Comparative Educational Background of Dairy Graduates, Sanitary Engineers and Veterinarians in Milk Control

SIDNEY SHEPARD

Birmingham, Ala.

"A little learning is a dangerous thing;
Drink deep or taste not the Pierian Spring:"
—Alexander Pope

WITH the founding of our agricultural colleges, courses were inaugurated for the study of dairying, both as it pertains to the production of milk and the manufacture of its various products. To a great degree quality in milk and milk products as known today is due, in no small part, to dairy college graduates who have dedicated their careers to the study of dairying and all that it implies. The very nature of the complex problems arising in the dairy industry in regard to manufacture, sanitation, production, and distribution of dairy products entails an intimate and thorough knowledge of the chemistry, bacteriology, and economics of the products involved. The agricultural colleges with their courses of study related to the subject—dairy manufacture, bacteriology, chemistry, animal husbandry, economics, et cetera — are institutions preeminently suited to train men in the study of milk in all its phases — including sanitation.

Since World War I, the field of dairy science as it relates to public health has slowly but surely drifted from the dairy college graduate into the hands of sanitary engineers (a division of civil engineering) and veterinarians. Today, only sanitary engineers may hold commissions as milk sanitarians with the United States Public Health Service, and only veterinarians are deemed qualified to exercise sanitary supervision over the production and manufacture of all products of "bovine origin" being used by our armed forces. Strangely enough the dairy graduate is given no appropriate official recognition in either of these important Federal services while, of late years, even still stranger it would seem is the fact that many state and municipal health departments have seen fit to place milk sanitation and its complex problems as a subsidiary to all other sanitary work—fly, rodent, mosquito control, sewage disposal, et cetera, under the direction of a sanitary engineer.

To what extent, if any, can this form of administration be justified?

In order to supply an honest unbiased answer to this question, it seems necessary to return to the fundamentally important matter of education. To what extent are our dairy colleges affording complete courses of study to fit graduates for executive and other important roles associated with public health milk control? To what extent, if any, is the college educational background of the sanitary engineer or graduate in veterinary medicine superior to that of the dairy graduate for such work? Well, it would seem that the only way to arrive at any fair-minded conclusion on this question is to examine the curricula of the three

courses of education under discussion.

To this end the results in summary form are submitted here of a careful study made by the writer of the curricula of five dairy colleges, five veterinary colleges and five schools of sanitary engineering. In each instance the colleges studied were those generally accepted as outstanding in their particular fields.

In order to interpret further and appreciate the data presented, it might add to the clarity of the subject to define the functions of the three courses of study. The following definitions are taken verbatim from a few of the many catalogues reviewed relative to courses of instruction open to the respective students discussed herein:

DEFINITIONS

Dairy Graduates

The dairy manufactures option is suggested for students who wish to specialize in and prepare for positions requiring training in the manufacture of butter, ice cream, cheese, market milk, and condensed milk. This option prepares the students for positions in teaching and extension, and for numerous government and commercial positions which require dairy manufactures training.

The dairy production option is suggested for students who wish to specialize in dairy farming and prepare for positions as managers of dairy farms, and for students who wish to prepare themselves for teaching or extension work in the feeding, breeding, and management of dairy cattle.

(Note: In all catalogues of Dairy Colleges studied, emphasis is laid on specific training made available in the science and practice of dairying and in agricultural economics.)

Veterinarians

The State Veterinary College, established by Chapter 153 of the laws of 1894, shall be known as the New York State Veterinary College. The object of said Veterinary College shall be: To conduct investigations as to the nature, prevention, and cure of all diseases of animals, including such as are communicable to man and such as cause epizootics among live stock; to investigate the economic questions which will contribute to the more profitable breeding, rearing and utilization of animals; to produce reliable standard preparations of toxins, antitoxins, and other productions to be used in diagnosis, prevention, and cure of diseases, and in the conducting of sanitary work by approved modern methods; and to give instruction in the normal structure and function of the animal body, in the pathology, prevention, and treatment of animal diseases, and in all matters pertaining to sanitary science as applied to live stock and correlatively to the human family.

(Note: In none of the catalogues of Veterinary Colleges studied was reference made to any specific training being made available in the science and practice of dairying or in agricultural economics.)

Sanitary Engineers

Sanitary Engineering has to do with the planning, construction and operation of waterworks, sewerage and drainage systems, water-purification plants, and works for the treatment and disposal of city sewage and waste disposal, with the improvement and regulation of natural waters for purposes of sanitation; with air sanitation; and with the principles and standards for the ventilation of buildings and for working under compressed air.

Public Health Engineering has to do more particularly with governmental supervision and control of all those activities of an engineering nature which are definitely related to public health.

(Note: In none of the catalogues of Schools of Sanitary Engineering was reference made to any specific training being made available either in the science and practice of dairying or in agricultural economics.)

TABLE 1

DAIRY COLLEGES

	Dairy Mfg.	*Animal Husb.*	*Bacteri-ology*	*Dairy Bact.*	*Chem-istry*	*Dairy Chem-istry*	*Agri-cultural Eco-nomics*
College A	7*	1	2	1	7	1	4
College B	7	1	2	1	2	1	2
College C	6	2	2	1	2	1	2
College D	11	3	2	1	5	1	3
College E	9	3	2	1	2	1	4

By the very definitions of its function, the dairy college readily establishes the justification of its ability to train men for work in all fields of endeavor as it relates to milk and its products. The schools of sanitary engineering and veterinary medicine do not pretend to train men for this particular work, as evidenced from the above.

Referring to Table 1, the good job our dairy colleges are doing in educating men for a career in milk sanitation is apparent. Essential to success in any chosen career is a knowledge of the fundamental tools with which the individual is to work. In every instance a minimum of 5 and a maximum of 11 courses are being offered for study in dairy manufactures. The courses include such studies as market milk, butter, ice cream, condensed products, cheese, dairy mechanics and equipment, laboratory control of dairy products, and dairy products-judging. From Table 1, it can be further deducted that our dairy colleges appreciated the fact that the study of milk and its products transcends the pure mechanics of its production and manufacture but includes the study of animal husbandry, bacteriology, chemistry, and economics. Who will deny that courses in animal nutrition, general organic and physiological chemistry, and instruction in agricultural economics, marketing and distribution are not essential in the education of the milk sanitarian?

In Table 2, of the 5 Veterinary Colleges studied, only two offered any instruction in the fundamentals of milk and its products. Where such courses were offered, said instruction was very scanty and elementary. While more courses were offered in animal husbandry, this was due to the fact that more of the farm animals other than cows were studied. The courses in bacteriology and chemistry were similar to those for dairy students, with the exception of the chemistry and bacteriology of dairy products, which are not taught to veterinary students. The only economics offered for study is one course in veterinary jurisprudence. No courses in agricultural economics are offered in this curriculum.

From Table 3, the lack of any courses of study in dairy manufacture and animal husbandry in the 5 schools of

TABLE 2

VETERINARY COLLEGES

	Dairy Mfg.	*Animal Husb.*	*Bacteri-ology*	*Dairy Bact.*	*Chem-istry*	*Dairy Chem-istry*	*Agri-cultural Eco-nomics*
College A	1	2	2	..	1	..	..
College B	..	4	3	..	4	..	..
College C	..	3	3	..	3	..	..
College D	..	4	2	..	3	..	..
College E	2	2	3	..	2	..	..

TABLE 3

SCHOOLS OF SANITARY ENGINEERING

	Dairy Mfg.	*Animal Husb.*	*Bacteriology*	*Dairy Bact.*	*Chemistry*	*Dairy Chemistry*	*Agricultural Economics*
College A	..	..	4	..	4	..	..
College B	..	..	2	..	2	..	..
College C	..	..	2	..	4	..	..
College D	..	..	3	..	2	..	..
College E	..	..	3	..	2	..	..

* In every instance the number of courses corresponds to the actual number of different courses studied and not semester hours.

sanitary engineering is apparent. The bacteriology and chemistry are in the main part connected with water and sewage and affiliated subjects. In the field of economics, subjects such as vital statistics and public health administration are offered; no courses are offered in agricultural economics of any kind.

Obviously, from the above our dairy colleges have not fallen down on their jobs of instructing their students in courses of study relevant to a career in the field of dairy science, whether it relates to production, sanitation, or distribution. Despite this fact, health officers and directors of field work in milk sanitation as it applies to public health find it necessary to instruct aspirants in this profession for a minimum period of six months to a year. Nevertheless, the dairy college graduate by virtue of his superior education in dairy science is, it would seem, the logical choice for instruction in milk sanitation.

The plight of the dairy college graduate in regard to holding positions of influence and prestige in public health work is glaringly brought to light in the following study, conducted in 1942 by means of a questionnaire sent to 78 cities having a population over 100,000, and to 28 states in the Union. In this effort an attempt was made to obtain information in regard to not only the number of men employed but also the educational background of said personnel. In addition, the technical training of directors of milk control in said cities and states was also obtained. The results are presented below:

In this study a few startling facts presented themselves. In 32 cities of the 79 answering the questionnaire, *no dairy graduates at all* are employed in milk sanitation. Further, it was disclosed that much discrepancy existed between large centers of population in regard to the number of dairy graduates relegated to dairy inspection. In City A, population 3,396,808, of 77 men employed, only 1 is a dairy graduate; while in City B, population 7,454,995, of 69 men employed, 25 are dairy graduates.

It was further disclosed that of the 28 states questioned, 8 employed no dairy college graduates on their milk control staff—approximately ⅓ of the states queried saw fit to refrain from employing dairy specialists on their milk control staffs.

	Personnel				*Director of Milk Control*			
	San. Eng.	*Dairy Vet.*	*Dairy Graduates*	*Dairy Laymen*	*San. Eng.*	*Dairy Vet.*	*Dairy Graduates*	*Dairy Laymen*
28 states	20	26	175	94	12	2	13	1
79 cities	30	102	160	377	12	25	21	21

CONCLUSIONS

The fundamental issue as to why the dairy college graduate does not hold positions of prestige and influence in the public health field can probably be laid on the "doorstep" of the dairy colleges and those health officers and directors of milk sanitation whose duty it is to employ and maintain personnel. It is lamentable but true that our dairy colleges have been too prone to overlook the public health field and concentrate their primary interests on buttermakers, ice cream makers, cheese makers, et cetera. As a result, in the last two decades milk sanitation as it relates to the public health has steadily drifted from the dairy college graduate to the sanitary engineer and to the veterinarian. This trend can be further substantiated by several statements written by the late Leslie C. Frank in a pamphlet entitled "Engineering Problems in Milk Sanitation"—reprint No. 2051 from the *Public Health Reports*, March 31, 1939. To quote a few statements from this publication we find the following:

"Milk Sanitation is a problem which now requires and will in the future increasingly require the serious attention of sanitary engineers."

"Information collected by the Public Health Service shows that in at least 25 States milk sanitation work is now being done by the divisions or bureaus of sanitary engineering, whereas two decades ago only one or two State sanitary engineering bureaus interested themselves in the problem."

While many milk sanitarians are sanitary engineers who by practice and experience have become expert in this particular line of endeavor, the preeminence of the educational background of the dairy graduate cannot be denied—by this virtue above all, is he (the dairy college graduate) the logical candidate for milk sanitation and all it implies.

On the other hand, health officers in general whose duty it is to maintain well-rounded staffs in all phases of public health have become oblivious to the virtues of the technical dairy college graduate in the fundamentals of dairy science as it relates to the public health.

The fact that dairy college graduates are being discriminated against in milk sanitation transcends the matter of education and training. It is purely a matter of a few "in the driver's seat" refusing either to share or relinquish the reins. If, through this paper, the writer has to some extent given some insight into the present picture of the plight of the dairy college graduate in its true perspective to both our agricultural colleges and health officers, the effort expended will have been justified. The time is ripe for the dawn of that day which will find the dairy college graduate in his rightful field of endeavor—dairy science as it relates to the public health.