

at bringing the foetus into position, embryotomy was decided on. The head was severed first with the knife and removed with some difficulty as it was quite above the normal size. Next the limbs were severed at the hocks, and the amputated foetus was brought into position. The foetus was now extracted without much difficulty. It was in an oedematous condition, the hair having fallen off, and on the whole showed signs of having been lain dead for over twenty-four hours. The cow was much exhausted, was given a dose of alcohol and kept on warm gruel with ginger. The womb was washed with Condy's fluid and a little oil injected. In the evening as the cow was much worse and evidently in pain, the following drench was administered:—

℞			
Tr. Nucis Vomice			
Tr. Opii	ʒʒ	...	ʒii
Ammoni Carb.		...	ʒi
Spt. æther: nit.		...	ʒiv
Aquæ			Oii
M. ft. mist			

Half the quantity to be given at once and half the next morning.

In addition rice gruel was given twice a day.

The next day the weather was very wet and small doses of alcohol were administered twice. The washing and injections were continued.

Under this treatment the cow completely recovered about the fourth day.

W. A. D. S.

GREEN MANURING.

Green manuring, or the ploughing under of green crops, is the cheapest and most effective method for building up poor soils, and for maintaining the fertility of those already in good condition, says a bulletin of the Mississippi station. It furnishes the necessary humus, it leaves supplies of potash and phosphoric acid in the surface soil where they are immediately available for future crops, and when leguminous crops are used, large amounts of nitrogen are assimilated from the air and made ready for other crops to use. On heavy soils its mechanical effects are very marked, not only in loosening the surface soil which is turned by the plough but also by loosening the subsoil deeply and so making it permeable to the roots of other crops. Green manuring is to fertilizing what grazing is to raising cattle. Crops can be grown by the use of stable manure, cotton seed and chemicals, and cattle can be grown on a diet of dry hay and grain, but neither is the most economical plan to be pursued permanently. In Mississippi we are fortunate in having a large number of plants which can be used for this purpose, some of which are perennials like alfalfa and red clover, others like melilotus are biennials and do their work in two seasons, while still others, like lespedeza and cow peas, are annuals. Vetches and rye can be grown in two months of summer weather. There is no time in the year when it is not possible to have restorative crops growing which will go far toward preparing the ground for succeeding crops.

PLANTS TO USE.—The plants most commonly used for green manuring are the legumes, the best of which are cow peas, melilotus, alfalfa

red clover and lespedeza and also the grasses. Of these, the leguminous plants are far more valuable than are grains and grasses, from the fact that they have much larger and stronger root systems, and so are able to gather food which is beyond the reach of the more shallow rooting grasses. They are all plants having strong tap roots which will force their way through the subsoil and so make it loose and porous; they bring up from the subsoil a large amount of potash and phosphoric acid which is left in the surface soil, and as nearly all legumes are rank growers they furnish more humus-making material than do the grasses.

NITROGEN GATHERERS.—The most important reason, however, for using the legumes is the fact that they are able to assimilate nearly or quite all their nitrogen from the atmosphere, while most other plants consume only that which is already in the soil. Nitrogen is the most expensive element of plant food, and the one which it is the most difficult to secure. The roots and stems of grasses contain only $1\frac{1}{2}$ per cent of nitrogen while the amount found in legumes is about $2\frac{1}{2}$ per cent. While the grasses take one and a half pounds of nitrogen from the soil, elaborate it into plant food, and then leave it in an available condition for future crops, the legumes take nearly double the amount from the air where it is unavailable for other plants, and add it to the amount already in the soil. The roots and stems of legumes are also richer in both potash and phosphoric acid than are grasses, and so, both chemically and mechanically, they are the more valuable plants for use as green manures.

COW PEAS.—Cow peas are very commonly used for green manures from the fact that they will grow on almost any soil, will make a large bulk of stems and roots, and can be grown in one season. When a restorative crop is wanted to occupy the ground for one summer only, this is the best which can be grown, and if planted early the crop will mature in time for a second crop to be grown on the same land if desired. Whether the vines should be cut for hay and only the roots and stubble used for manure, and whether the vines should be ploughed under in the fall or left to protect the surface from washing during the winter, are questions which bring out long discussions at almost every farmers' institute, and which no single statement will answer. Various plans have been followed at the station, and we find that in this as in all other work with fertilizers we must be governed by the condition of the field in which the crop is grown. On heavy soils we have found it much better to plough under the whole crop, while on lighter and more sandy soils we have found it better economy to graze the crop as such soil needs compacting rather than loosening, and the droppings from the cattle compensate for a large part of the fertilizing material carried off.—*Indian Agriculturist.*

ZOOLOGICAL NOTES FOR AGRICULTURAL STUDENTS.

The group *Ruminantia* includes the following families: *Camelidae* (camels, Llamas and Alpacas), *Tragulidae* (Chevronians), *Cervidae* (deer), *Camelo*