No of Sides	Names.	Area of Multipliers.
3	Trigon	0·4330127
4	Tetragon	1·0000000
5	Pentagon	1·7204774
6	Hexagon	2·5980762
7	Heptagon	3·6339124
8	Octagon	4·8284271
9	Nonagon	6·1818242
10	Decagon	7·6942088
11	Undecagon	9·3656399
12	Duodecagon	11·1961524

A man of average size will take the place of about three cubic feet.

A mattress, a pillow, three blankets, one coverlet, and two sheets of a soldier's bed are said to occupy about 10 cubic feet, when folded together loosely.

All projections, solid pieces of furniture, cupboards, &c., should be measured and their cubical contents deducted from the gross measurement.

This table shows the minimum of cubic air space allowed for each person, under the following circumstances:—

Class of Dwelling, &c.	Minimum cubic space allowed.		Remarks.
	Adults.	Children.	
Canal boats.	60	40	Boats built prior to 1878, for each child not less than 30 c. f.
Common lodging-houses (Met.).	240	120	
Common lodging-houses (Prov.).	300	150	
Houses let in lodgings (Met.).	300 and 400	150 and 200	The larger amount is required where a room is used both as a living and bed-room.
Houses let in lodgings (Pro.).	350 and 450	175 and 225	
Factories and workshops.	250 and 400	—	400 c. f. is required in cases where overtime is worked.

MEAT INSPECTION.

As the sanitary inspector is required to keep a strict watch over the food supply of his district, unless as is the case in some towns, an inspector is specially appointed for that work; it is necessary that he should make himself thoroughly acquainted with the diseases of animals which render the meat unfit for human food after the animal has been slaughtered and deposited in the slaughter house or shop; also as regards fish and other foods, solid or liquid, whether exposed for sale, or in preparation for sale, or deposited for the purpose of sale, and intended for the food of man.

The Royal Commission on tuberculosis considered that meat inspectors should possess certain qualifications. Their recommendation on the subject will be found on page 21 of their report, and is as follows:—

> We recommend that in future no person be permitted to act as a meat inspector until he has passed a qualifying examination before such authority as may be prescribed by the Local Government Board (or Board of Agriculture), on the following subjects:—
>
> (*a*) The law of meat inspection, and such bye-laws, regulations, &c., as may be in force at the time he presents himself for examination.
>
> (*b*) The names and situations of the organs of the body.
>
> (*c*) Signs of health and disease in animals destined for food, both when alive and after slaughter.
>
> (*d*) The appearance and character of fresh meat, organs, fat, and blood, and the conditions rendering them, or preparations from them, fit or unfit for human food.

At present a person cannot be required to pass a qualifying examination of the kind referred to before he

acts as a meat inspector; but it appears to the Board that, in the case of a borough or urban district, where the work connected with the proper discharge of the duty of meat inspection is sufficient to justify the appointment of a separate officer for the purpose, it is very desirable that such an appointment should be made, and that the Council should satisfy themselves that the person appointed possesses adequate knowledge of the subjects mentioned in the recommendation of the Royal Commission.

In the smaller districts, where the work of meat inspection is not sufficient to render necessary the appointment of a separate officer, the Board consider that regard should be had to these qualifications in making future appointments to the office of Inspector of Nuisances.

The Council of the Sanitary Institute have established an examination for persons desirous of qualifying for an appointment of inspectors of meat and other foods on the lines recommended by the Report of the Royal Commission on Tuberculosis, the syllabus of which includes the subjects specified in the Report of the Royal Commission, as follows :—

A knowledge of the laws, bye-laws, and regulations affecting the inspection and sale of meat and other articles of food, including their preparation and adulteration.

Signs of health and disease in animals destined for food, when alive and after slaughter. Tuberculin and other tests.

The names and situations of the organs of the body in animals. The distinctions between the parts and visceral organs in different domestic animals. Size, weight, and form of the organs of ox, cow, horse, sheep, calf, pig. Position of lymphatic glands.

The appearance and character of fresh meat, organs, fat, blood, fish, poultry, milk, fruit, vegetables, and other food, and the conditions rendering them, or preparations of them, fit or unfit for human consumption.

The hygiene of byres, lairs, cow sheds, and slaughter houses, and all places where animals destined for the supply of food are kept.

The hygiene of markets, dairies, and other places where food is stored, prepared, or exposed for sale.

Practical methods of stalling and slaughtering animals, preserving and storing meat and other foods.

The following provisions relate to the powers of the inspector and medical officer of health, as to the seizure or otherwise of unsound food :—

Any medical officer of health or sanitary inspector may at all reasonable times enter any premises and inspect and examine:

(*a*) any animal intended for the food of man which is exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, and

(*b*) any article, whether solid or liquid, intended for the food of man, and sold or exposed for sale or deposited in any place for the purpose of sale or of preparation for sale,

the proof that the same was not exposed or deposited for any such purpose, or was not intended for the food of man, resting with the person charged; and if any such animal or article appears to such medical officer or inspector to be diseased, or unsound, or unwholesome, or unfit for the food of man, he may seize and carry away the same himself or by an assistant, in order to have the same dealt with by a justice.

If it appears to a justice that any animal or article which has been seized or is liable to be seized under this section is diseased, or unsound, or unwholesome, or unfit for the food of man, he shall condemn the same, and order it to be destroyed or so disposed of as to prevent it from being exposed for sale or used for the food of man; and the person to whom the same belongs or did belong at the time of sale or exposure for sale, or deposit for the purpose of sale or of preparation for sale, or in whose possession or on whose premises the same was found, shall be liable on summary conviction to a fine not exceeding fifty pounds for every animal, or article, or if the article consists of fruit, vegetables, corn, bread, or flour, for every parcel thereof so condemned, or, at the discretion of the court, without the infliction of a fine, to imprisonment for a term of not more than six months with or without hard labour.

Where it is shown that any article liable to be seized under this section, and found in the possession of any person, was purchased by him from another person for the food of man, and when so purchased was in such a condition as to be liable to be seized and condemned under this section, the person who so sold the same shall be liable to the fine and imprisonment above mentioned, unless he proves that at the time he sold the said article he did not know, and had no reason to believe, that it was in such condition.

Where a person convicted of an offence under this section has been within twelve months previously convicted of an offence under this section, the court may, if it thinks fit, and finds that he knowingly and wilfully committed both such offences, order that a notice of the facts be affixed, in such form and manner, and for such period not exceeding twenty-one days, as the court may order, to any premises occupied by that person, and that the person do pay the costs of such affixing; and if any person obstructs the affixing of such notice, or removes, defaces, or conceals the notice while affixed during the said period, he shall for each offence be liable to a fine not exceeding five pounds.

If the occupier of a licensed slaughter-house is convicted of an offence under this section, the court convicting him may cancel the license for such slaughter-house.

If any person obstructs an officer in the performance of his duty under any warrant for entry into any premises granted by a justice in pursuance of this Act for the purposes of this section, he shall, if the court is satisfied that he obstructed with intent to prevent the discovery of an offence against this section, or has within twelve months previously been convicted of such obstruction, be liable to imprisonment for any term not exceeding one month in lieu of any fine authorised by this Act for such obstruction.

A justice may act in adjudicating on an offender under this section, whether he has or has not acted in ordering the animal or article to be destroyed or disposed of.

Where a person has in his possession any article which is unsound, or unwholesome, or unfit for the food of man, he may, by written notice to the sanitary authority specifying such article, and containing sufficient identification of it, request its removal, and the sanitary authority shall cause it to be removed, as if it were "trade refuse." (Public Health (London) Act, 1891, Sect. 47; and Sects. 116-119, Public Health Act, 1875; and Sects. 28 & 31, Public Health Act (Amendment) Act, 1890; also Sect. 43, Public Health (Scotland) Act, 1897). See also Sect. 289 & 292-3 of the Markets and Fairs Clauses Act, 1847.

The last part of the above section takes away the ground of a common defence in prosecutions for having unsound meat in one's possession; it being very often suggested that the food seized had been set aside with the object of destroying it, or to await the inspector's visit for inspection before offering the article for sale.

But as the officer is appointed for public purposes, and not to assist the dealer in deciding whether such food is fit for sale, the latter being quite competent to judge for himself, it follows that should the article be deposited in a market or shop for instance, or where sales of such commodities are usually carried on, it is the duty of the inspector to take possession of any food which he believes to be diseased or unsound, and which is intended for the food of man, with a view to its being taken before a justice or not, as "seizures now are unnecessary."

In the case of Queen *v.* Dennis, reported in the "Times" for May 29th, 1894, it was held that if a person voluntarily handed to the sanitary inspector, an article of food which was unsound, he could not be convicted of having the food in his possession, neither could it be said that the article had been seized by the inspector.

Articles which are exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, may be seized, but in the case of Vinter *v.* Hind, 10 Q. B. D. 63, it was decided that a seizure made after sale, was not within the section. The defendant slaughtered a cow which had had milk fever, and sold several portions of it for the food of man. One of the

purchasers handed the meat to Vinter, who was inspector of nuisances for the district. Vinter had it destroyed by order of a magistrate, and then sought to convict Hind of an offence under the section, and it was held that Vinter had no power to seize it *after sale*, although it was intended for the food of man; whereas, to come within the section it must be both exposed for sale and intended for the food of man. This decision was undoubtedly in accordance with the wording of the section, but it clearly exposed a defect in its working which hampers a local authority in its endeavour to maintain the good health of its district. The Public Health Act (Amendment) Act, 1890, Section 28, and Section 47 of the Public Health (London) Act, 1891, also Section 43, Public Health (Scotland) Act, 1897, removes this defect, and provides that the section shall apply in such a case as that of Vinter *v.* Hind, and gives an inspector power to inspect any article of food, even after sale, and take the same proceedings if he find it to be diseased, &c., as if he had found it exposed for sale at the time of his inspection.

It was formerly considered that if the magistrate once made an order for the destruction of the meat, the defendant could not in a prosecution under this section call evidence for the purpose of showing that the meat which had been condemned was not in fact unsound, and that view was supported by a dictum of Justice Stephen in the case of Vinter *v.* Hind, but this dictum was expressly over-ruled in the case of Waye *v.* Thompson, 15 Q. B. D. 342, on the ground that it is necessary that a man should be heard upon the question in a case where he is subjected to the liability to imprisonment, and therefore an inspector has not only to satisfy the magistrate who makes the order for destruction that the meat is unsound, but he must also be prepared to establish the fact when the case comes to be fought in open court. The difficulty of establishing a case is often increased by the erroneous idea that it is necessary to establish that the meat is unfit for the food of man.

Forms of Orders for Destruction usually contain the words "and unfit for the food of man," in addition to the words "diseased or unsound or unwholesome," which are left to be filled in according to the circumstances, and summonses nearly always contain the words "and unfit for the food of man." All this increases the difficulties unnecessarily. Nothing could be more undesirable as a rule than these words, and I have found by experience that it is wiser to leave out the words "unfit for the food of man," and simply allege that the meat is either diseased or unsound, as the case may be. It is usually a comparatively easy thing to prove that a piece of meat is diseased, but I never knew a case yet where the defence was not prepared to produce evidence that the meat in question was not "unfit for the food of man."

For instance, in the Glasgow tuberculosis case, many eminent medical men and veterinary surgeons were called for the defence to prove that the meat was not unfit for the food of man. In the first case of tuberculosis I had, the summons as issued alleged as usual that the meat was unfit for the food of man. There was no intention of fighting the Glasgow case over again, which on that summons it would have been quite competent for the defence to have compelled us to do, so a fresh summons was issued simply alleging that the meat seized was diseased, and the learned counsel who appeared for the defence admitted that on the second

summons as worded, he could do nothing but plead in mitigation of penalty.

An interesting question arises as to the person against whom you may proceed. The words in the Section are "the person to whom the same belongs or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty," &c. The case of Newton *v.* Monckom, 58 L. T., N. S. 231, was decided on this point. There the under bailiff of a large landowner (who had two cows slaughtered because they were affected by disease) was sent to Portsmouth to arrange with a butcher to take the carcases. The under bailiff sent the carcases in his own name consigned to the butcher at Portsmouth station. The butcher examined the carcases and stated to the under bailiff that they were of no use to him. The meat was seized while lying at the station and condemned, and proceedings were taken against the under bailiff "as being the person to whom the same belonged," and he was convicted. Against this conviction he appealed, and appealed successfully, for it was held that although he might have been convicted as being the person "in whose possession the same was found," the evidence showed that he was not the person "to whom the same belonged" at the time of exposure for sale. The judgment of Justice Smith in that case was remarkable. He said:—"It seems to me that two classes of persons may be convicted, namely, the person to whom the meat belonged, and the person in whose possession or on whose premises it was found." The statement was not necessary for the decision of the case before him, and therefore is not a binding statement of the law. But if it is correct it means that if you convict the

person in whose possession the meat is found, you cannot afterwards convict the person on whose premises the same was found. Curiously enough, I had a case in which this very point arose. A man, A. B., was caught in the act of dressing a heifer in the slaughter house of one C. D.; the heifer was found to be very badly affected with tuberculosis, and was accordingly seized. Proceedings were taken against A. B. as being the person in whose possession the carcase was found, and also against C. D. as being the person on whose premises the same was found. A. B. was convicted and sentenced to imprisonment; C. D.'s case then came on, and the point was raised whether he could be convicted or not, seeing that A. B. had already been convicted. It was contended that on the words in the Section three persons could be convicted. (1) The person to whom the same belongs or did belong at the time of exposure for sale. (2) The person in whose possession the same was found. (3) The person on whose premises the same was found. The case was adjourned for a week to enable the magistrate's clerk to consider it. In the meantime the facts were submitted by a person interested to the *Justice of the Peace* newspaper, and they gave an opinion against the contention, and relied on the dictum of Justice Smith to which I have referred; but a case was submitted for the opinion of one of the leading Junior Counsel on the Northern Circuit, and he advised that the whole three persons could be convicted. When the case came on again, the clerk to the magistrate gave an opinion in our favour.

In a Scotch case (Dickson *v.* Linton, 15 Ct. of Sess., 4th series, J. C. 76), it has been decided that in order to obtain a conviction against the occupier of premises for

having unsound meat on his premises, it is not essential to prove that the accused knew either of the meat being on his premises or of its unsound condition, and this view is supported by the judgments in the English case of Mallinson *v.* Carr (1891) 1 Q. B. 48, and of Blaker *v.* Tillstone, 70 L. T. Rep., N. S. 33.

Under the provisions relating to unsound food, &c., it is provided that "the inspector of nuisances may at all reasonable times inspect meat, &c., exposed for sale or deposited in any place for the purpose of sale or of preparation for sale and intended for the food of man." (In the case of Small *v.* Bickley, 32 L. T., N. S. 726, it was held, that a Sunday afternoon might in certain circumstances be a reasonable time for examining meat). And that "the person to whom the meat, &c., belongs or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty." It was contended in a case, though without success, that as the words only referred to exposure for sale, a person to whom meat belonged which was seized while "deposited in any place for the purpose of sale or of preparation for sale," could not be convicted. The case to which I refer was that of Mallinson *v.* Carr (1891) 1 Q. B. 48. There one Kettlewell sold a cow to the defendant Carr for thirty shillings, with a stipulation that it was not to be offered for human food. The beast was slaughtered and cut up into four quarters. Kettlewell heard that the carcase was going to be offered for human food, and he gave notice to the inspector of nuisances, and by him the meat was seized. But in the subsequent proceedings the justices refused to convict, being of opinion that the decision in Vinter *v.* Hind applied, and that inasmuch as the meat was not exposed for sale

at the time of seizure no offence had been committed. Mallinson obtained a case for the High Court, and on appeal the case was remitted with a decision that the magistrates were wrong in point of law. Justice Hawkins said, "I can find nothing in the section which says that no man, even although he has unsound meat in his possession which is intended for the food of man, and although he is preparing it for sale with the intention of selling it can be convicted unless he actually exposes it for sale. I cannot think it could ever have been intended that, however great a quantity of diseased or unsound meat a man has in his possession for the purpose of selling it, he should be liable to no penalty under the Act. The Legislature cannot have intended that construction." Justice Stephens said "the justices have misapprehended the judgment in Vinter *v.* Hind. That case was entirely different from the present. It turned upon a different collection of words in the Statute, requiring a different coincidence of things in order to constitute an offence . . . . . The offence is having in a person's possession or on his premises, meat which is unsound or unfit for human food. There was unquestionable evidence in the present case that the respondent committed that offence. He was in possession of meat which was unsound and unfit for human food, and it is not an element of that offence that the meat should either have been exposed for sale or prepared for sale . . . . I cannot agree with the argument that unless there is an exposure for sale, no offence is committed."

The statement that all diseases must affect the composition of the flesh, and that, though animal poisons may be neutralised or destroyed by the process of cooking and digestion, the composition of the muscles

must exert an influence on the composition of human nitrogenous tissues, which no preparation or digestion can remove, is no doubt right in *principle*, but if the officers responsible for the inspection of meat were to put this principle into practice, the meat supply would become seriously reduced, and the high price consequent upon that would put the purchase of meat altogether beyond the reach of the poor.

It is, therefore, evident that upon the Inspector and Medical Officer of Health rests great responsibility in carrying out these duties, as these officers will frequently have to determine the fitness or otherwise of meat intended as human food.

The following diseases of animals are declared to render the meat unfit for the food of man:—

Cattle-plague.
Pleuro-pneumonia.
Sheep-pox.
Cow-pox.
Influenza.
Rheumatism.
Black quarter or splenic fever.
Splenic apoplexy or braxy.
Pig typhoid.
Scarlatina.
Quinsy or strangles.
Anthrax.
Tænia—producing Encysted Parasites.
Trichinæ.
Tuberculosis.

The post-mortem appearances of the meat of slaughtered animals which have suffered from the diseases mentioned, according to Dr. F. Vacher, are as follows:—

Cattle plague.—In the early stages there is a redness

of the mucous membrane lining the respiratory passages, the alimentary canal, and the organs of generation —in the intestines there is a viscid, blood-coloured secretion.

In an advanced stage of the disease there will be a yellow, cheesy deposit in the nares and larynx, patches of ecchymosis on the intestines, urinary and generative organs, and extravasations beneath the endocardium and pericardium, and swollen mesenteric glands. There is emphysema of the lungs and the blood is dark and thick.

According to Dr. Murchison, the lining "membrane" of the fourth stomach is studded with numerous minute superficial ulcers. The urine is probably always albuminous.

Pleuro-pneumonia.—The pleura is thickened, the lungs show signs of adherence to the pericardium or diaphragm—if the disease is not extensive, the change in the colour of the lungs will be the best indication—the bright pink hue of health giving place to grey, mottled with spots, blue, purple and red. The lungs will be much larger and heavier, when placed in water they will sink to the bottom, and there is loss of elasticity in them. The weight of the lungs, which are usually from 5 to 8 pounds, will be increased to 30 or 40 pounds. The meat is dark and ill-bled.

Sheep-pox.—This disease resembles human small-pox, though the pustules are larger than those of human small-pox, varying from $\frac{3}{8}$ to $\frac{1}{2}$ inch in diameter. The mucous membrane is the seat of the eruption, the lungs contain spots in which the specific virus is deposited—in severe cases the joints and hoofs are inflamed and swollen, the eyes blood-shot and the nostrils packed with discharge. The lymphatic glands are enlarged

and inflamed; the meat has a nauseous smell and the flesh is soft and pale and too moist.

Cow-pox.—The eruption of cow-pox is severe, the udder pustules assuming the appearance of running ulcers, while in a living beast the mouth is very sore; there is exhaustion from diarrhœa and fever.

Influenza.—Red patches denuded of epithelium are to be seen in the mouth—the conjunctiva and cornea are inflamed—there is pus in the nares and sinuses, the face is smeared with pus and blood, patches of ecchymosis are visible on the intestines and other abdominal viscera. The meat is dark, ill-bled, soft and watery.

Rheumatism.—Resembles influenza in beginning as a simple cold—joints stiff or thickened with deposit, fluid should be looked for in and around the affected joints; the animal has probably been slaughtered owing to obstruction in the bowels with hardened fæces, and the flesh is charged with watery fluid and is sour.

Black quarter or splenic fever.—A swelling of the forequarter or haunch, part affected, dark and unwholesome looking from erysipelas, spleen swollen and dark coloured, lungs generally congested, serous membranes stained more or less with ecchymosis.

Splenic fever, according to a report of the Veterinary Department of the Privy Council, has the following post-mortem appearances:—

1. The lungs sometimes partially congested, and commonly blown up with air between their lobules.

2. The first, second and third stomachs are usually healthy. The fourth stomach is intensely congested at its upper end.

3. The intestines are, with rare exceptions, congested and blood-stained, more or less throughout their whole extent.

4. The liver often congested, is not materially implicated in the disease. The gall bladder has its coat sometimes thickened by a gelatinous-looking fluid, and its contents are dark and viscid.

5. The spleen is always enlarged, it should usually weigh one to one and a half pounds, but it is found in the disease as high as five, six and even eight pounds in weight. It is dark coloured, and its structure broken up.

6. The kidneys are congested, and the mucous membrane within them often blood-stained; in a small percentage of cases the bladder contains clear urine. In the great majority of cases this organ is greatly distended by bloody urine, and its internal lining is dotted with small bright pin-point-like extravasations.

7. The brain and spinal cord are congested more or less.

Splenic apoplexy or braxy.—When it affects sheep it resembles splenic fever with "head" symptoms; the spleen, which is rather over one pound in a beast, and rather over two ounces in weight in a sheep, will be quadrupled; subjects of this disease are not likely to be slaughtered before it proves fatal—the meat cannot be bled properly.

Pig typhoid.—Diffused and patchy redness of the skin, small ulcerations in the mouth and in the throat organs, stomach congested, ulcers on large and small intestines, the larger intestines most frequently affected, ulcers vary in form and size, they increase in size and run into one another, forming eight-shaped figures, large branching irregular sores, or ulcer chains or groups, the spleen usually darker, lungs often pneumonic and on dissection display tiny white specks due to cheesy deposit in small bronchial tubes. Generally there is some pleural exudation, the liver in severe cases is enlarged from con-

gestion; if the eruption is abundant the carcase should not be passed.

Scarlatina or swine fever.—Acute inflammation of the skin and mucous membrane, the eruption specky at first, but soon spreads over the whole surface of skin and is of a bright scarlet colour, the glands are inflamed and enlarged, a strong solution of salts is often used by the butcher to bleach the outer skin, but the colour cannot be removed by this means from the subcutaneous fat.

Quinsy or strangles.—Glandular swellings in neck, organs of the throat inflamed, cheeks and underside of neck very red and swollen, there are raised red spots in the mouth.

Anthrax.—The skin is frequently congested, livid rather than red, extravasations into the tissue and beneath serous and mucous membranes, lymph is exuded in greater or less quantity, rendering the carcase swollen and sodden.

Tænia—producing Encysted Parasites.—This disease is known as *cysticerci cellulosæ*, is very common in pigs, and produces tape-worm in the human subject, if the parasites are taken into the stomach alive. The parasites are found in and between the muscles, fibres, on the surface of the muscles, and in the walls of the heart. The egg-shaped infest the bladder, they vary in size from $\frac{1}{8}$ to $\frac{1}{2}$ inch, and are easily seen and removed from the bladder upon gentle pressure. There is nothing remarkable in "measly pork" but the bladder worm, measles is the name given because of the appearance of the flesh on section. There is swelling round the shoulders. Young pigs are the most susceptible to the disease.

Trichinæ.—Trichinæ in pork may be seen without the aid of a magnifier, the flesh being distinctly speckled.

A thin section of the muscle should be put into dilute liquor potassæ and water, in the proportion of 1 to 8, when the white specks will be clearly seen; to see the coiled up worm itself apply a pocket lens. The lungs are sometimes inflamed.

Tuberculosis or consumption.—Sometimes called "grapes" because of the resemblance of the tubercles to a bunch of grapes. The tubercles or tumours vary in size from a pea to a walnut, they are found chiefly on the surface and in the lungs and on the walls of the chest, but in severe cases may be found in the liver, udder and glands of the neck. To remove traces of this disease, the butcher will carefully strip off portions of the lining membrane; the tubercles, if the disease is of long standing, will be large and "cheesy." It frequently happens that an animal having all the appearance of being healthy will be found seriously affected with the disease when slaughtered. But the affected beasts are as a rule very much emaciated and the meat will not "set."

The Royal Commission on Tuberculosis recommended that the Local Government Board should be empowered to issue instructions from time to time for the guidance of meat inspectors, prescribing the degree of tubercular disease which, in the opinion of the Board, should cause a carcase, or part thereof, to be seized.

Pending the issue of such instructions we are of opinion that the following principles should be observed in the inspection of tuberculous carcases of cattle:—

(*a*) When there is miliary tuberculosis of both lungs.
(*b*) When tuberculous lesions are present on the pleura and peritoneum.
(*c*) When tuberculous lesions are present in the muscular system or in the lymphatic glands embedded in or between the muscles.
(*d*) When tuberculous lesions exist in any part of an emaciated carcase.

} The entire carcase and all the organs may be seized.

(*a*) When the lesions are confined to the lungs and the thoracic lymphatic glands.
(*b*) When the lesions are confined to the liver.
(*c*) When the lesions are confined to the pharyngeal lymphatic glands.
(*d*) When the lesions are confined to any combination of the foregoing, but are collectively small in extent.

} The carcase, if otherwise healthy, shall not be condemned, but every part of it containing tuberculous lesions shall be seized.

In view of the greater tendency to generalisation of tuberculosis in the pig, we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcase and of the organs.

In respect of foreign dead meat, seizure shall ensue in every case where the pleura have been "stripped."

Diseases of animals, which in their later stages may render the meat unfit for the food of man, are:—

Foot and mouth disease.
Hoof-rot.
Jaundice.
Texas fever.
Inflammatory diseases of the lungs.
Cardiac dropsy.
Enthetic disease.

To assist in the detection of certain diseases of *animals*, the Board of Agriculture has issued the following description of diseases:—

Cattle-plague.—The early symptoms of the plague are, rise of internal temperature; the animal stands with its head hanging down, ears drawn back, and coat staring; it refuses all food and occasionally shivers. A mucous discharge flows from the eyes and nostrils. The extremities are cold; the breathing is laboured and frequently accompanied with moaning.

The inner part of the upper lip and roof of the mouth and all visible mucous membranes are reddened and

are not unfrequently covered with an eruption of minute pimples, and later on with a bran-like exudation. The bowels are occasionally constipated, but in most instances, diarrhœa soon sets in, the evacuations being slimy and very frequently of a dirty yellow colour. The prostration of strength is great, the animal staggering when made to move. In milch cows the secretion of milk is rapidly diminished and soon ceases altogether. The disease usually ends fatally in from six to ten hours.

Pleuro-pneumonia.—The attack is mostly insidious, the animal appearing but little affected at the outset.

The internal temperature is always increased, even in the earliest stages of the disease; it may reach 104° or 105° F.

A short dry husky cough, which continues throughout, and is easily excited by moving the animal, is one of the earliest symptoms. The breathing is increased in frequency and altered in character, is often accompanied with a grunt, and becomes painful as the disease advances.

A dull sound is emitted on percussing the side of the chest over the diseased lung. Firm pressure applied to this part will cause the animal to shrink.

The appetite is generally diminished, but rarely lost except in the advanced stages of the disease.

In milch cows the secretion of milk is always lessened but not completely stopped.

Foot and mouth disease.—Premonitory symptoms are, rise of temperature; the animal frequently smacks its lips, and shows by the movement of its tongue that the mouth is the seat of suffering; and the saliva flows freely from the mouth. An examination of the mouth shows the existence of vesicles on the tongue and often on the inner part of the upper lip on the pad.

Often the vesicles are broken, exposing the surface beneath. The animal seldom refuses food, but rolls it about in its mouth, and often drops instead of swallowing it. In most instances the feet are affected as well as the mouth, and blisters will form between the toes, causing the animal to walk tenderly, and frequently to catch up one foot after the other and shake it as if to dislodge something which was producing pain. In milch cows the teats are occasionally affected with vesicles, especially at the opening of the milk duct, which often lead in this situation to sores and crusts being formed, preventing the ready flow of milk. The disease is of short duration, rarely produces death, and frequently exists simultaneously among the cattle, sheep and pigs of the farm.

Sheep-pox.—A contagious eruptive disease affecting sheep, the chief symptoms of which are the elevation of temperature, general febrile disturbance and marked prostration, great thirst, loss of appetite, discharge from eyes and nose, and the appearance of papules in the skin of parts of the body which are either hairless or covered by hair instead of wool, such as the inside of the fore-arms, and thighs, under-surface of tail, &c.

At the seat of these papules, vesicles and sometimes even pustules may form, which afterwards dry up and leave brownish crusts.

Sheep-scab.—This disease is due to the presence of a small parasite which causes great irritation to the affected animal by its movement over the surface of the skin.

The parasite may be transferred from one sheep to another by contact or by portions of the wool of an infected sheep which may become detached upon hurdles, posts, hedges and other things against which the diseased sheep may have been rubbing. This constant rubbing is the prominent symptom in sheep-scab, but as sheep may rub themselves from other causes than scab it is important that the veterinary inspector should examine the wool with a pocket-lens to determine whether the acarus is present. Sometimes the acari are difficult to find in the wool, and in such cases a portion of the scab should be removed from the skin, soaked in a small quantity of soda and water, and examined under a microscope with a lens of low power, when some of the dead acari, portions of the limbs, or some of the ova, will be found.

Swine fever.—The most prominent symptoms of this malady are a short husky cough, loss of appetite, great thirst and prostration, elevation of temperature, often as high as 105° F., or more, constipation at first, followed by profuse fœtid diarrhœa, with traces of blood, and in the later stages even crusts from the ulcerated surface of the intestine being passed, frequently an eruption of the skin of the insides of the thighs, belly, and axillæ, and behind the ears, and in some cases more or less appearance of paralysis of the hind extremities before death.

Anthrax.—In most cases the sign of an outbreak of anthrax or splenic fever is the discovery of a dead animal in the pasture or byre. Probably the animal was left a few hours before in apparent health; at least there was nothing to attract attention, or give any warning of the approaching catastrophe. Occasionally, and in the case of sheep not uncommonly, there are certain premonitory symptoms of an attack of anthrax which can be recognised by an expert. The affected animal is dull and disinclined to move. If one of a

herd or flock is attacked, the fact is indicated by the separation of the sick animal from the rest. Close observation will enable the observer to detect an occasional shiver which seems to pass rapidly over the body, and then cease.

Sometimes a little blood is discharged from the nose and also with the fæces, and from time to time the animal will cease to feed, and stand with the head bent towards the ground. On closer inspection it will often be found that there is a good deal of swelling under the throat, extending down the neck, and the swollen part will at first be tender to the touch and hot, but as the disease goes on it becomes insensitive, cold and clammy.

The shivering fits now become more frequent, and perhaps, while these signs are being noted, the animal will suddenly roll over on its side, and, after a few violent struggles, expire.

As regards the unwholesomeness of meat arising from decomposition, Dr. Christian in his work on "Poisons" says:—"The tendency of putrefaction to impart deleterious qualities to animal matters originally wholesome has long been known, and is quite unequivocal. To those who are not accustomed to the use of tainted meat, the mere commencement of decay is sufficient to render meat insupportable and noxious. Game, only decayed enough to please the palate of the epicure, has caused severe cholera in persons not accustomed to eat it in that state."

The practice of eating game which is "high" is common, not only to this, but to other countries, and we are also told that rotten fish is used by the Burmese, Siamese, and Chinese, as a sort of condiment, without bad effect.

Dr. Pavy says:—"Cooking doubtless neutralizes, to some extent, the effect of decomposition, and the secretion of the stomach (gastric juice), with the strongly antiseptic properties it possesses, will tend to prevent any further advance of ordinary decomposition as soon as the food reaches the stomach. Notwithstanding these salutary influences, however, experience shows that the resisting power enjoyed by those accustomed to our mode of life is not sufficient to allow meat tainted with decomposition to be consumed without incurring a risk of more or less severe gastro-intestinal derangement, if nothing more, being set up."

Though it is the custom in this, as well as other countries, to eat game in a "high" state, it is evident that meat of any kind in this condition cannot always be partaken of with impunity, and whenever the inspector finds beef, mutton, fish, rabbits, &c., intended for the food of man, which is putrid, he should adopt the measures provided by the Acts to prevent its being sold as human food.

Generally speaking good meat has the following characteristics:—

1. It is neither of a pale pink colour nor of a deep purple tint, for the former is a sign of disease, and the latter indicates that the animal has not been slaughtered, but has died with the blood in it or has suffered from acute fever.

2. It has a marbled appearance from the ramifications of little veins of fat among the muscles.

3. It should be firm and elastic to the touch, and should scarcely moisten the fingers, bad meat being wet, sodden and flabby, with the fat looking like jelly or wet parchment.

4. It should have little or no odour, and the odour

should not be disagreeable, for diseased meat has a sickly cadaverous smell, and sometimes a smell of physic. This is very discoverable when the meat is chopped up and drenched with warm water.

5. It should not run to water or become very wet on standing, but should, on the contrary, dry upon the surface (Dr. Letheby).

Specimens of diseased meat, for production in Court in any legal proceedings, may be preserved in spirits, placed in a wide-necked bottle.

The weight of animals in a normal state of health should be, as follows:—

An ox should weigh not less than 600 lb., and will range from this to 1200 lb.

A cow may weigh a few pounds less; a good fat cow will weigh from 700 to 740 lb.

A heifer should weigh 350 to 400 lb.

A full grown sheep will weigh from 60 to 90 lb. but the difference in different breeds is very great.

A full grown pig weighs from 100 to 180 lb. or more.

The soundness of fish may be noticed by the smell, and if lifted, fresh fish would be firm and stiff. Any drooping of the tail when the fish is held in an horizontal position may be taken to indicate that the fish is not fresh.

Dr. Vacher gives the following useful table to show when fish is in season:—

Fish.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Brill	—	—	in	in	in	in	in	in	in	in	in	—
Cod	in	in	in	—	—	—	—	—	—	in	in	in
Eels	in	in	in	—	—	in	in	in	in	in	in	in
Flounder	—	—	—	—	—	—	in	in	in	in	in	—
Hake	—	—	—	in	in	in	in	in	in	in	in	in
Haddock	in	in	—	—	—	—	—	in	in	in	in	in
Halibut	—	—	in	in	in	in	—	—	—	—	—	—
Herring	—	—	—	—	—	—	in	in	in	in	—	—
Mackerel	in	in	in	in	in	in	in	—	—	in	in	in
Plaice	—	—	—	—	in	in	in	in	in	in	in	in
Salmon	—	—	in	in	in	in	in	in	—	—	—	—
Skate	in	in	in	in	—	—	—	in	in	in	in	in
Smelt	in	in	in	in	in	—	—	—	in	in	in	in
Sprats	in	in	in	—	—	—	—	—	—	—	in	in
Sole	in	—	—	in	in	in	in	in	in	in	in	in
Turbot	in	in	—	—	in	in	in	in	in	in	in	in
Whitebait	—	—	—	in	in	in	in	in	—	—	—	—
Whiting	in	in	in	—	—	—	—	—	in	in	in	in

SLAUGHTER HOUSES.

The duties attending the inspection of slaughter houses are very onerous, especially if they are private slaughter houses, as owing to the distance of such premises one from the other, supervision in the matter of meat in-