if pigs were liberally fed chiefly on cereal grain—the increase would, with as much as five or six parts of total *non*-nitrogenous to one of nitrogenous compounds in the dry substance of such fattening food, probably be very fat. Further, that in the earlier stages of growth and feeding, a higher proportion of the nitrogenous compounds is desirable; indeed, that it is frequently the most profitable (having regard to the rapidity of fattening and to the value of the manure) for the farmer to employ, even up to the end of the feeding process, a somewhat higher proportion than is necessary to yield the maximum increase in live weight for a given amount of dry substance consumed.

We at the same time pointed out, however, that the comparative values of foodstuffs, even as such, could not be unconditionally determined by the percentage of nitrogenous and non-nitrogenous constituents; that it was necessary to examine more closely into the nature and condition of the proximate compounds of foodstuffs, to distinguish those which are digestible and assimilable from those which are not so, to determine the relative values of the comparable or mutually replaceable portions; and, finally, to fix our standards of comparative value with more of reference to direct experimental evidence on the point, and to existing knowledge of the composition of the animal bodies, than had hitherto been usual or even possible.

Since then an immense amount of labor has been expended in the determination of the digestibility of the individual constituents of various food stuffs; and the results so far obained form a valuable contribution to our information on the subject. There is, however, wide variation in the composition of different samples of nominally the same description of food. Then, determination of the amounts of various constituents remaining undigested has generally been made with animals fed on limited supplies, for maintenance only; and frequently with individual foods given separately. Great care and reservation are, therefore, necessary in the application of the results to practice. Thus, in feeding animals for the production of increase, it is generally economical to give, within limits, an excess of food, if a maximum result is to be obtained for a given live weight within a given time; and, in the case of animals liberally fed for the exercise of force, there will also generally be an excess of food given. It is obvious that, under such conditions of actual practice, greater proportions of the various constituents consumed will remain undigested than under the usual conditions of experimenting.

Conclusive evidence is still wanting as to the exact *rôle* in the system of some prominent constituents of foodstuffs. For example, there is yet much uncertainty in regard to the position of the various amides, which enter so largely into the composition of feeding roots, and hays—in fact, of all succulent and unripe products. In the calculation of "nutritive ratios," the amides have sometimes been classed with the albuminoids, and sometimes in large proportion with the non-nitrogenous constituents. We have from time to time had the results of our numerous feeding experiments calculated according to the published tables of digestibility. But the so-calculated "ratios" varied so considerably for different rations within the range of good practice that it would be misleading to give results and general conclusions therefrom without full discussion

Ewes and lambs.—In another part of the present number of the *Journal* will be found an article on the treatment of ewes and lambs, by the editor. The following list of prizes awarded to shepherds in the county of Suffolk, England, will show the great importance the work of a thoroughly skilled shepherd is to a flock-master. How often have we heard farmers, here, say, they would rather a ewe should have only one lamb at a birth! A sign, in our opinion, that the speaker is either too lazy or too stingy to give a ewe nursing twins sufficient succulent food to enable her to suckle them properly. The "Nursing mothers" of the flocks mentioned in the extract had probably been up to their knees in rape for a fortnight or three weeks before the ram was introduced to them. Why this plant should be the precursor of twins more than any other vegetable, no one knows: the fact remain that it is so.

At a Committee meeting of the Suffolk Agricultural Association at Ipswich on Tuesday, Mr. J. A. Hempson presiding, a number of premiums were adjudicated to deserving shepherds who had been successful in rearing lambs. The prizes were divided into classes as follows:—

CLASS 1.—To the shepherd who shall have reared from no less than 400 ewes the greatest number of lambs with the smallest loss of ewes up to May 7th, 1895. Presented by the President, the Earl of Stradbroke.

Competitors' Names.	Recommended by	No. of Ewes.	No. of Lambs.	Loss of Ewes.	Lambs to the score after deducting 3 Lambs for loss of each Ewe.
Emeny, John, 1st....	Mr. A. Heywood.....	410	620	13	28.34
Bye, D., 2nd.....	The Executors of the late M. J. Watkins	450	646	6	27.91

CLASS 2.—To the shepherd who shall have reared from not less than 300 ewes the greatest number of lambs with the smallest loss of ewes, up to May 7th, 1895. Presented by Lord Rendlesham.

Ling, David, 1st.....	Mr. J. Cracknell.....	310	488	10	29.54
Venn, Leonard, 2nd	The Executor of the late M. J. Sherwood.....	350	512	7	28.05
Meadows, William...	Colonial College.....	364	503	8	26.31

CLASS 3.—To the shepherd who shall have reared from not less than 200 ewes the greatest number of lambs with the smallest loss of ewes, up to May 7th, 1895. Presented by Lord Rendlesham.

Drury, James, 1st...	Mr. G. Martin.....	235	374	4	30.80
Smith, Geo., 2nd.....	Mr. J. Toller.....	227	352	3	30.22
Harvey, Chas., 3rd...	Mr. W. Wilson.....	214	337	5	30.09
Rush, Charles.....	Mr. T. Keeble..	241	373	6	29.46
Squirrel, Thomas.....	Mr. W. Toller.....	260	397	6	29.15
Crick, William.....	Mr. W. R. Hustler...	207	299	3	28.01
Last, George.....	Mr. S. R. Sherwood..	260	3.6	9	26.84

CLASS 4.—To the shepherd who shall have reared from under 200 ewes the greatest number of lambs with the smallest loss of ewes up to May 7th, 1895. Presented by Lord Rendlesham.

Stammers, W., prize.	Mr. E. L. Scrivener.	98	177	1	35.51
Cann, Charles.....	The Executors of the late Mr. T. Woodward.....	173	277	5	30.28
Garnham, Eli	Mr. J. Huson.....	157	235	4	28.40

The skill and care exercised by the shepherds, especially those to whom premiums were awarded, was spoken of in high terms, and some of the results mentioned as being the highest ever known.

Hampshire Down Lambs.—I beg to send you the following note upon the weights of Hampshire Down lambs taken on the 8th inst. The lambs were born for the most part about January 20th, some of a few days before, and some a few days after that date. The average birthday was therefore assumed as falling upon January 15th, and the average age on May 8th was therefore 113 days. The lambs were weighed in the field, with the following result:—

		lb.
No.	1 lamb...	113
"	2 "	112
"	3 " ...	112
"	4 "	105
"	5 " ...	119
"	6 " ..	104
"	7 " ...	114
"	8 "	114
"	9 "	113
"	10 " ...	112
Total...		1,118 Average 111 8 lb.

If the average age at birth is assumed at 12 lb., the net increase to May 8th was 99.8 lb., and the average daily increase ·88 lb., after deducting birth weight. If, however, as in the Smithfield results of December, 1893, the birth weight is given in, then we have the surprising result of 111 8 lb. in 113 days, or practically 1 lb. per day.

The *Standard*, in reporting upon the Smithfield Show in December, 1893, published a five years' average increase in the case of lambs of various breeds (birth weight given) in as follows:—

	Average daily increase.
Leicesters.....	0.74
Cotswolds.....	0.77
Lincolns...	0.72
Kentish.....	0 73
Southdown	0.60
Hampshire Down	0.71
Suffolk.	0.67

It is not to be expected that a gain of 1 lb. (.99) per day, calculated on the Smithfield basis, could be kept up until December, but it is nevertheless remarkable that in the month of May, and over a period including the first weeks of life, such a result, is obtainable. The probability is that during the middle period, *i. e.*, from April to July, these lambs will increase at a considerably higher rate than even that already given.

JOHN WRIGHTSON.

College of Agriculture Downton.

Judging from our experience with this breed of sheep, we should be inclined to put the carcase-weight of a Hampshire-down lamb whose live weight is, in round numbers, 112 at 62 or 64 pounds, and its value at, say, 5s. 6. a stone of 8 lbs., offal=$12.00. But, then, the Hampshire men do not keep sheep "to clear up the weeds in the corners of the fields"! And it is not only of yesterday that the care of sheep is so important a part of English husbandry. Bishop Latimer (ob. A. D 1555), the son of a tenant farmer, told his flock from the pulpit that: "A plough land (i. e., arable farm) *must* have sheep to dung their land for bearing corn. If they have no sheep to fat the ground, they shall have but bare corn and thin." if our *habitans* could once see a chalk-country" sheep farm, with the flock hurdled on the rape!

Lucerne.—Our friend, M C. F. Bouthillier, of Bleury, Ste-Thérèse, tells us that he cut his lucerne, sown last spring, on the 12th of May! Owing, probably to the faultiness of the seed, the plant, he says, is not quite so good as it should be, but where it is weak he has sown more seed and raked it in: with the rains we have just had, it ought to do well.

Gapes in fowls.—This very troublesome malady among young chickens we used to cure by smoking tobacco into a box wherein the chickens were confined: it answered well. A remedy, said by our well known English poultry-lecturer, Mr Newcombe to be equally efficient, is the fumes of lime: get a piece of quick-lime, let it dissolve in hot water; take the chicken in your hand, open its mouth, and let it inhale the fumes which will kill the worms in the throat.

The potato.—A very good idea, that, of allowing the poorer inhabitants of some of our Western cities to plant potatoes on the vacant lots, with, of course, the consent of the owners. The committee in one town estimated the potato-crop at about 15 bushels per lot, but what sort of judges they must be is shown by the following: "By good manuring, as much as 500 bushels (equal to 15 tons) can easily be grown on an acre; 900 bushels (equal to 27 tons) are said to have been grown on a single acre, but this is unusual": yes, rather; the average crop in the U. S. is rather more than 80 bushels, and in England about 180 bushels. Shirley Hibberd once grew 20 tons (2240 lbs.)=800 bushels of 56 lbs., but we never saw more than 640 bushels on an acre.

Barley for malting.—The 2-rowed barley, so much vaunted a few years ago, seems to have fallen back into its original obscurity; why, no one can tell for, properly treated, it will make good malt, and a decidedly greater quantity of extract can be had from it than from 4- or 6-rowed. The following extract, from the "Kentish Express," will show how very carefully the cultivation of this most peculiar grain is looked after in England, and how hopeless it is for us, with our