too well known. In addition, authorities claim for the omum products, aphrodisiac, diuretic and vermifugic properties. With myrobolans and rock salt it is made into a paste which serves as an expectorant for cases of sore throat. As a common household remedy against severe cold and heaviness of head, some omum moistened and crushed is packed up in a small cloth and used for inhaling.

Allied plants. The *umbelliferous* cousins of the omum plant are all interesting and useful plants. Many of them are familiar to us either in the kitchen or through grandmothers' recipes. *Hydrocotyle asiatica* (Tam. *Vallarai*) *Carum caruui* (Tam. *Shimai shombu*). *Carum Roxburghiani* (Tam. *Ashanta omum*) *Ferula nathen* (Tam. *Perungyam*) *Pencedanum graveolens* (Tam. *Shadakuppai*) *Coriandrum sativam.* (Tam. *Kothamalli*) *Cumin ceynium* (Tam. *Shirakam*) are all members of *Umbelliferae*, the family to which omum belongs. Of these, *Hydrocotyle asiatica* has now assumed tremendous importance because, the oil of the fruit is considered to be a specific against leprosy and figures prominently in modern anti-leprosy treatment; it is also used in treatment of syphilis and as an anti-dote against mercury poisoning; *Carum carui* is used for pectoral piles while *Carum Roxburghiani* is administered to relieve bladder pain and as an antispasmoic in hiccoughs; *Ferula nathen* is supposed to be a nervine stimulant and in cases of hysteria and angina pectoris finds a liberal use. *Pancedanum graveolens* besides being well known for its carminative properties (it is from this *dhil* water is prepared) is also used as an emmenagogue. Coriander and cumin, are well known as indispensables in a tastily prepared menu, and they are supposed to correct anti-bilious tendencies.

CRAMMING WITHOUT A CRAMMER

One of our most successful poultry breeders is well known to have "no use of scientists". He is not alone. It is quite a common mistake to suppose that there is a world of difference between the scientist and the practical man. But if the scientist be not practical, he is a bad scientist, though he does not need to be a practical poultry farmer. Practical poultry men rarely realise what they owe to research workers, in breeding, incubation, and nutrition, who probably never handled a bird in their lives. Mendel, the discoverer of "Mendelism", worked on peas.

The latest scientific help for poultry men comes from a more unlikely source still—the psychologist. A study of the psychology of the hen in relation to hunger and appetite has revealed a trick or two worth knowing for the fattener.

Certain German scientists starved hens for 24 hours and then placed a heap of wheat. 100 grams, about 3½ ozs. in front of each one. When they stopped eating it was assumed they had satisfied their hunger; on the average, they ate 50 grams (1¾ ozs.) each, and left the rest untouched.

But when a larger heap was put before a hen in the same state of hunger, she ate about half as much again. So it seems that the more she sees, the more she

will eat, whether hungry or not. This result was also supported when other kinds of grain were used.

In another experiment a hen was allowed to eat from a pile of nearly half a pound of food until she was satisfied and stopped eating. The food left was then entirely removed with a brush and immediately replaced. She invariably made another attack on the food and ate some more. When she stopped the food was removed as before and immediately replaced, and she began to eat again. In many cases the hens dealt with in this manner ate as much as 67 per cent. more than satisfied them at the first meal.

Although such a process looks at first sight too fiddling and impracticable to be employed by fatteners, it is certainly not without its possibilities as a method of making birds cram themselves.

Another experiment which gave results that will surprise most poultry keepers was concerned with the difference in the surfaces on which the food was offered to the birds. When a hungry bird was put before grain on bare wood it ate on the average about 1½ ozs ; or slightly less, but when the food was placed on soft felt it ate more than twice that amount. When birds were given their choice between eating from a hard surface and a soft surface, they always chose the food on the soft surface once they had tried both.

Curiously enough, when this experiment was carried a step further, and smaller lots of grain were offered on a hard and soft surface together, neither sufficient to satisfy the bird, it ate up all the food on the soft surface, and left the other. But if more food was placed on the soft surface it was immediately eaten.

The conclusion to be drawn from this is that the jar which the bird gets from pecking on a hard surface is painful, if only very slightly so, and on that account the bird is content to eat rather less than to carry on jarring its beak on a hard surface.

Another experiment, in which birds were fed from a surface of putty showed by the marks on the putty that the hungrier the bird, (i e., the less she had eaten before being offered grain on the putty), the much harder she pecked, whilst a half satisfied bird made much shallower marks on the putty.

The size of the grains of food offered also had a remarkable influence on the amount eaten. When whole and cracked rice were offered (the cracked being about one-quarter the size) in similar states of hunger, the birds ate two or three times more by weight of whole rice than of cracked rice. Evidently picking up small pieces is so much more troublesome that the birds get "fed up" with it very quickly.

Various colours of lighting also appear to have an effect on the appetite--yellow and red seem to stimulate it, blue and green appear to damp it.

Perhaps the most surprising experiment of all conceived the comparison between eating alone and in company. When a bird had eaten its fill and left the remaining food untouched, another bird, hungry, was put alongside the first. As soon as the hungry bird began to eat, the bird that had already had enough to eat began to eat again. In some cases a bird ate as much as 60 per cent. more after the hungry one had been brought in. Both birds ate still more when a third hungry one was added to the party. But when three well-fed birds had a fourth hungry one introduced, all three seemed to agree that they had had enough.

This last experiment does not appear to have much practical value, but some of the previous ones suggest lines that might be tried out.

For example, two battery houses containing similar quantities of birds of the same hatching might be compared, one with ordinary light, other with yellow or

red washed windows or lights at feeding time, and the amounts consumed measured.

Similarly, the effect of lining mash troughs with rubber could be compared Every extra ounce of food consumed when cooped for finishing off increases th killing weight.

Frequent feeding of excessive amounts, and double feeding by removing t surplus after, say, 10–15 minutes, and feeding again, might be tried. It is possibl that the labour involved would be more than paid for by the result. (*Feathered World*. No. 2427 December 27–1935).

Research Notes.

On the application of soluble manures—ammonium sulphate and super-phosphate—in swampy conditions for Rice

It is known that the fertilising principles nitrogen and phosphoric acid, in the soluble manures like ammonium sulphate and super-phosphate are immediately fixed in the soil soon after the application of these manures. But the conditions of rice cultivation are unique, quite unlike those for other crops as the rice crop is mainly grown under puddled and swampy conditions. Usually in the carrying out of manurial experiments on rice, elaborate precautions are usually taken against the leaching and washing out of manures by having separate bunds 1½′ to 2′broad and 1′ high and channels 2′ wide and irrigation is carefully controlled to manured plots after the application of the manures. A simple preliminary experiment conducted at the Agricultural Research Station, Maruteru (C. R. Srinivasan 1929), indicated that there was no effect of ammonium sulphate beyond the area within which it was applied. Detailed experimental data were essential before any conclusions could be drawn and to arrive at a definite conclusion, an experiment was conducted at the Paddy Breeding Station, Coimbatore during the year 1933—1934.

Two fields that had strains Co. 1 and Co. 5 and planted in rows 1′ apart between the rows and 6″ in the row, were taken up for the experiment and the following manurial treatments were adopted.

1. Amonium sulphate at 100 lb. per acre.
2. Super phosphate at 200 lb. per acre.
3. Ammonium sulphate at 50 lb. per acre + 200 lb. super per acre.

Each field was divided into 3 portions one for each manurial treatment. In each of these portions, the manured and control (no manure) were arranged in AB. BA. plan giving 8 plots with each plot containing two rows of plants. There was no elaborate arrangement with regard to having bunds between the treatment plots except the demarcating line which was represented by a small mud elevation 2″ to 3″ high along the line. The manures were applied a month after planting for both the crops and the irrigation was controlled for a day or two at the time of application of the manure and no further precautions were taken afterwards with regard to irrigation and drainage. When the crop was ripe each individual line was divided into four equal parts and was carefully harvested and weighed. There were 16 replications for each treatment and the results are given in the table. It is seen that while the effect of manurial treatment was significant except in the case of super-phosphate (it has been found that there is practilally no response in paddy soils of Madras I residency to phosphate manure), there is no significant response to manure in the no manure lines adjacent to manured lines showing there is no leaching effect with regard to ammonium sulphate applications.

We are indebted to Mr. K. Ramiah, Paddy Specialist at whose suggestion the expriment was carried out.