passes out, the partition and head-stall fold completely. thereby offering no obstruction to the animal whose turn comes next.

The car being empty it can be washed out in a few minutes by the use of a hose attached to the water tank, and, if it is desired to use the car for carrying other freight than live stock in ten minutes everything can be removed, thus leaving four bare walls, and to all intents and purposes, an ordinary freight car, without a single obstruction.

Now let us look at the saving such a car will effect to railroads in time and expense; to shippers in the saving of expense in feed and attendance upon the animals; and lastly the saving of property by the comfort and humane treatment of the animals.

1st. To railroads With the car under consideration, there need be no delay. The train can proceed without loss of time to its destination, and no stoppage is necessary as far as the comfort of the animals is concerned; thus a train of cattle may be shipped at San Francisco, and delivered in New York or Halifax, with only one stoppage for taking in feed which would not exceed one hour.

2nd. To shippers At present a staff of 6 to 10 hands is required to attend to the cattle on the way, to get them in and out of the cars, and carry feed and water to the animals. not to mention the immense expense to shippers in having to buy feed (such as they can get)³ for the animals on the way.—With this car, a shipper puts cattle on board and puts his own feed into the bins, and sends one man to attend to a whole train of twenty cars. Unless the journey occupies more than five or six days, the animals wil reach the end of the journey before the feed is consumed. There is no waste of feed, no torturing of the animals; but instead of having to be taken out of the car every twenty-four hours and fed in a snow bank or mud-heap, and then to be drivenback into the car by means of sticks, spears and whips for another twenty four hours run, when the same brutal treatment has to be re-cnacted - the animals are just as confortable as if in a clean and well ventilated barn, except that they have not quite so much room, but they can lie down with as much case at least as on board ship. Seeing that any cattle car at present in use can be converted-carrying the same number of animals-to the above principle for the small sum of \$200, it is only reasonable to suppose that Railway Companies will adopt the patent on the score of cconomy, if for no other reason.'

This car appears to us to meet the requirements of the case. Each animal being secured and isolated from all risks of goring or being trodden on, can be fed, and watered in the car, while cleanliness and comfort are carefully provided for.

The principal objections offered by Railwaymen are that the water would freeze. Well, this is an objection easily remedied. In the first place, it is only during a very few mouths in winter that this would be likely to happen, when the water need not be carried, but the supply taken in at watering stations, and at once used by the stock

The question of expense is the chief one; the adaptability of the car to the purpose seems to us to be simple enough, and if, as the inventor claims, ordinary cars can be converted for \$150 to \$200, it must pay any Railway to adopt them.

We refer to this subject as one indirectly affecting our readers, for it is well known that whatever tends to simplify the cattle trade and make it less risky, will also tend to increase its lucrativeness; so that it is of importance to the farmer that everything should be done to improve the system of transportation. The humanitarian is interested, inasmuch as great suffering is experienced by animals in transit, often from long fasts, continued thirst, abuse in unloading and reloading, sufferings, which such an invention is specially intended to provent.

FOODS.

The nourishing value of a food is determined by two factors : -1. Its composition. 2. Its digestibility.

Composition of Foods.—The average percentage composition of the foods commonly given to farm animals is shown in the following table:

PERCENTAGE COMPOSITION OF ORDINARY FOODS.

	- ·· · ·					• -
	Water,	Alloum- notds.	Fat.	Solublo carbo- hydratee.	Fıbre.	Ash.
Cotton cake (decorticated	10 U	41 2	$ \begin{array}{r} 11 \\ 6 \\ 2 \\ 12 \\ 0 \end{array} $	18 0	90	78
Cotton cake (undecorticated)	11 5	24 6		30 2	208	67
Lanseed cake	12 0	28 1		30 3	110	66
Beans Peas	$\begin{array}{c}14 \\ 5\\14 \\ 3\end{array}$	$25 \ 5 \ 22 \ 4$	$\begin{array}{c}1&6\\2&0\end{array}$	45 9 52 5	94 64	3 t 2 4
Oats	13 0	12 9	60	53 8	10 8	35
Wheat	11 4	11 3	15	63 1	3 0	17
Barley	14 5	10 6	20	65 7	7 1	26
Maize	11 4	10 4	51	68 5	3 0	16
Clover hay	16 0	12 3	22	38 2	26 0	- 3
Meadow hay	14 3	9 7		11 U	26 3	6 2
Bean straw	16 0	63	10	36 7	35 0	50
	14 3	30	15	32 6	4 u	41
Mendow grass Green clover	80 0 83 0	35 33	0807	19 2 7 0	45	20
Potators	75 0	2 1	03	20 5	1 1	10
Mingels	58 5	1 2	01	8 2	1 0	10
Swedes	89 3	1 5	02	7 3	1 1	06
Turnips	91 7	1 1	02	5 3	1 0	07

The soluble carbo-hydrates in the above table include starch, pectin, and the finer parts of the fibre; these are not soluble in water, but are dissolved by the weak acid and alkali employed by the analyst to separate the coarse fibre.

The whole of the nitrogen present in the foods has been reckoned as existing as albuminoids; this, however, is not always the case, a part of the nitrogen in many foods existing as amides (e.g. asparagin and glutamin) and as nitrates. The true amount of albummoids has at present been determined in only a few of the foods mentioned in the table. It would appear that in seeds nearly the whole of nitrogen exists as albuminoids, and this is especially true of the kernel of the seed. Thus, in wheat flour, about 90 per cent. of the nitrogen present is in the form of albuminoids, while iu the bran which forms the skin of the grain only about 70 per cent. of the nitrogen is in this condition. For the various cakes and grains mentioned in the table the figures gives for albuminoids will, therefore, be approximately correct. but for the other foods the figures are undoubtedly too high. In hay it would appear, from the few determinations made, that about 80 per cent. of the nitrogen is present as albuminoids. In potatoes about 60 per cent. of the nitrogen is in this condition. In mangels generally only about 25 per cent. of the nitrogen exists as albuminoids. In turnips the proportion is also but small. The amides, which are largely present in the foods last mentioned, can only have a small nourishing value as heat and force producers; they are incapable of taking the place of albuminoids and forming muscle in the animal body.

The composition of vegetable food is liable to considerable variation, depending on the state of maturity of the plant, and the character of the soil and season. In the case of perfectly matured produce, as, for instance, ripe seed, the variations in composition are not generally considerable, and