THE IMPORTANCE OF MEAT INSPECTION AND HYGIENE IN THE OPERATION OF A MEAT LABORATORY

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The high esteem in which meat is held in the American dietary is due in no small part to the American standards of meat inspection which are admittedly the most exacting in the world today.

Meat inspection is not new. The Egyptians designated the hog as unclean and prohibited its use for human food. Some believe that the Jewish Kosher regulations as set up in the Old Testament were an attempt to safeguard the food supply of the people by the rabbis, the learned men of the tribes. Mohammedan food regulations, to a large degree, follow the pattern of the Jewish and the Egyptian regulations in considering the hog and the dog as unfit for food. On the other hand, pork was relished by the Romans, and the Greeks showed a preference for the flesh of young castrated dogs. The Athenian meat market was policed since earliest times, and in Rome, meat was inspected officially since the year 388. With the fall of the Roman Empire, inspection ceased.

It was not until the spread of Christianity in Northern Europe that we find any attempt to regulate food habits there. At the beginning of the eighth century, Apostle Bonafacius, at the direction of Pope Gregory III, prohibited the consumption of horse meat. Later he directed that pork products could be eaten only after thorough cooking. The consumption of the flesh of diseased, dead, or torn animals was prohibited.

Regulations governing meat were found as early as 1120 in Freiburg, and merchantable and unmerchantable meats were differentiated by a law passed at Basel in 1248.

In the United States, meat inspection began as a municipal enterprise in scattered cities. By 1879, the export of American products had grown to considerable proportions. Importers of American pork products became alarmed at the presence of Trichinella in these items. Italy, in 1881, barred the importation of American bacon, an action promptly followed by Austria, Germany, and France. In 1882, Great Britain prohibited the importation of American cattle because of contagious pleurapneumonia.

These two threats against the infant meat industry caused the American Congress to pass the first meat inspection act, that of August 30, 1890, which provided for the inspection of salted pork and bacon. This act did not prove acceptable to the foreign governments and a new law was passed on March 3, 1891. This latter legislation was designed not only to protect a growing American industry, but also to safeguard the food supply of this country. The administration of meat inspection was placed under the jurisdiction of the U. S. Bureau of Animal Industry which had been established in 1884. The first inspection under the new law was made on May 12, 1891, and within a short time thereafter the prohibitions against the importation of American meats were withdrawn by the European nations. The new act provided for both ante-mortem and post-mortem examinations of all animals slaughtered for interstate and export trade, and the microscopic examination for Trichinella of all pork intended for export.
About 1903, Upton Sinclair wrote a book called "The Jungle" which called attention to alleged unsanitary conditions in packing plants particularly in the canning departments. Up to this time, meat inspection had concerned itself primarily with the health of the animals slaughtered and had given little attention to sanitation. Out of the popular clamor for corrective legislation grew the meat inspection act of June 30, 1906, the most stringent body of laws and regulations of its kind in the world.

Meat inspection, according to American standards, concerns itself with three things, the health of the animal, the sanitation of the plant, and lastly, the correct and proper labeling of the product.

The health of the animal is of importance for there are many animal diseases which may be transmitted to man by contact with the animals or with the meat or other products. Among these may be mentioned anthrax, foot-and-mouth disease, swine erysipelas, Brucellosis, tularemia, and tuberculosis. Certain parasitic diseases, such as trichiniasis, may also be transmitted through the consumption of raw or insufficiently cooked meat.

It is generally recognized that where meat is properly cooked, the internal temperature is raised above the pasteurization point, so that there is little likelihood of transmitting disease through the cooked product. There is always the possibility that meat may not be thoroughly cooked. Another source of danger is the handling of meat from infected animals. There is a danger from the entry of pathogenic material through abrasions of the skin. Sometimes the hands may touch the mouth after handling a piece of meat from an infected animal, thus carrying the infection to the person. Certain diseases, such as swine erysipelas and undulant fever, are definitely recognized today as occupational hazards. We should recognize this fact and point out to our classes the need of good personal hygiene, such as washing the hands thoroughly after handling meat. We never know when the beef we slaughter or cut up may be positive to a Bang's test or when the pig may be infected with erysipelas.

People must recognize that the mere fact that a carcass has been passed by a meat inspector does not guarantee it to be free from all infection. The positive reacting animal to a Bang's test is passed for food if no complicating disease is found. A person might contract undulant fever from handling a cut of meat from such a carcass. Further, the "inspected and passed stamp" does not guarantee the meat to be free from Trichinella. Of course, such meat items made from or containing pork as are normally eaten without cooking, such as summer sausage, must be processed in such a way as to remove all hazard. This is accomplished by freezing at very low temperatures for stated periods of time.

Under federal inspection, the health of the animal is checked on the living animal (ante-mortem inspection) and, also, on the carcass and viscera during and after the slaughtering process (post-mortem inspection). Even after the product has been passed for food, the inspection legend may be removed and the product condemned if it becomes contaminated or otherwise unsuitable for human consumption.

Under federal meat inspection, every slaughtering or processing establishment has an establishment number. This makes it possible to trace back any piece of defective meat. No doubt this has been a very effective means of maintaining inspection on a high plane.
In other countries where food is more scarce, little meat is condemned. Meat is divided into three categories: that which is passed as free from disease; second, meat from mildly diseased animals which is sold with express instructions that it be thoroughly cooked; and lastly, meat from seriously diseased animals which is cooked in the packing plants to be sure that the cooking is properly done.

In meat hygiene, we are interested in the sanitation of the meat plant, not only from the aesthetic standpoint, but also from the point of view that even good meat may be contaminated by careless handling after dressing. Meat is an excellent food not only for mankind, but also for a host of bacteria, many of which fortunately are harmless, but occasionally a pathogen gets in which may cause a good case of food poisoning.

So far as possible, the meat laboratory should embody all of the principles of good sanitary packinghouse construction. It should always be a model of cleanliness and sanitation that it may impress upon students, patrons, and visitors the need of handling meat in the best possible manner. Coolers especially should be clean and sweet.

Those of us who are getting along with old buildings sometimes find it difficult to keep things ship-shape. Pests such as flies, roaches, mice, and rats sometimes get in. New control methods offer definite promise. Offal, refuse, and manure must not be allowed to accumulate about the meat laboratory.

Perhaps as good a guide as to the kind of housekeeping is the condition of the storerooms. These are a necessary evil and should be kept in as good shape as possible.

It is important to create in the meat laboratory an atmosphere of cleanliness that will create in the students a wholesome appreciation of the need for it. An industrial plant found their employees spitting on the stairways. Painting the stairs white stopped this practice effectively. So a new paint job may be in order. Ample and convenient toilet and locker rooms are a big help. Lavatories and sterilizers with ample supplies of liquid soap and paper towels are a necessity on the killing and cutting floor. Greasy floors are not only unsanitary, but are an invitation to accidents.

I usually spend the first period with a new meat class stressing two points -- safety, and cleanliness. The attitude of some of our students on the latter reminds me of a favorite story of a packing house superintendent friend of mine. In all the lavatories they posted a sign very prominently, stating "Wash your hands before returning to your work." This superintendent was in a lavatory one day to find an employee make a break for the door without the ablution. "Here, here," he called, "do you see that sign?"

"Yes," replied the man, "but I'm not going back to my work, I'm going to eat my lunch."

Clean clothing is a problem in a meat laboratory. The ideal setup would provide laundry service, although we have not been able to do that. We use yellow oilskin waterproof aprons. This year, we are requiring our students to wear paper caps, which cost 3 1/2 cents each. We like them very much.

The need of scrubbing hands and keeping fingernails short and clean are pointed out repeatedly. One of the capital sins in our laboratory is for a student to sit on a meat block.
The need for proper and correct labeling of meats and meat food products is so self-evident, but that is not a problem which is of much importance in operating a college meat laboratory.

About two-thirds of the meat produced in this country is produced under federal inspection. All meats which move in interstate traffic must be federally inspected. Much of the remainder is inspected by local and state health authorities.

If meat inspection is good from a public health standpoint, we in our teaching and research work should recognize it. Federal inspection is out of the question for most of us. Where there is no provision for local inspection, most of us can make arrangements with our college veterinary departments. Some of us are located in institutions where veterinary colleges are located. All veterinary colleges offer courses in meat hygiene and inspection, and the meat laboratory may well provide laboratory training in this field. Meat inspection in a teaching laboratory is different from that in a commercial plant. Sometimes you must wait for the inspector and sometimes the inspector must wait on you. It is a matter of give and take and working out an arrangement taking into account the problems of both parties.

My great concern with meat work is to keep it on a collegiate level. If all we teach is slaughtering and the cutting of meats, I fear that our work is on a trade school basis. We can remedy this by making the meat laboratory an effective adjunct to good animal husbandry teaching.

No animal should be slaughtered without a careful appraisal on foot and an estimation of its carcass potentialities. The live weight, dressing yield should be estimated and these estimates should be checked after slaughter. Attention should be called to desirable and undesirable qualities.

The laboratory should be used as a means of studying anatomy, physiology, pathology, parasitology, and applying the facts learned in a nutrition or physiology of reproduction course. It is in this connection that the help of a good veterinary inspector is most useful. If he will take the time to explain what he is trying to do, he can be very helpful. He should explain the appearance of the various organs in health and in disease.

Charts and sketches of the four-compartment stomach of the ruminant may not mean too much to the student in a feeding course. However, when he sees them separated out on the killing floor, he is likely to remember them for years to come. The boy who has to run a set of casings, lay them out and measure their length will not forget these facts very soon. The life history of the round worm and its control may have held little of interest to the student in a pork production class. However, let him dress out a wormy pig and he is in an extremely receptive mood to learn all he can about these same facts.

It is impossible to cut meat intelligently without a thorough knowledge of the bones. This study is usually dry and uninteresting. However, the student who can see the usefulness of this knowledge for the proper identification of meat cuts usually applies himself diligently.

CHAIRMAN TOMHAVE: Professor McClurg, will you lead the discussion on this subject?
PROFESSOR McClurg: Professor Loeffel has given us a good history on the meat inspection and hygiene, and he has definitely given us some good suggestions to follow in our laboratory work as far as sanitation and how it may be applied to class work.

PROFESSOR ZIEGLER: What's the psychology behind your wearing those paper caps? They don't do much good.

PROFESSOR LOEFFEL: I think they do a lot of good. In our institutional management, girls, for instance, who work behind the counter in a cafeteria are required to wear a hair net or something of that sort.

PROFESSOR ZIEGLER: You said slaughtering.

PROFESSOR LOEFFEL: Well, in slaughtering. We have them put on their fresh caps in the cutting class, and when they get a little dog-eared, they wear them in the killing classes, and then they go in the waste basket.

PROFESSOR ZIEGLER: You tell me how to get the girls to trim their talons and take the paint off.

PROFESSOR LOEFFEL: You are asking too much now.

PROFESSOR SNYDER: Do you require your boys to wear standard uniform all the way through?

PROFESSOR LOEFFEL: We don't. We ask them to wear clean clothing. One thing I will not let a boy do -- it is quite a temptation -- coming to the meat lab. with a pair of overalls or a work shirt, or whatever he chooses to wear -- white clothing - a few days later he comes busting into the locker to get that stuff and want to wear it in a tractor laboratory or blacksmith shop, or something of that sort. I turn thumbs down on that.

These killing clothes have to be used just for that, and I tell them to take them home and give them a surprise every so often, don't wear them until they stand up by themselves.

PROFESSOR COLE: I wonder if you think it is necessary for students to have a blood test when your meat is being sold through retail counters.

PROFESSOR LOEFFEL: I have often wondered about that. In our city now, everybody who works in a restaurant or handles food in any way has to have a blood test.

PROFESSOR SNYDER: Doesn't your school require a health examination.

PROFESSOR LOEFFEL: Yes, we have a health examination at the beginning of the semester. Of course, there is always a chance for contamination during the school year. I do think that's a good program.

PROFESSOR COMFORT: I'd like to ask Dave Mackintosh how to keep them dressed white. What system do you use, Davey? Every time I have been out there, you seem to have them dressed for parade, or are they that way all the time?

PROFESSOR MACKINTOSH: That's a costly undertaking. Our laundry bill this year was about $400.00
PROFESSOR COMFORT: Do you supply them?

PROFESSOR MACKINTOSH: We used to supply coats and aprons. Our coats have become sadly dilapidated, and the purchase of new coats is prohibitive so far as we are concerned, so we have rather modernized coats with frills that some of them do use, but we have an ample supply of aprons, and they are not supposed to come on the floor without a clean apron.

PROFESSOR COMFORT: Do you supply the aprons or the uniforms?

PROFESSOR MACKINTOSH: We supply the aprons.

PROFESSOR LOEFFEL: Do you have a lab. fee?

PROFESSOR MACKINTOSH: We have a lab. fee. I think it is $3.00, which doesn't begin to cover the laundry cost in itself.

PROFESSOR HILLIER: Do they do the inspection, or do you have to call in the local veterinarian?

PROFESSOR LOEFFEL: We have in Lincoln a City Health Department, and according to law, we are required to call the veterinarian every time we contemplate slaughtering. In other words, we have an arrangement. If we are going to kill Tuesday, we call the veterinarian's office Tuesday morning, tell them we are going to have so much stuff for him to inspect at 4:00 o'clock.

PROFESSOR COLE: Would he have a written form then to sign, or do you keep a record of it?

PROFESSOR LOEFFEL: He keeps a record and we keep a record, too. There is no signature, but we have to pay a fee, thirty cents for cattle, and twenty cents for small stock; that is, a pig or a lamb or a calf -- anything 425 pounds. A calf we have to pay 20 cents a head for inspection.

PROFESSOR SNYDER: One other question, Bill. Are you running any tests for trichinosis at all?

PROFESSOR LOEFFEL: We haven't been.

PROFESSOR SNYDER: It might be interesting here to say that every hog that has been killed in our laboratory since the beginning of time -- it is a few over 19,000 -- we have never found a case yet that has been laboratory tested, and the veterinarian division of our institution gives us that service.

PROFESSOR LOEFFEL: Where do they get that sample, out of the skirt?

PROFESSOR SNYDER: That's right, diaphragm, just a small section of the diaphragm, and that report is given us back before we cut that pig the next day.

PROFESSOR LOEFFEL: I have always had a feeling that our Middle Western hogs that are grown on alfalfa and grain have relatively little trichina infestation, but I think where you do get it is with garbage-fed pigs.

PROFESSOR SNYDER: I was particularly interested. We have a high percentage of garbage-fed pigs killed, and you have always seen reports of it
coming from there, but we haven't had it, so that was a little side report
there on that inspection.

PROFESSOR LOEFFEL: July 1

PROFESSOR McCLURG: If there are no more questions, I'll turn this
back to Mr. Tomhave.

CHAIRMAN TOMHAVE: Thank you.

I think every instructor in the meat laboratory at one time or
another has been confronted with minor or serious accidents among students,
and we will now hear from Professor B. R. McClurg of the Iowa State College,
who is going to discuss: Safety Rules and Precautions in the Meat Laboratory.
Professor McClurg.

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