

tions of blood throughout the organ, but more particularly in the intralobular tissue where the hepatic cells are frequently separated by areas of blood-extravasation; (2) distension of the intralobular veins, probably by contraction further on of the larger veins; (3) coalescence and the formation of hepatic giant cells (chiefly in the horse); and (4) particularly in the horse, of the deposit of a brownish-yellow pigment in the liver-cells. As these chronic conditions are the most frequently encountered post-mortem they are rightly considered first.

In the very early stages there is naturally little formation of new fibrous tissue. The chief characteristic is intense portal and hepatic congestion, with an accumulation, particularly in the interlobular tissue, of new connective-tissue cells, some of which are laying down delicate fibrillæ throughout the tissue, and already the tendency to distortion and coalescence of several of the liver-cells can be observed.

In the sub-acute cases a condition which partakes of each of the above phases prevails—that is, there is intense capillary congestion, there is considerable deposit of new fibrous tissue (not so much confined to the interlobular region, however, as in the chronic cases), and a large accumulation of new connective-tissue cells, both inter- and intra-lobular.

In the two last conditions, when a liver section is examined under the microscope, the most notable feature is the almost complete absence of any definite arrangement of the liver-cells. Individual lobules are indistinguishable, and the hepatic cells have often a distorted appearance. Fatty degeneration may be observed in certain cases.

In some instances I have observed the formation in the interlobular new tissue of new bile-ducts or fragments of them, and this phenomenon is difficult to account for, unless it may be that the separation of liver-cells from each other by the blood, and the excessive supply of nutrient material, induces proliferation of some, with the tendency of the new cells to arrange themselves in a tubular fashion. In the chronic condition angiomatous spaces filled with blood are formed, and very frequently these contain a few true liver-cells. That these liver-cells detached from the main tissue may be carried into the circulation we have demonstrated by observing them, in one instance, in the distended blood vessels of the kidneys.

The brain and the kidney, at death, are usually congested, the capillaries being frequently distended to many times their normal diameter, and occasionally areas of blood-extravasation are present, due to rupture of the smaller vessels. In the brain of a certain horse, who exhibited marked cerebral symptoms before death, the peripheral capillaries of the cerebrum were extremely engorged, and here and there areas of extravasation could be observed on section. Also, in the kidneys there is acute catarrh of the urinary tubules, while the urine contains enormous numbers of shed epithelial cells and epithelial casts.

The ulcerations of the mucous membrane of the stomach of the horse, and abomasum of cattle, are difficult to account for. They are almost entirely confined to the mucosa. They are not constant, and to them the symptoms exhibited before death cannot be in any way attributed, for they may be found completely healed, only a faint cicatrix remaining. It may be they are caused by the intense distension of the sub-mucosa by fluid interfering with the circulation of certain areas.

The cases of ulcerative stomatitis in the horse recorded by Mr. Paterson are worthy of note. I have not had an opportunity of observing instances of this, but no doubt such ulcerations are also due to interference in some way with the blood supply.

The time required for the disease to develop and prove fatal after stock begin to eat ragwort was found to be from four to six months. The conclusions of Dr. Gilruth, after careful and prolonged investigations, are: "That the *Senecio jacobæa* is the cause of the disease. In this, as in so many other matters, what now seems to have been the obvious was ignored; not without reason. That this common plant was known to exist, and had been known to exist without detriment, so far as was apparent, or, at least, recognized, to stock; that sheep ate the weed with apparent fondness and evident impunity; that no one could ever say he had observed horses or cattle partake of the plant when growing naturally; that it was patent to the most casual observer these animals avoided its ingestion, even when it was almost impossible to do so; and that Mr. Park's experiment in Southland, so far as it went, resulted negatively (although slaughter and post-mortem was never made): all these facts tended to divert the mind from the true cause. In addition, when it is considered that the most experienced and highly-trained pathologists in Canada had decided that ragwort was not the cause of the Pictou disease—identical with that known as Winton disease in New Zealand—it was but natural to look for causes more obscure, and withal offering more in-

terest to the investigator. Yet when I had, as I believe, exhausted the possible means of demonstrating the cause to be a living organism, I was forced to again turn my attention to the herbage and to the common weed, which alone, as I have shown, was the one point of uniformity in three localities so widely divergent in every other respect as Nova Scotia and the two extremities of the Colony of New Zealand. That the plant *Senecio jacobæa*—commonly known as "ragwort," "ragweed," "stinking Willie," etc.—contains an active principle capable of producing inflammation, more or less chronic, according to the dose, in the liver of the horse and the ox is, I venture to submit, definitely proved by the experiments recorded. The fact that this weed was known in the days of Culpeper in certain parts by the terms "staggerwort" and "stammerwort" is extremely interesting.

A remedy found beneficial for horses by Dr. Gilruth was, first, to purge with aloes or Epsom salts, and to give powders containing iron, gentian, and three-fourth grain of strychnine, once daily. About the tenth day, the method of treatment with strychnine was changed—the first day one-twelfth grain was given hypodermically, and, for the following twenty days, one-eighth grain twice daily was hypodermically administered. After this, a bolus containing one-half drachm of ipecac and one-half grain of strychnine was given in the morning, and in the evening one containing ten grains of quinine and two grains of arsenic. This treatment was continued until recovery was reached.



Portion of Stems of Ragwort, Showing Flowers, Buds and Stem Leaves.

From Report of New Zealand Department of Agriculture, Veterinarian Division.

Short or Long Keep Steers.

An Oxford County, Ontario, reader raises the never-answered question: Is it better to finish cattle weighing 1,150 to 1,300 pounds, in good condition for feeding, as soon as possible, or run them over and finish on grass?

The disposition a man makes of a bunch of steers as described above is a pretty fair criterion of his ability as a feeder. It requires a very nice discernment to tell accurately whether a steer is in good enough flesh to rush on to a finish, or so low that it would be best to bring him along gradually, taking from four to six months to finish him. Most feeders in the good cattle-feeding districts of Huron County, Ontario, sort up their cattle, and put those of good weight and fair flesh onto fairly heavy feed, and finish them up in from sixty to ninety days, while those of lighter weights and in lower flesh are carried forward on from one and a half to two pounds of grain per day, until the last month of feeding, when the grain ration is gradually increased to from three to five pounds. Most feeders, however, prefer the short-keep steers, as with them they can turn money over faster, and, generally, when a steer comes through the summer having laid on flesh, it is a good sign that he will stand crowding for a few weeks in the stall. The question of finishing on grass is problematical. Much depends upon the character of the cattle and nature of the grass. Easy-feeding, good-tempered steers, on rich pastures, no doubt will make good use of their time, but with the average steer, on average pasture, in June, when the grass is soft, it is often disappointing to try to round out a winter's feeding.

With steers of the weights named, we would hesitate long before running them through on light feed to finish on grass. Only in case we had loose stalls, plenty of roughage, easily fed, and a good acreage of capital pasture grass, would we want to try the experiment.

Prof. Curtiss on the World's Fair Shropshires.

Prof. Curtiss, of Iowa, who judged Shropshires at St. Louis, offers the following comments, in the American Sheep-breeder, upon the exhibit:

I shall not attempt to describe the exhibit in detail. The judge's task is arduous and exacting enough without undertaking a critical review. It is more fitting that the judge devote himself to silent, careful study, and leave others to do the talking.

The Shropshires made a clean exhibit of high character and genuine excellence. Mediocrity did not characterize the show at any point. Stale and overdone specimens were not in evidence. Coarse and otherwise "off-type" sheep were the exception. It was a clean contest for supremacy, with scarcely a "foul tackle" anywhere on the line. The shepherds had their charges fit, and did clever work.

There were some fleeces that gave evidence of more maturity than was essential or desirable. No animal in the show gained any advantage from this condition, however. A mutton sheep carrying from two to four months' extra fleece in the American show-ring is never the gainer thereby. On the contrary, it is almost invariably a distinct handicap in an autumn show. The added fleece is always carried at the expense of mutton, which many can ill afford. There may be an advantage in the extra wool for the Royal and other shows in June, but this does not hold in the intense heat of the American circuit from August to October. Importers who purchase sheep in full fleece at the British shows in June would do well to clip them at once, rather than send them on in this condition.

Much is said about Shropshire type, and about adherence to type in judging. This, within reasonable bounds, is entirely proper and for the best interests of the breed. No breeder ever attained marked success without adherence to type. No breed of domestic animals has ever made substantial progress while admitting of wide divergence of type. It is likewise true that the man who becomes over-contentious for a narrow or inflexible type stands in his own light. There is some senseless clamoring for a too rigid adherence to type in judging. What is Shropshire type? I fancy that a score of our best breeders who have helped to give the prestige and popularity, are ready to answer. But will there be unanimity on the part of these breeders in defining Shropshire type? Not by any means. A close observer may visit the flocks of Mansel, Buttar, Minton, Farmer and Harding, and distinguish a majority of the sheep from each flock as they come into the American show-yards. Whose type should constitute the standard? Should one be chosen and the others left? Are there not good sheep in all? The type will vary in each one of these flocks, though the best flocks admit of the least variation. Shropshire character is more clearly defined and less flexible than type. Character has to do with the expression, animation and individuality of the animal. Type pertains more to form conformation and outline. You look into the face and countenance for character. You look at the back, spring of rib, length and fullness of leg for type.

Adherence to type should always receive due consideration. It should not be used as a justification, however, for placing an animal above one of another type that is better when both are within the realm of approved type. Is it not better that there be a little variation in type, just as there is in, and between, the best flocks, than a blind adherence to type that will place a superior animal below one that is manifestly inferior?

There are some things of more importance than too rigid adherence to type. The animal that does not meet you well with a good head and bold front has lost half the vantage ground of battle in the show-ring. The animal that does not stand squarely on good underpinning has lost the other half; and the animal that lacks heartgirth and constitution has lost all.

There is always more or less speculation as to what the judge will do in groups and flocks after the class ribbons are tied. Sometimes the boys in the barn have it all settled in advance. There is no cocksure mathematical basis for the group and flock awards, without assuming that all rings are of equal strength and all animals of equal importance in the rating. This would be fallacy. Other things being equal, the head of the herd or flock is entitled to more consideration than any other place. Likewise, the upper end is entitled to more consideration than the lower end. Then the strength of some rings is