance to it and associated it in some way with black magic. Even though modern man understands in a general sort of way that disease has definite, well-known causes, he himself is helpless in defending himself against it because he cannot recognize its approach. He is stricken before he knows that danger is near. The sanitarian is the defensive line. He possesses the know-how to attack conditions that engender diseases at their sources. He strikes before the enemy gets started. The enormous saving in life as shown by our declining death rate is the measure of what was done in the field mostly by him. One hundred years ago the death rate in the large American cities was approximately 30 deaths annually per 1,000 people (9) whereas today in the same cities the rate is approximately 10 per 1,000. Imagine what this means in lives saved! Moreover, the morbidity (illness) rate has declined too. Absenteeism from work means economic loss. A reduction in this is an economic gain. Add this to the productive value of the lives saved. A staggering sum is the economic value to the country that the work of the inspector contributes. Add to this the sorrows of bereavement that never occurred, the suffering that did not come, the misery that was prevented. Truly, the sanitarian is engaged in a useful, valuable, noble calling. This is tremendously rewarding in itself.

Sanitarians, your work is necessary. Demands for your services are increasing. New fields are opening up. Stability of your employment is assured. Therefore investment in your future is sound.

"He who knows not and knows not that he knows not is a fool; show him. He who knows not and knows that he knows not is simple: teach him."
He who knows and knows not that he knows is asleep: awaken him. He who knows and knows that he knows is wise: follow him."

REFERENCES
5. See Ref. No. 1, p. 1006.

MILK AND CREAM FILMS

(Continued from page 357)

REFERENCES

LEEDER JOINS RUTGERS DAIRY STAFF

Dr. Joseph Gordon Leeder, until recently director of research for the Ramsey Laboratories at Cleveland, Ohio, has begun his duties as associate professor of dairy manufacturing at the College of Agriculture, Rutgers University.

Dr. Leeder received his bachelor of science degree from Ohio State University. He was awarded his master of science degree by the University of Vermont in 1940, and his doctor of philosophy degree by Penn State in 1944.

While at Penn State Dr. Leeder collaborated with F. J. Doan in developing a method of preserving milk by concentration and freezing. Whole milk was concentrated in a vacuum pan, homogenizing it, then frozen in a continuous ice cream freezer. The milk later was reconstituted. The process has met some success in actual practise in this country and has been considered by the Australian government as a means of supplying milk to the outlying sections of Australia.