Part VI

TRAINING OF PERSONNEL

TRAINING OF MEAT INSPECTORS

H. THORNTON, B.V.Sc., M.R.C.V.S., D.V.H.

Chief Veterinary Officer,
City and County of Newcastle-upon-Tyne, England

In order to establish in any country a satisfactory meat-inspection service as part of public-health administration, certain requirements must be considered essential. There must be an adequate staff of competent, qualified inspectors, assisted, where necessary, by less well-qualified or lay inspectors ; and there must be a definite and orderly system of inspection, guided by a workmanlike code of procedure and judgement.

General Principles

Uniformity in judgement in meat inspection cannot reach a satisfactory standard unless there is some degree of uniformity in the teaching given at the schools where meat inspectors receive their training. This training must not only embrace adequate instruction in the basic sciences, such as anatomy and physiology, but must also indicate the relative importance of the various pathological conditions that the person who becomes a meat inspector will inevitably encounter. The practicability of implementing these requirements must depend to some extent on : (*a*) the time which can be allotted to the teaching of the subject ; (*b*) the facilities available for practical training ; and (*c*) the standard of education of the personnel receiving the training and on whose shoulders the responsibility of meat inspection will eventually fall.

It would be impossible to include within the scope of this study a review of the meat-inspection services of the various countries and of the relative roles played within them by professional and lay staff. Suffice it to say that no person can become an efficient meat inspector unless he has paid special attention to the subject and has reached the degree of knowledge, dexterity, and efficiency which meat inspection demands today. The advantage that any officer can derive from a specialized training must depend very largely on his firm grounding in the anatomy, physiology, and pathology of animals, and in biochemistry and bacteriology ; for this reason, and for this reason alone, the veterinary surgeon has come to play an increasingly responsible part in meat hygiene, not only in Europe but throughout the world. In some countries, however, the employment of the veterinary surgeon in relation to meat inspection has made little

or no headway, and the responsibility for this important branch of public-health work is therefore vested in the medical officer, who deputes the work to a lay inspector—an officer whose qualification to carry out such duties is the possession of a certificate obtained after a relatively short period of training.

Those who have had the opportunity of visiting abattoirs where laymen are in complete charge of meat inspection cannot but be perturbed at the empirical and unscientific judgements that are made, the chief and most serious criticism being that their lack of knowledge of the essential basic principles of meat inspection, and their inaccurate assessment of the relative importance of certain pathological conditions, compels them to apply a wide margin of safety in their judgement; as a result, much meat which is harmless and wholesome is condemned and destroyed. For several reasons, however, it is not practicable in every case to insist that all meat inspection be conducted by veterinary surgeons, and a realistic and practical outlook has been taken by many countries, which prescribe that the actual routine examination of carcasses and organs—itself an onerous task made still more onerous by constant repetition—may be conducted by laymen who are designated " detention officers " or some such similar term.

The duties of such a person are aptly defined in the appellation " detention officer " since, as a result of his routine post-mortem examination of all the animals slaughtered at an abattoir, he may release those carcasses which appear normal in every respect but must detain any which require a further and more detailed scientific inspection by a veterinary surgeon. Thus it is understood that in the law governing meat inspection in Germany a non-veterinary meat inspector who, during his post-mortem examination, detects tuberculous lesions in a carcass of beef or pork may pass judgement on the carcass only when the disease falls into the clearly prescribed classification of localized; all carcasses which, by the nature, disposition, or extent of the lesions, cannot be so classified are subjected to an expert veterinary examination. There is little doubt that the ideal arrangement is for the meat inspection to be placed in the charge of a veterinary surgeon, assisted by other veterinarians where the volume of work renders this necessary, and also by lay inspectors where required. In some cases lay inspectors have had previous experience of the butchering and slaughtering trade, and experience has shown that if they are men of a reasonable standard of education and are possessed of intelligence and integrity they fulfil a role of undoubted public-health value.

In considering the training which the potential meat inspector should receive it will be at once apparent that such training must be considered on two levels. First, there is the student of the veterinary college, who receives tuition in the basic sciences and in meat inspection during his

course ; and, secondly, there is the lay inspector, who lacks the basic training of the former but aspires to take up meat inspection as his career after obtaining a certificate of competence at some recognized technical school. Very obviously, the training of these two groups of potential meat inspectors must differ considerably in form and extent, but the purpose here is to refer to some general principles that must be observed wherever meat inspection is taught, and also to mention some specific aspects by which improvement in teaching could be secured.

The need for a greater measure of uniformity in meat-inspection teaching will not be questioned by those who have had the opportunity of investigating this aspect at the various schools. One of the reasons for training deficiencies in a number of schools is that the lecturers responsible, though admittedly well qualified theoretically, have not taken steps to acquire the essential practical knowledge that can be obtained in no other way than by experience in a large abattoir ; stress is laid on the size of the abattoir, for it is only in large establishments that a wide diversity of pathological conditions and abnormalities will be encountered. No person should be appointed to teach meat inspection, therefore, unless he can produce evidence of a fairly wide practical experience in the day-to-day problems that inevitably arise when large numbers of animals are slaughtered.

In certain countries in the Far East, during ante-mortem inspection of animals for slaughter it is a practice to reject any animal affected with mange, even though the bodily condition may give every indication that the animal would yield a useful and marketable carcass. The reasons advanced for such a decision cannot be other than unconvincing, but the frequency of the practice leads one to believe that such a judgement is generally taught, and that the teaching is therefore at fault and must be held responsible. Accordingly, it would seem wise to draw attention to certain shortcomings in the teaching of meat inspection and to make suggestions, based on a lengthy experience, as to how a greater measure of uniformity in teaching may be secured, thus bringing about a corresponding increase in the efficiency of the personnel engaged in such work. A number of recommendations are included here by which the interest of the student may be aroused and maintained, though one has yet to meet a student who did not wish to " run before he could walk " ; in other words, students aspire at once to study the problems of disease and it is at times difficult to curb or resist this desire. The lecturer must insist that in the earlier stages of tuition the student be encouraged to recognize the normal—whether it be a healthy animal, a carcass, or an organ that is in every way normal—and it is wise to avoid any reference to disease, except in the most general terms, until a thorough grounding in animal anatomy and physiology has been secured.

Ante-mortem Inspection

The value of the thermometer in ante-mortem inspection should be impressed on the student, and the necessity for taking the temperature of any animal unable to stand; similarly, it should be stressed that a rise in temperature is usually associated with the onset of most communicable diseases. He may also be instructed on the position of the superficial lymph-nodes in cattle, though undue stress should not be attached to this because, although the submaxillary, prescapular, and precrural lymph-nodes can readily be palpated in the lean bovine animal, they furnish evidence of disease so rarely that their routine examination during ante-mortem inspection is scarcely justifiable.

Though it is unreasonable to expect a student to possess the detailed knowledge of the farmer as to the characteristics of a good butcher's animal, he should be acquainted with the salient features that constitute a desirable conformation. It is also wise to indicate that the butcher's practice of palpating the scrotum in castrated bovines furnishes a valuable indication as to the bodily condition of the animal, inasmuch as it is in this location that body fat is last to be deposited; thus an animal with plentiful scrotal fat is likely to yield an attractive and well-nourished carcass.

Methods of Slaughter

A point frequently overlooked during teaching is that the stunning of an animal by any means prior to bleeding causes a brief but appreciable rise in the arterial blood-pressure of the animal, and that it is important that advantage be taken of this *vis a tergo* by severing the neck vessels immediately the animal has been stunned. Instruction should also be given that delay in bleeding is one of the factors responsible for the occurrence of "splashed" meat and that meat so affected, though sometimes unfit for sale in the form of retail joints, may safely and reasonably be used as an ingredient of manufactured foods.

Anatomy

In the study of anatomy the better-educated student possesses an advantage, for most of the terms used have a Greek or Latin derivation. Whenever possible this derivation should be explained, as, for example, the word "circumvallate", which means "surrounded by a ditch". There is, however, a tendency to inflict too much anatomical detail on

the student of meat inspection ; it is unreasonable to require him to memorize the names and position of all the skeletal muscles of the animal body or the minor vessels of the circulatory system.

Once the student is thoroughly conversant with the framework of the animal body, he is in a position to study the various systems, and lectures on these subjects should be accompanied by numerous visits to the slaughterhouse, where experience can be gained in recognizing the various organs and their differential features in each of the food animals. It is also important that instruction be given as to how the shape and appearance of organs may differ in animals of the same species but of different ages. Thus, the spleen of the young bovine, with its rounded edges and reddish-brown colour, may be contrasted with that of the cow, with its sharp borders and greyish-blue colour of the surface. Similarly, the liver of the cow can usually be recognized by the presence of a well-marked " waist " between the left and right lobes. In demonstrating the digestive system there is no better method of impressing on the student the structure of the ruminant stomach than by inflating the organ, and in the case of the pig stomach to open the organ and demonstrate the region of the fundus, from which pepsin is obtained.

The recognition of the sex of an animal when in carcass form is important, and here teaching is often at fault, particularly in relation to the appearance of the external inguinal ring in the male bovine, sheep, and calf, and the disposition of the inguinal canal. In this respect it is advantageous to enlarge on the intra-abdominal position of the testicles in foetal life and to explain the mechanics of cryptorchidism, a condition frequently encountered in slaughterhouse work.

Students are often concerned as to why the kidneys of the bovine are lobulated whereas in the other animals the surface of the organs is smooth. It should be explained that in all the mammalia the kidneys have a lobulated structure in early embryonic life, but in all animals except the bovine the lobes eventually become fused to present a uniformly smooth surface. Perhaps the most illuminating demonstration that can be given in a slaughterhouse is on the nearly full-time foetal calf, with the fascinating inter-attachment of the maternal and foetal cotyledons and the course of the foetal circulation ; after such a demonstration the reason for the peculiar disposition of the lesions of tuberculosis in the congenitally-infected calf becomes readily apparent, as also does the etiology of pyosepticaemia neonatorum in calves. It always creates interest when lecturing on the female reproductive system to discuss the physiology of twins and free-martins, and the reasons for the occurrence of extra-uterine pregnancy.

When one comes to compare the teaching of meat inspection in various countries one finds that the greatest lack of uniformity is in the naming of the various lymph-nodes, and nothing could be more desirable than a

general agreement to adopt a standardized nomenclature. Quite apart from the need for uniformity in this respect, it is also desirable that there be more general agreement as to the accepted drainage-areas of particular nodes and that greater stress be laid on the fact that certain nodes are quite frequently absent. There is still divergence of opinion on the areas drained by such nodes as the prescapular (lymphoglandulae cervicalis superficialis) and precrural (lymphoglandulae subiliacus) of the ox, and on whether the precrural nodes do, in fact, drain the anterior quarters of the bovine udder. It should also be stressed that nodes such as the external iliacs (lymphoglandulae iliaci lateralis) and right bronchial (lymphoglandulae bifurcationis dexter) and some of the suprasternal group (lymphoglandulae mediastinales ventrales) are frequently absent in the bovine, though in the suprasternal group the largest and most constantly present is the one located in the fifth intercostal space. Numerous other cases could be cited where clarification and uniformity of teaching on the lymphatic system is required.

In considering the position of the lymph-nodes it is always advisable to give the student some instruction in how the carcasses of animals are divided into marketable retail joints. It is here that a firm grounding in knowledge of the skeletal system comes into play, and it is of the greatest practical importance that the student be able to expose and identify the lymph-node or nodes that may be present in an isolated joint of meat which may be presented for his inspection; one has seen acknowledged experts confused when confronted with specimens of meat in which it is desirable that the lymph-nodes should be incised. Students should therefore be required to demonstrate that they are able to expose every lymph-node in a carcass and its viscera, and should be expected to do this with reasonable dexterity and without causing excessive mutilation.

Pathology

As inflammation is the basis of all pathology it is wise to demonstrate the various types of inflammatory change that may be encountered in meat inspection. But, most important of all, it is essential that the student be taught to recognize and appreciate the macroscopic difference between an inflammatory change of the acute type and one which shows evidence of chronicity. In the past, the inability of meat-inspection personnel to recognize simple pathological conditions and to differentiate accurately between acute and chronic lesions, particularly in relation to tuberculosis, has resulted in untold amounts of meat being unnecessarily condemned and destroyed; it would be interesting to conjecture the number of occasions on which anaemic infarcts in the kidney of the cow have been

erroneously classified as lesions of tuberculosis. Though one would hesitate to minimize the potential danger of any systemic infection of the animal body, it should be pointed out that extensive pathological processes with the formation of pus, such as occur in traumatic pericarditis and pyometra, do not necessarily call for condemnation of a carcass, inasmuch as they are less likely to produce a generalized systemic infection than is usually supposed ; the judgement of all septic infections depends on whether or not the septic process has become generalized throughout the carcass.

Conclusions

No meat-inspection service can hope to operate efficiently unless the personnel conducting routine inspections, whether in the abattoir, the meat market, or elsewhere, have previously received an adequate period of theoretical and practical training. In order to achieve this it is essential that the teaching staff responsible are in possession of a thorough grounding in the basic sciences and are able not only to imbue the students with some of their enthusiasm but also to impart to them their own theoretical and practical knowledge. This study indicates some of the ways by which greater efficiency may be secured.