FARMSTOCK

STOCKBREEDERS' & FARMERS' MONTHLY

NEWS, SALES & ADVISORY SERVICE ON ● LIVESTOCK ● POULTRY, ● FISHING ● HORTICULTURE ● FARMING & ● FOODSTUFFS ETC.

APRIL '69

Harvesting in the USSR

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MANAGING EDITOR
Abiodun Ojugbele

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New Equipment

TREE SHAKER

MR. H. A. EDWARDS DEMONSTRATES THE NEW FRUIT HARVESTER DEVELOPED BY HIS COMPANY IN HEREFORDSHIRE, ENGLAND. THE SHAKER GRIPS THE TREE WITH A RUBBER PADDED HYDRAULIC CLAW, WHICH IS ADJUSTED TO AVOID DAMAGE TO THE BARK.

The shivering action of the machine then shakes the fruit into a canvass container draped round the trunk under the lower branches. The shaker is hydraulically driven and cantilevered from the tractor by the normal three-point linkage. According to the manufacturer, trees can be cleared in a matter of seconds.

The machine weighs only 950 lbs (about 430 kilogrammes) and can be worked by medium tractors of 35 to 45 brake horse-power. Being both cheap and light, it makes the shaking method of harvesting a feasible method for small growers for the first time

The shaker has successfully been used for trial harvesting of cider apple crops; though not suitable for universal application, it will deal with nuts, plums, olives and fur cones.

The machine offers considerable saving on traditional harvesting costs and obviates the possiblity of damage to the tree by pickers or their ladders and poles.

Manufacturer: Mr. H. A. Edwards, Collington Works, Bromyard, Herefard, England

New Cotton Variety

SCIENTISTS of the Iolotan Plant-Breeding Station, in Turkmenia, evolved a new variety of Soviet fine-fibrous cotton. It ripens five days earlier than the local cotton. The weight of the boll reaches 3·5–4 gramms, and the yield per hectare is 34 centners.

The new variety is valued mostly for its resistance to fusarial wilt. Many years' data show that this disease affects from 2 to 8 per cent of the crop.

Another merit of this new cotton is its superior fibre quality.

Agrotechnical methods have been worked out at the station for its cultivation, thickness of stand per hectare, and its watering. The new variety will help boost the output of finefleeced cotton in Turkmenia to 150,000 tons in the next few years.

CONTINUOUS ACT
PUMPING UNIT
ORCHARDS AND
GARDENS

A CONTINUOUS
syringe-type pumpin
which is fitted with a shou
mounted knapsack
container and is design
use in gardens, orchard
soft fruit plantations, has
developed by a British
Either fungicides or insecti
can be sprayed.

Made of brass, the p
has a built-in air bottle t
the full spray output
pective of the position o
plunger.

Continue on page

RIDGING
PLOUGH
"ALHERI L"

NORTHERN
NIGERIA
TECHNICAL
SERVICE LTI

Is interested
engaging a Comm
ssion Salesman
attractive terms'
the Marketing
the Company's
Product.

RIDGER PLOU
'ALHERI

Please contact:-

THE MANA
59 Tafawa Bale
P. O. Box
Kano.

The Compan wishes to infc General Public REPETITION RURAL DEV MENT DEMC TION which place from 5th April, 1969.

POULTRY BREEDERS' SUCCESSES WITH HYBRID BIRDS

FOR conversion of animal feeds into high quality protein for human consumption the modern chicken is unbeatable, and it has a guaranteed position in the economy of every country.

Hybrids being developed today can produce their own weight in eggs every five or six weeks, and Britain's breeders are developing strains which will do the same job even more efficiently.

BY

A. ROSS MUIR

Improved strains are mainly developed by population genetics, in which many thousands of birds are tested and all but the top few per-cent, are rejected from the breeding programme. Lines outstanding in particular qualities are isolated, and scientific crossing of them produces the highly efficient hybrids.

VITAL QUALITIES

The work of British breeders is aimed at finding birds which will produce eggs efficiently on commercial farms in many parts of the world. The birds which usually are in intensive units either in batteries or on deep litter, must therefore possess the vital qualities of livability and resistance to disease, as well as the ability to convert feed efficiently.

On these factors British breeders excel, and in their work they cater for conditions where management standards may not be as high as in British units with many years of experience.

All the British breeders offer the light white-egg laying hybrids of the Leghorn type. They weigh around 4 to 4.5 pounds (1.8 to 2 kilograms) and lay more than 260 eggs in 12 months under ideal conditions, with as little as four inches (10 centimetres) of trough space per bird in batteries.

But half of the British demand for chicks is in the brown-egg strains and Britain has excelled in the production of these birds. They have different characteristics from those of the Leghorn type and may well be more suitable for some conditions where quality of feed is low, and management is not too experienced.

British chick breeding has gone on two different lines, and both are being developed and refined on a continuing programme by each of the four main home sellers on the United Kingdom market.

One of the latest hybrid hens developed by Thornber Brothers Ltd., of Yorkshire, northeast England is the New 404 Plus, pictured here. Field tests have shown it to have an average production of 246 eggs a year, six more than the 404 it replaces.

VALUABLE CARCASS

The brown-egg laying srtains have improved remarkably in recent years and they perform only slightly less efficiently than the Leghorn types. The farmer under British conditions can expect 240 eggs in a year from this type of bird with a feed consumption of around 4.5 ounces (127 grammes) a day.

One of the advantages of these birds is the fact that the final carcass—around 5 pounds (2.3 kg)—is more valuable than that from the light hybrid.

Because management conditions and standards vary it is important to offer farmers a choice of birds. Where good management prevails the Leghorn type isideal.

But when management is likely to go wrong this type of bird can develop vices like feather picking, which is unlikely to occur with the brown strains.

Continue from page 1

LETTERS

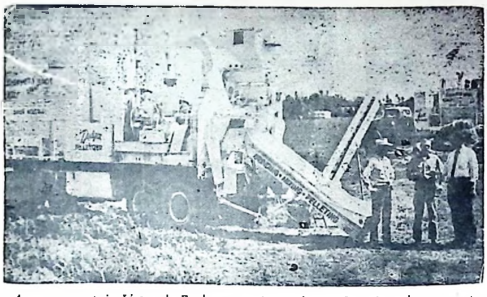
Sir,

Animal Feed

WHILE I do not grudge anyone for doing what one likes, it strikes me painfully that no one has thought of setting up a feed factory.

It cannot be gainsaid that the country needs many commercial feed compounders. Without competition, one is bound to have unbridled rising of prices when only one firm is operating in as huge a market as Nigeria. One can imagine the glow of a lone star in the sky.

Dauda 'Nekan
Abeokuta.



A new concept in Livestock Feeds processing and manufacturing that can start making money for its investors immediately. The unit, mounted on a lorry goes to any location, grinds, mixes and weighs any feedstuffs, makes any size pellet to any desired formula at savings up to four pounds per ton or more. The Nigerian representatives of the dealers are Messrs Shonubi Stores Ltd. P. O. Box 1039, Yaba.

AND FOR THE SMALL FARMER

A mixer which incorporates a hammer mill with a plain feed table, ladder, 10ft discharge conveyor, universal power take-off drive from the tractor, safety shear pin and discharge system clutch. The unit costs about £800.

FISH ; WHAT IS IT!

Sir,

OUR recent series BREAD made very teresting reading. Wha you publish some thi matter on fish.

Many people think of fish when meat is scarce when they are tempora tired of the jaw and t tug-of-war.

Now that fresh fish frozen fish flood our mar you need to help both public and the fish mon too by publishing in si language some matter fish. Thanks indeed p in advance.

Bordo Bre
Sapele.

FARM SCRAMBLE

Sir,

IT looks there is g to be a mad rush B. TO THE LAND soon. coming out of FARMST is very timely. Almost week-end now, one convoys of cars and ca our up-country roads.

They are not going where but farms. The is a gentle ripple now, i soon turn to a fever. reminds one of the sere constituencies by po candidates.

Ayinde
Obafemi.

GARI FROM POTA

SUB-SECTION news item of you month's issue (Farm Feb '69) says that Am Angronomists are strivi produce gari from p

Now that the spir carver has woken up to produce for hum will you please—Mr. Ed pass my cheers to Americans.

The more sources of particularly the staple The better. And times or a substitute for casav our untiring support le Americans tell us more this potato gari please.

Bob Sonu
Ijebu-Igbo.

INVEST IN RABBITS AND

OWN A MONEY SPINNING BUSINESS

It is striking indeed that very few have ever thought of rabbits and fewer still have ever started owning even a few rabbits.

But rabbits are very easy to keep. They are quiet and readily cared for. And what is more, they breed at a terrific rate Sample their sweet tender meat. Picture (right) shows a all new specie of English rabbits that can be bred on wire floors as poultry.

Their breeders say a doe can be mated as many as nine times a year at an annual minimum average of 55 or a maximum of 80.

What of marketing? Easy. Apart from an insatiable demand by individuals, families and caterers, our universities are good markets too.

If you want quick returns from a few hours, spend such time on rabbits please.

For further particulars about rabbits, if you wish to own them please contact Advert 8 Farmstock, P. O. Box 79 E. B.

Continue from page 4

NEW EQUIPMENT

The pump is fitted with an 'O' ring in place of the more usual two-cup washer system, and this, the firm claims, ensures a longer working life with less chance of leakage.

An adjustable nozzle for a fine mist or single jet is fitted as standard. The plastics knapsack container has a capacity of 3½ gal. (24 litres) and is moulded for a comfortable fit on an operator's back.

(*E. Allman and Co. Ltd., Birdham Road, Chichester, Sussex, England; product is the Gardenspray; price £7 f.o.b. London.*)

NEW EFFECTIVE FERTILISER

UCH fertilisers are required for the normal growth and development of plants. But the three basic elements-nitrogen, phosphorus and potassium are needed most of all.

Until lately the chemical industry produced fertilisers containing only one nutritional element. Most soils, however, require all three elements. This complicated matters for the farmers, inasmuch as they had to either apply fertilisers three times, or else prepare a mixture of the three.

It demanded additional work and means, when they had little time to spare. Moreover, the prepared mixture caked quickly and made their application difficult.

Soviet fertiliser factories now put out mixture containing all the needed nutritional elements required by plants. One of them is called "introphoska," which is very popular with the farmers. It is a granulated fertiliser with a nutrient content of 40 to 50 per cent.

Introphoska is delivered in bags weighing from 40 to 50 kilograms. The first experiment with the new fertilisers proved their high economic

Continue from page 5

HYBRID BIRDS

In Britain, birds are bred to thrive under modern battery and deep litter conditions, and large scale testing programmes are continually conducted to allow the UK breeders to give detailed recommendations to customers both at home and abroad.

To achieve optimum performance from birds, it is vital to know their exact requirements for food and light at each stage of their development. It is well known that unless a bird is on the correct lighting pattern during its first 18 or 20 weeks, it will never be able to express its genetic potential.

The major British breeds tend to be early maturing. This ensures that the rearing period is shorter than by international standards and birds begin their production cycles more quickly.

The four main breeders-Thornbers, Sterling, Double "A", and Sykes—have quite strong position in the British market against international competition; and all four have introduced new and refined birds designed for present day conditions.

DISEASE RESEARCH

F. and G. Sykes, who produce Hybrid Three, one of the most prolific laying strains in the world, is also leading in the practical research into the control of Marek's disease, a cancerous condition which, in its acute form, can cause high percentage mortality.

The programme involves the identification of strains which are resistant to the disease and the breeding work continues from there.

The "mini" layer is a regular talking point throughout the world. The "mini" has a dwarf factor, but still lays a large number of eggs, and many international organisations are moving towards this goal. One, in fact, hopes to market a 2½ pounds (1.1 kg) layer in the very near future.

British breeders are also in the race, and two of them,

MONTHLY ADVISORY SERIES

L. J. Elmslie discusses

WHICH SYSTEM FOR LAYING

THERE are a great many ways of keeping laying birds. In the beginning all hens were kept on "free range", that is allowed to wander about looking for food anywhere they could find it.

As long as flocks of birds were small they could get quite a lot of their food in that way, but a big flock can not be kept in that way without a lot of special feeding.

Free range was the only possible system at one time before bird nutrition was well understood, but now we know exactly how much of all the various vitamins, minerals, amino acids to put in a ration, and do not need to let the bird look for them in insects seeds and so on that it can pick up from range.

So we can keep birds inside all the time and so have much better control of them ; there are fewer deaths, more eggs laid and fewer lost.

Several systems have tried for keeping birds inside. Only two have really become popular. The first successful system was Deep Litter, but Battery cages are now more popular.

In America about half the layers are kept on each system; in Britain 80% of the layers are in cages, and in both countries the proportion of cages is increasing. Both systems can be used for growers as well as for layers, but different cages and equipment are needed for the younger birds.

A great deal can be and has been written about poultry management on each system and about the modifications of each to give the best results. Such points may be discussed in later articles in this series, but first let us look at the advantages and disadvantages of each system, and compare them.

A. NUTRITION

Birds on deep litter have the advantage of being able to walk about, scratch and eat small things from the litter. The litter is rich in vitamin B12, the "Animal Protein Factor", and before this vitamin was discovered birds on litter often did better than those in cages.

Nowadays sufficient B12 is included in all poultry rations and the extra in the litter is of no practical benefit. The exercise obtained by birds on litter was also important in the old days.

Weak legs due to "Cage Layer Fatigue" were common in cages, but increased knowledge of nutrition, particularly the calcium, vitamin D and phosphorus requirements, has virtually eliminated this disease, and the advantage of the deep litter sustem has disappeared.

Food consumption is higher on deep litter than in cages for two quite separate reasons. The first is that birds need more food to supply the energy used in moving about on the litter. The second is that food waste is greater on deep litter than in battery cages.

The amount of waste varies enormously with the type of trough used in each case, but while feed waste can be reduced to less than 1% in batteries even the best troughs waste about 3½% on litter.

The result is that deep litter birds use at least ¼ ounce of food a day more than they would if kept in cages, which amounts to at least 5½ lbs. of food worth 1/10d. a bird over a laying year. Poor feed trough design may double that figure.

B. HEALTH

On the deep litter system the bird is always scratching about among its own droppings. Obviously this means a risk of disease especially of various kinds of worms and coccidiosis.

It is only surprising that these diseases are not worse than they are. The reason is that as the droopings decompose in the litter conditions become unfavourable to worm eggs and the "oocysts" of coccidia, so that most of them are killed.

However there is always a danger from these diseases especially if the litter becomes wet, near drinkers for example. Droppings borne diseases are avoided entirely in cages.

Other disease problems on litter which are reduced in cages are the leucosis complex, and Chronic Respiratory Disease. The leucosis viruses are carried by the b found in the litter, and nic Respiratory Disea made worse by the du birds breathe in from litter.

In very young chicks A gillus infection from the can be very serious, espe during the rainy season.

C. PRODUCTION

Provided that there a disease problems egg pr tion is as good or even b from litter than from c However light infestatio worms and other disease so common that average duction is definitely less. size is similar.

There are usually cracked eggs in cages tha litter, but a lot depend the cage floor (3% woul anaverage difference bet the two systems). Battery are easier to keep clean.

D. LABOUR

There is little differenc labour requirements bet litter and unmechanised ca The need to clean out c every week or thereabout a disadvantage for farn who have trouble getting of the droppings, but li only needs cleaning annually.

Continue Next pa

NEWS

PANKSHIN AGRIC SHOW

Another Agricultural Show to boost farming and promote modern methods among local farmers of the Plateau Province has come off successfully recently.

One of the highlights of the show was the sellection, of Miss Cordelia Ali as "Miss Agriculture Show"

ARGUNGU FISH FESTIVAL

Thousands watched the much awaited annual Fish Festival at Argungu recently. Among the enthusiastic crowd were members of the International Observer team, school children and high ranking civil servants.

The biggest fish caught at the show weighed 132 pounds

IFE UNIVERSITY AND AGRICULTURE

The Vice-Chancellor of the University of Ife Dr H. O Oluwasanmi has announced that new courses in Agriculture would start soon.

The courses, Food Science and Technology, will help the country immensely according to informed circles.

FARMING BRIEFS

PRODUCE AND OIL

A recent release from the Nigeria Produce Marketing Board disclosed that Nigeria's total earning from produce amounted to five million pounds (£5 million).

Produce Oil and extracts have also been earning Nigeria an average of six million pounds annually (£6 million) stated another release from the Vegetable Oil Nigeria Company Limited.

GOVERNMENT TO BOOST AGRICULTURE IN RIVERS

The Government of the South Eastern State is planning a big boost for all facets of Agriculture according to a recent State release.

To this end, young seedlings, seeds, dy old-chick and fertilizersh ave been acquired as the nucleus of the agricultural revival.

KWARA STATE TO CHAMPION COURSE OF AGRICULTURE

The Government of the Kwara State under Lt. Col. David Bamigboye has been showing very keen interest in 'Agriculture in the State.

ALREADY, A NUMBER OF FARM INSTITUTIONS HAS BEEN ESTABLISHED AS DEMONSTRATION CENTRES. THESE FARMS ARE ALREADY AT OFFA, ALAPA, PATEGI, OGEUBA AND OCHAJA

WOMEN ARE ALSO IN THE SHOW. HOUSEWIVES ON THE FARMSTEADS ARE BEING TAUGHT HOME-ECONOMICS TO MAKE THEM MORE USEFUL CITIZENS.

A number of Schools of Agriculture are to be opened to train young farmers.

Such farmers will not just pass out but will be financed on passing out by both the State and their respective Local Authorities.

Continue fom page 10

WHICH SYSTEM ?

The mechanised cages used in Europe save a lot of labour but add a lot to the cost and sometimes breakdown.

E. CAPITAL COSTS

In Europe and other cold climates cages are much cheaper than deep litter because expensive insulated houses are needed to keep the birds warm and a much smaller house is needed to hold the same number of birds in cages than on litter.

The difference in house costs more than pays for the cages. In West Africa housing is much cheaper, and imported cages are dearer, so that batteries are more expensive in first cost than litter, at least if imported cages are used.

If sufficiently well made to last and suit the birds locally made cages can reduce costs, though badly designed cages are useless however little they cost. Whether imported or good local cages are used the advantages of lower food consumption and better health more than pay for the higher initial cost, compared with deep litter.

HARVESTING IN THE U. S. S. R.

Thousands of combines criss-cross the vast fields of the Kazakh virgin land, harvesting the crops

20, 000 hectares of cereals are to be mowed and thrashed by the corn-growers of the Pri-ishimsky States Farm, North Kazakh Region. Nearly 100 combines and 90 trucks work in the fields of the farm every day now. Grain harvesting and windrow picking-up are performed by the group method. They have decided to harvest the whole area in 25 days and pass over to the state I, 346, 000 poods of grain (one pood-36 lb).

Cover pictures shows team 9 of the state farms during grain harvesting Kurmagali Suraganv, an experienced combine operator and the Hero of Socialist Labour, is the team leader.

PRODUCT *INFORMATION*

TERRAMYCIN

POULTRY FORMLAR WITH

ANTI-GERM 77

ALL wonder drugs are not the same. Some are more wonderful than others and among these exceptional drugs is Terramycin Poultry Formula with Anti-Germ 77 which gives double protection to your poultry.

PERHAPS, YOU DO NOT ALWAYS REALISE THAT YOU BUY TWO DISTINCT PRODUCTS WHENEVER YOU PURCHASE TERRAMYCIN POULTRY FORMULA WITH ANTI-GERM 77 EACH OF THESE TWO PRODUCTS IS EQUALLY IMPORTANT IN COMBATING GERMS.

Anti-Germ 77 Is a most potent germicide which destroys germs in the drinking water. Its activity is outside the bird's body. On the other hand Terramycin is the most reliable broad spectrum antibiotic for effective combat of disease germs within the bird's body.

Terramycin Poultry Formula with Anti-Germ 77 is therefore the only product which fights disease germs both within and outside the body,

In the modern poultry industry where intensive poultry keeping is now the rule, the importance of preventing the spread of infection can not be over-emphasised. Even in the best managed farms anywhere in the world, infections still break out.

Before one sick bird is discovered, it would have taken both feed and water, and therefore contaminated them. But whereas the germs may not spread through the feed at an alarming rate, they do spread through the water at a fantasic rate. As many as 50 or more birds may already be infected by the time you isolate one sick bird.

These 50 birds now become new reservoirs of infection and until they show symptoms of infection, you can neither identify nor isolate them. It is therefore of paramount importance to give an outstandingly good medicament to the birds in order to "nip in the bud" any chances of disease outbreak.

The most reliable drug to use under these conditions is the drug which will not only destroy those germs which have already entered the birds body but also those that are in the drinking water and thus prevent any chances of their infecting more birds.

In West Africa, as in most other parts of the World, Terramycin Poultry Formula with Anti-Germ 77 is always the wise poultry man's first choice.

Terramcin Poultry Formular with Anti-Germ 77 is distributed by Pfizer International.

CORRECTION PLEASE

IN our last issue—Feb. '69 we inadvertently printed a wrong name and address of the Distributors of TYLAN.

The correct name and address are:-

ABULU & COMPANY LTD P. M. B. 1077, YABA.

326, Herbert Macaulay St,. Yaba. Telephone 4444

SHORT ARTICLE ON ANY KIND OF DRUGS. FOR LIVESTOCK POULTRY FARMING AND HORTICULTURE ETC. ARE ACCEPTED FREE ON THIS PAGE

FARM POULTRY MANAGEMENT (2)

THIS SERIES ARE MADE AVAILABLE THROUGH THIS MEDIUM FOR THE NIGERIAN BEEDERS BY COURTESY OF THE U.S.A.I.D

SPACE requirements per bird in a floor housing system are the same for all types of chicks up to 10 weeks. In general chicks less than 2 weeks old need ½ square foot per bird ; chicks from 2 to 10 weeks need 1 square foot per bird ; growing pullets from 10 to 20 weeks need 1½ to 2½ square feet per bird.

Layers need 2½ to 3 or more square feet per bird, the exact square depending on the body size of the bird and the temperature.

Pullets need about ¼ square foot more space per bird when the temperature is above 80°F. As a general rule, large flocks require less space per bird than small flocks.

Through efficient management and use of automatic equipment, some poultrymen have reduced space allowances per layer without increasing losses.

When space per layer is reduced, the layers should be debeaked. More care is required in operating the house to maintain egg production if space is limited.

Some poultrymen with small flocks make use of porches or yards to provide additional space per bird.

A 12 by 16-foot brooder house will accommodate 200 pullet chicks or 200 straight-run chicks to 8 weeks. A brooding-growing house should be 2 to 3 times larger than a brooding house that holds the same number of birds.

A 36 by 140-foot house will accommodate 2,000 small-breed pullets to laying age, 1,800 pullets and cockerels to maturity, or 5,000 broilers to market age.

A portable range shelter 8 by 9 feet will house 100 birds from the time they go onto the range until they reach maturity.

BUILDING FEATUERS

A poultry house should provide clean, dry, comfortable quarter for birds throughout the year. An interior temperature range of 45 to 80°F. is satisfactory for economy of egg production.

Moisture is a common problem in poultry houses. Fresh air should be circulated, but the house should be free of drafts.

Pole-type houses are economical to build, maintain, and clean. They are becoming increasingly popular for all types of flocks—replacement chicks, growing pullets, layers, breeders, and meat-type birds.

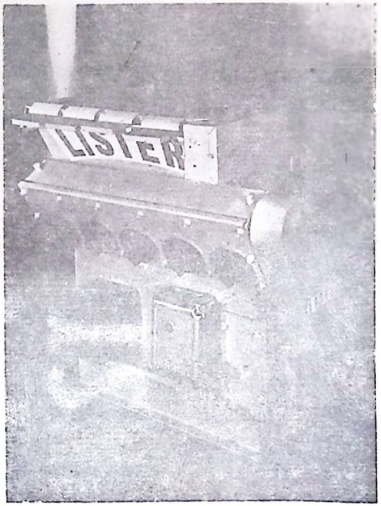
Pressure-treated poles are set into the ground to support the roof and walls of a single-story structure. Pole-type houses often have roofs made of metal or other water-proofed materials. Walls may be made of poultry netting or conventional building materials.

Other types of poultry buildings include open, open-front, and insulated houses. Prefabricated poultry houses of several types are available.

All poultry buildings—whether new or remodelled—should contain:—

- Floors which can be cleaned and disinfected easily.
- Walls which can be washed easily.
- A ventilation system. Build-in gravity systems, adjustable roof ridge ventilators, and fans are often used.
- Fireproof and vermin-proof insulation.
- Water piped into the house. The water system should be adequately protected against heat

Continue from page



This new British-built machineshould prove aboon to farmers requiring balanced feed. It has been specially designed to eliminate hand weighing or measuring the ingredients before milling.

Powered by a one-horse-power single phase electric motor, the unit is small and compact, measuring only 24 in. by 26 in. by 21 in; and is easily positioned above the mill in an existing system. It will deal with four separate ingredients fed to it by gravity from overhead storage by augers from ground level

Four flow switches enable the farmer-user to regulate the amount of each ingredient required in the feed: and a fifth dial controls total volume. Once set, the machine can be left unattended. Should any ingredient run out or become blocked, an automatic switch stops the operation.

Manufacturer: R. A. Lister and Co. Dursley Gloucester shire. England.

ANI

A Report on USAID Nigeria Livestock Project Activities At the National USAID Agriculture Workers' Conference Lagos, Nigeria—Jan. 29, 1969.

By E. R. Halbrook,
Chief Livestock Branch

In the short time assigned to me on this programme I have decided to review the status of our Livestock Project today as compared to a year ago, point out the major changes which have occurred during the interval, and then enumerate our more important accomplishments to-date.

It might be stated as an introduction that, although the size of the livestock industry in Nigeria is only an estimate, based upon numbers which are believed by many to be inaccurate, we can say that the value approaches 130 million pounds and that the greater part of this value is in the Northern states, largely due to the presence of the tsetse fly in the South. The South, therefore, serves as the major consuming market for the livestock of the North—especially of cattle.

There are many who say that the cattle are valued by their producer—owners more for the number of wives they can buy and the prestige conveyed than for their monetary value but this is being over-exaggerated. The nomadic Fulani is being forced to sell his livestock because of decreasing grazing land and the encroachment of crop farming, just as it occurred in the United States in the West.

PROJECTS

We had a year ag
two livestock projec
Livestock Develo
West (767) and L
Development—North
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North (774) was cha
Livestock Develo
Nigeria (774).

Since January 1, I
had a total of 18 fiel
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13 direct hire, 4 BLM
and 1 KSU contract
we have a total of
board, consisting of
hire, 5 BLM/PASA
USPHS/PASA Four
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Project (770).

Major governm
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programming had
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prepared by state
agencies.

For example, while
two project work
year ago, we now ha
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but for our inten
move the only re
project technician
state at an early date.

ASSIGNMENT

Our 11 livestock

EPORT OF

HUSBANDRY
NIGERIA

ald technicians on board
: present are assigned as
illows :

1. One (1) in poultry production to the Livestock and Meat Authority.

2. Two (2) in animal husbandry and range management instruction to the Livestock Assistant Training Centre at Mando Road under the Interim Common Services Agency.

3. Two (2) to the Federal Department of Veterinary Research at Vom in vaccine production and disease diagnosis.

4. One (1) in range management to serve both the North-Western and the North-Central States.

5. One (1) serving the North-Eastern State in range management and cattle breeding.

6. Two (2) stationed in Jos—one to assist the Benue-Plateau and North-Eastern States in range management and one to give these and other states assistance in range management equipment servicing and repair.

7. One (1) BLM/PASA chief of party works the Northern States and gives help to other range management technicians.

8. Finally, we have one livestock advisor completing his assignment in the Western State after which it is expected that he will be assigned to the Livestock and Meat Authority.

9. The four livestock project technicians who have been transferred to the Extension Project (770) are stationed at Fashola in beef cattle and swine work with one temporarily stationed in Kaduna attached to the Extension-Research Liaison Section (ERLS) of Ahmadu Bello University as Livestock Extension Advisor.

The fourth is at present in Lagos and is to be moved to the North as soon as housing can be arranged. He will work in poultry extension.

That is a very brief summary of our present livestock project activities and the changes brought about during the year.

ACCOMPLISHMENTS

What has AID Livestock Project assistance accomplished ?

In the former Western Region we have helped—

1. To develop a poultry programme which has eliminated the necessity of importing eggs and has placed quality eggs in most areas, including the Lagos market.

2. To establish an abattoir and two pilot meat markets which are providing an outlet for Western State beef and pork formerly hard to sell. The two small pilot meat markets are doing a volume of business approaching £50,000 a year.

3. To demonstrate that imported dairy breeds will survive and produce and reproduce normally, even though at present competition with improted dairy products would make a viable dairy industry doubtful.

4. To show that imported swine breeds can be maintained in Nigeria and will reproduce normally. The market outlet is still a major limiting factor as well as the available supply of maize for swine feeding.

5. To establish a successful programme of artificial insemination with dairy cows and give assistance to some 55 producers in forming or assisting five co-operative groups to engage in beef cattle production.

In the North, AID has assisted in—

1. The establishment of poultry breeding/hatching units at Jos and Kaduna which should be able when in full scale operation to supply most of the chicks needed to start a poultry extension programme. A third unit is yet to be developed at Ilorin.

2. Making a start in beef cattle breeding through establishment of the Bornu Ranch in the North-Eastern State and previous assistance to Livestock Investigational Breeding Centres (LIBCs). (It should be pointed out, however, that cattle breeding is a long-time project and thus hardly fits into a standard AID programme.

3. Establishing a pilo cattle fattening ranc at Manchok and develo ping it to a limite operational basis. Re sults to-date would seem to point to a marketin problem not previousl fully appreciated namely, lack of interes on the part of Northern consumers in buyin finished beef at a highe price than ordinar meat.

4. On the other hand th abattoir/meat marke complex established i Kaduna will no doub serve a valuable pilo function under th operation of the live stock and Meat Autho rity.

5. The Livestock Service Training Centre a Kaduna is enrolling 2 to 30 students a yea and a range management curriculum was added two years ago with the first six students gradua ting last summer.

6. The range management pilot projects have been especially valuable in selling range land conservation and the need of adequate livestock water supply to Northern State government officials if their industry is to survive. We have recently heard from every state in the North on this subject except one.

7. Finally, our assistance to the Federal Department of Veterinary Research at Vom is helping to make more dependable vaccines available throughou Nigeria.

I would like to close by leaving with you the question —How can these accomplishments be measured in shillings and pence so they can be rated on the AID/W computers ?

THE FLY (3) PROBLEM

by Our Sanitary Correspondent

IN the two previous instalments, effort was made to essay out the menace, life span, habits and breeding grounds of flies and their species. This last instalment will treat the control of the various stages and offer helpfull hints for the control of the ubiquitous fly.

- Be sure your garbage can have a tight-fitting lid and no holes. Wrap garbage in paper bag or newspaper (unless contrary to local regulations). Wash inside of can regularly.
- For composting : use a fly-tight box or cover each new layer of material with a layer of dirt.

FIGHT FLIES WITH INSECTICIDES

- Do not stack lawn clippings : allow clippings to remain on lawn, spade into the ground, or scatter thinly in garden.
- Bury or otherwise dispose of all dog droppings daily.

CONTROL LARVAE AND PUPAE

- If an effort has been made to eliminate fly sources but larvae and pupae are still found, such chemicals as Malathion, DDT or fuel oil may be used.
- Many chemicals will kill fly larvea but there are numerous difficulties involved in using them effectively. Failure usually results from lack of thorough mixing of the larvicide with the infested material.
- Care must be exercised in selecting a larvicide as some chemicals make manure unfit for use on crops. Best results will be obtained by following the directions on the label.
- If you use animal manure to fertile your garden, examine it to make sure it does not contain fly larvae and pupae. If it is infested, destroy the flies by spreading the manure in a thin layer and drench-spaying with an insecticide.

Other materials containing fly larvae can be treated in the same way.

CONTROL THE ADULTS

If most of the flies have been eliminated as eggs, larvae, or pupae, the remaining adults may then be controlled by use of one or more of the standard insecticides according to the directions on the label.

In some areas flies have developed resistance to some chemicals. This must be concidered in selecting an insecticide.

All insecticides should be handled with care. They are all poisonous to humans in some degree. Insecticides should not be spread about or stored where children can get into them.

This applies especially baits which may taste attr tive to young children.

- If adult flies are too numerous they c be controlled successfu with sprays applied vegetation, walls, other surfaces where f rest. Malathion, Dia non, and DDT are wi used in this way.
- Various poison baits effective in controll adult flies. Malathi Diazinon, and Dipte are available in gran form in large sha containers. Liquid b containing these in ticides are also availa
- As an emergency meas it may be desirable attempt to control la numbers of flies in door areas with inse cidal space sprays. Y local chemist or pa medicine dealer will l you to select a good Flit guns or aer bombs may be us indoors and in encl areas outdoors.
- Keep flies out of y home by screening d and windows.
- Electrocution devices help control small populations.
- Electrical insectic vaporizers contai lindane can kill in an enclosed room their use is not rec mended in homes, in other buildings rooms where food or people work or sl
- Fly traps baited meat, fish or sweets usually not effective controlling flies. T attract more flies to y premises and if neglec provide a breeding pl for more flies.
- Fly paper and fly swat are still of limited fulness in controll adult flies.

Our Sanitary Correspondent

RATS

- **THEY ARE YOUR WORST ENEMY**
- **GET RID OF THEM**

EXCEPT FOR MAN HIMSELF, THE RAT IS PROBABLY AT ONCE THE CLEVEREST, MOST DESTRUCTIVE AND ADAPTABLE ANIMAL ON THE EARTH. FROM NEAR THE FROZEN ARCTIC TO THE BLAZING DESERT, THIS ANIMAL, WITH ITS REMARKABLE INSTINCT FOR SURVIVAL, HAS NOT ONLY SURVIVED MAN BUT AT TIMES THREATENED HIM WITH EXTINCTION—RATBORNE DISEASES MAY HAVE KILLED MORE PEOPLE THAN ALL THE WARS IN HISTORY.

Of some 550 kinds of rat, most live in forests, fields and jungles far from civilization. But neons ago, a few species made a historic decision : to link their destinies with that of man. They went where man went, ate what he ate, learned his ways.

Rats are social animals and live in colonies. In laboratory experiments, if a strange adult male is placed in a pen containing a colony he will be attacked. But this is not a fight in the human sense. A colony rat arches his back and leaps, moving his forelimbs and often nipping at the invader's ears and tail. The stranger never retaliates, and the bites are not effective because of the rat's thick skin.

After a few such "bouts," each lasting only a few seconds, the invader is often left stretched out limply, breathing rapidly and irregularly.

Anytime from 90 minutes to a few days after these seemingly futile attacks, the invader usually dies. No organic cause, no serious wound or internal bleeding has yet been discovered to explain the death.

Although a caged rat could live to a doddering old age of three years, wild rats ordinarily live only about nine months, hardly ever more than two years. They can breed any month of the year. The number of babies in a litter is generally five to ten, but litters as high as 17 have been recorded.

Given ideal conditions, one pair of rats breeding only three litters a year could theoretically produce at least 20 million descendants in three years.

Exterminators have used every poison known ; yet even with kill rates of 95 per cent, the rat population of a given area seems to replace itself within about a year

COMPULSIVE GNAWING

The rat is driven by his teeth. His chisel-bladded incisors, which appear eight or ten days after birth, begin to grow immediately at a rate of five inches a year. They must be continually filed down by chewing ; if an upper tooth is lost or knocked out of line, the bottom one opposite the gap may grow through the upper jaw and pierce the brain

Rats have created pocket blackouts by gnawing through the lead sheathing of electric

Continue on page 20

A series on the various diseases hampering successful pig breeding. These a prepared by the U.S. Department of Agriculture is issued for the benefit of Nig breeders by the courtesy of the U. S A. I. D., Nigeria.

PIGS:

PROTOZOA are the simplest forms of animal life, the individual consisting of an exceedingly minute, speck of living matter. Some forms of free living, others are parasitic. The parasitic forms can be seen only with the aid of a microscope.

In spite of their small size they can inflict serious damage. They are responsible for some of the severest diseases that afflict human beings, for example, malaria, amoebic dysentery, and Africa sleeping sickness.

Protozoa of livestock and poultry cause important diseases such as tick fever and genital trichomoniasis of cattle, doutine and related diseases of hourse, coccidiosis of poultry and livestock, and blackhead of poultry.

DYSENTERY-PRODUCINO PROTOZOA

Swine habour in their ntestine a number of Protozoa including forms that are closely related to, if not identical with, those found in human beings. Some, known as amoeba, are practically ndistinguishable from those known to produce amoebic dysentery in man.

Others, known as balantidia, are apparently identica with forms that produce dysentery in human beings.

The dysentery-producing Protozoa are conveyed from animal to animal by minute rounded bodies known as cysts which are the resistent stage in the life of cycle of the parasite.

The cysts are discharged with the droppings. Pigs swallow them while eating or drinking.

It has not been determined to what extent amoebae injure swine. There is evidence that balantidia can be injurious, especially in the case of swine fed principally on corn or garbage. The possibility that these organisms can be transmitted to human beings become unthrifty, and emaciated.' In extreme cases which may result in death loss of flesh is pronounced.

These symptoms are associated with a marked destruction of intestinal cells and a swelling and congestion of the intestinal wall.
should be kept in mind.

If for no other reason, measures designed to control these parasites in swine are indicated as a human-health safeguard. Measures for the control of coccidiosis may be used.

COCCIDIA

Coccidia attack the lining of the intestines. The damage they do causes scouring and other ill effects which are known as coccidiosis. About six types of coccidia have been noticed among pigs.

The infective stages are known as oocysts. The largest ones are about one five-hundredth of an inch in diameter. They are discharged with the droppings. Before the oocysts can infect pigs, they must develop in the open.

LIFE HISTORY

Pigs swallow the oocysts with feed and water that have become contaminated with the droppings of infected swine. On reaching the intestine, the contents of the oocyst, consisting of several infective bodies, are liberated.

Each infective body is capable of penetrating and damaging a cell of ihe intestinal lining. It develop the expense of the cell produces a number of infective bodies. Each newly formed infective b is capable of entering neighbouring cell and re ing the process of dev ment, multiplication, cell destruction.

The multiplication of co does not continue indefi however ; if but few oo are swallowed by a g few cells that are dest by the developing co may not produce se injury.

Sooner or later in development of co oocysts are formed. Disc ed with the droppings, propagate the infection.

Swine which recover coccidiosis may continu discharge oocysts for a time. Such pigs are cl as carriers ; they tra coccidiosis to susceptible

DAMAGE

In light cases no symp are observed. In m infections pigs may s

THEIR INVERNAL PARASITES (1)

become unthrifty an, emaciated. In extreme cases which may result in death lost of flesh is pronounced.

These symptoms are associated with a marked destruction of intestinal cells and a swelling and congestion of the intestinal wall.

TREATMENT

Consult your local or state Veterinary Officer timely on noticing any symtom of disease. The disease will be quickly checked.

CONTROL

The control of coccidiosis is largely a matter of sanitation. Severe cases usually occur under crowded unsanitary conditions, particularly in pigs raised on old hog lots and on permanent low and wet pastures, which are ideal for the survival of the oocysts.

Infected pigs that were removed from unsanitary surroundings to clean pastures or isolated in houses with concrete floors have shown marked improvement. Removal of an infected pig from the area where the infection was acquired reduces the chances of reinfection and affords opportunity for recovery.

TRICHOMONADS

Another type of Protozoa, known as trichomonads, occurs in the intestine, stomach, and sometimes in the nose of swine. These parasites are pear-shaped and extremely tiny. They move by means of whiplike structures attached to one end of the body.

It is not known how trichomonads are conveyed from one pig to another. However, pigs kept under unsanitary conditions generally habour greater numbers of these parasites than do clean pigs.

Under ordinary conditions richomonads in the stomach and intestine are not known to be serious. In severe infections they may cause scouring. Trichomonads in the nose are often associated with atrophic rhinitis. These parasites have not been shown to be the sole cause of this disease, however.

Trichomonads from the nose and intestinal tract of swine can live in the reproductive tract of cattle. In cows they cause abortions and other breeding difficulties.

TREATMENT

Consult the nearest Veteirnary Officer.

CONTROL

Measures for the contro of coccidia are applicable to the control of trichomonads. In addition, cattle and swine should not be kept together if infectionof cattle with trichomnnads of swine is to be avoid.

Continue from page 7

HYBRID

bers have introduced intermediate birds which are half way towards this ideal.

The Ross Rocket from Sterling Poultry is now being marketed. Weighing less than four pounds (1.8 kg) it is as prolific as heavier birds and eats considerably less food. Livability is high.

The Thornber 808 is the newest bird to be marketed in the UK. It is claimed to weigh around 3.5 pounds (1.6 kg) yet it lays 260 eggs a year under commercial, conditions. It rises to a peak production of 80 per cent. with a feed consumption of only 3.5 ounces (99 gms) of feed a day.

By reducing the body weight of these birds—both Leghorn types-the whole economic conditions within a unit change. More birds can be kept in the same space ; and they eat considerably less food because of their lower body weight.

MODERNISED BASE

All the British companies are competing strongly in international markets and are setting up agencies throughout the world. And the performance of their birds is highly competitive.

The 60 million sales of chicks each year in the UK give British companies a compact and highly modernised base for maintaining their breeding programmes. This is necessary if a first class chick is to be produced.

The effect of the move into the international field, coupled with expanding sales means that the base and experience under all conditions become more valuable. The opportunities for improving performance in the future are therefore enhanced.

Inquiries to :

Thornber Brothers Ltd., My tholmroyd, Halifax, Yorkshire.

Sterling Poultry Products Ltd., Ross House, Grimsby, Lincolnshire.

Double A. Hatcheries, Brockworth, Witcombe, Gloucestershire.

F. and G. Sykes (Overseas) Ltd., Manor House, Ash Walk Warminster, Wiltshire.

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Continue from page

POULTRY MANAGEMENT

* Electricity, for an lights to provide form light "day" poultry house, a operate equipme needed.

Auxiliary rooms—su those for egg, feed, or ment storage—should b trally located.

Incinerators or dispos are essential on all p farms, as a disease-c measure.

Incinerators or dispos should be placed wher are convenient. A di pit 4 feet square and deep is adequate for a with 1,000 layers or broilers.

It should be const above the water table, a 100 feet from the supply, with drainage opposite direction. The should be tight fitting public health officials be consulted in instal disposal pit.

EQUIPMENT

Select equipment t safe for the birds, con to use, and easy to keep Whenever possible, ment should be installe way that allows remova the house is cleaned.

Use of automatic or automatic equipment hours of labour. Mech feeders, waterers, and- sionally—pit cleaners a for farm-sized flocks.

Feed and litter carrie operate on tracks are a to use in long houses feed requires special bins.

BROODER HOUS EQUIPMENT

Brooders

To give day-old ch proper start, the brood provide a temperatu about 95°F. in winter a the rest of the year.

Continue from page

WEED CONTROL

BY AGRONOMIST

WEEDS growing in orchards do serve some useful purposes. They supply organic matter to the oil and often prevent erossion following heavy rain.

During the spring and summer months, however, weeds compete with fruit trees for available soil moisture and nutrients. Their control at this time is a must. Furthermore, rank weed growth around the butts of fruit trees increases the problem of controlling insects pests.

Weed Control and Soil Management

Bare soil conditions during the summer are desirable except where ample irrigation facilities are available. The two alternative systems-clean cultivation or close mowing—are designed to reduce transpiration losses of moisture.

Under both systems weeds growing around tree trunks are out of reach of cultivators or rotary mowers.

In many orchards it has become standard practice to treat these small areas with herbicides.

In orchard lands between trees, weeds usually reappear toward the end of summer. Although chemical control is possible, it is rarely undertaken because of the additional cost.

Spraying Useful

Chemical weed control is useful in the following situations :—

- For the control of perennial grasses, particularly around tree trunks.
- For seasonal weeds where cultivation would lead to dusty conditions, or interfere with irriga into equipment or tree props.
- For the control of weeds close to the trunks of trees following spring cultivation. Cultivation then need be done to surface feeder roots. In addition, control of many insect pests would be facilitated.
- Where weeds grow on steep hill slopes, cultivation is desirable only in one direction. Herbicides could then be used for these narrow strips missed along the trees rows.

Apply Chemicals Carefully

Herbicides are normally applied at spraying pressures of from 50 to 100 psi. The usual volume applied is 100 to 150 gallons per acre. Where absorption is taking place through the leaf, sufficient solution should be applied only to wet the leaf.

Normal orchard spraying equipment can be used to apply the herbicides mentioned, but some care is required to avoid contamination. Although in no way as dangerous as hormone-like herbicides, all spray equipment including the tank and hoses should be washed out after use.

Spray solution should not be allowed to come in contact with tree foliage ; for this reason spraying should not be undertaken in windy weather. Double spray nozzles attachep to a lance are most satisfactory.

In a cultivated orchard the area to be treated around each tree will depend on the degree to which the implement is offset and upon the spreading habit of the tree.

The effectiveness of a herbil cide depends on the ability of the operator to apply materia- at the recommended rate per acre of treated area. Therefore the orchardist should know the quantity of spray mixture to be applied around each tree.

A circle six feet in diameter around each tree is usually sprayed. This means that 10 gallons of the spray solution shown in the table is sufficient to treat 80 to 90 trees, or that one pint of the spray mixture is required for each tree.

By spraying into a graduated bucket the actual time taken to apply one pint can be measured. This will indicate the time that should be spent at each tree.

In order to kill all the weed seeds as they germinate, it is essential to obtain an even application of the spray to the soil surface. Heavy plant growth or other trash lying on the surface will reduce the effectiveness of the treatment.

Young plants are more readily killed than large established plants so a lower rate of application is required for treatments applied at this time.

The herbicide, however. must have a more lasting effect to cope with weeds which can emerge over a period of several months.

Risk of Damage

Recommended treatments should not be applied to fruit trees less than three years old.

Effect of Soil Type

Where fruit trees are growing in sandy soils, risk is increased. In these soils rain or irrigation water may wash herbicides through the soil into root area and cause damage. Unuder these conditions, consult your agricultural agent or officer for necessary advice.

Continue from page 18

POULTRY MANAGEMENT

Some types of brooders heat the entire room or house. Other types warm the area under or near the hover, while the rest of the room remains relatively cool. Chicks feather better when they have a cool place to exercise.

Chicks need enough space under the brooder so that they can keep warm without crowding, piling up, or smothering. Under normal conditions, each replacement chick needs about 6 or 7 square inches of brooder space.

Manufacturers often overrate the capacity of their brooders. For example, a 96 inch hover—rated as a 1,000-chick brooder—will satisfactorily brood 600 replacement or 850 broiler chicks under cold conditions.

Brooders may be operated by hot water or hot air. The fuel may be electricity, oil, gas, or coal.

In selecting brooders, consider the fuels available in your locality and the amount of heat needed during the seasons in which you intend to brood.

Choose brooders that can be raised and lowered easily, are easy to clean, have reliable thermostats, and are equipped with thermometers.

Electric and gas brooders require minimum care.

In cold weather, electric brooders should be used only in well- insulated houses. If a house is not insulated, these brooders may not give off enough heat during the winter to keep chicks warm and the litter dry. Auxiliary heat may be needed during the winter with electric brooders.

Gas and oil-burning brooders vary widely in heat output. In cold weather, wet litter may be a special problem with gas brooders that do not have flues for venting combustion gases to the outside.

Coal-burning brooders require more labour than other systems, because they must be refuelled and cleaned frequently. They keep the entire house warm and the litter relatively dry.

Fires in poultry houses often start from leaky oil brooders. Coal brooders also may be fire hazards if not properly operated. An asbestos sheet, or other fire-resistant material, may be placed under brooders to minimize the danger from fires.

Lights :

A 7½ or 15-watt light under the hover will attract young chicks to heat. Attraction lights are not normally used after the first 2 weeks of brooding.

Feeders :

Hanging tube-type feeders are rapidly replacing trough-type feeders, because there is less labour and there is less bruising of chicks with the hanging feeders.

Allow three hanging feeders —each 15 inches in diameter with a 25-pound capacity— per 100 chicks.

If trough feeders are available, they may be used for farm flock. Allow two 4-foot tough feed hoppers, open on both sides, or 200 linear inches of hopper space for each 100 chicks at 3 weeks of ago.

When chicks are 7 weeks old, provide three 4-foot feed hoppers, or 300 linear inches, per 100 birds. Provide additional feeders when the temperature is above 80° F

If automatic feeders are used, follow the manufacturer's directions carefully

Waterers:

Use two 1-gallon water fountains for each 100 chicks during the first 2 weeks. Allow 40 linear inches of water trough per 100 birds at 3 weeks, and 50 linear inches from the time the birds are 7 weeks old until the end of brooding. Provide additional waterers when the temperature is above 80° F.

Waterers should be automatic or float-controlled. Hanging waterers are preferable to the stationary type.

Follow the manufacturers' recommendations concerning space allowances for automatic water systems.

Other equipment:

Roosts and perches should be provided in the brooding house if roosts are to be used in the laying house.

Continue from page 15

RATS

cables. On a gnawing spree in a warehouse, a rat may tear into and burrow through dozens of sacks in an hour—flour, grain, coffee, anything.

Everywhere he goes, the rat spreads contamination. He is a health menace as deadly as a nuclear warhead Rats carry as many as 35 different diseases. Their fleas spread bubonic plague, which killed at least one out of every three people in Europe in the fourteenth century and is still endemic in the Far East and Africa.

Pest officials at all British ports keep a close watch for plague rats. No plague-infested rat has been found at London docks since 1926. "But without constant vigilance," warns Arthur Marshall, the Port of London's chief health inspector, "there could easily be disaster."

The fleas of the Norway rat also carry typhus. Epidemic for foure enturies, this diseases has killed at least 200 million people.

But plague and typhus are not all. The rat's foraging habits take him from sewer to warehouse to home tracking disease germs every step of the way.

His habit of urinating and leaving droppings where ever he goes provides him with an enormous capability and range for contamination, for in his blood and intestines are organisms that cause amoebic dysentery, tularaemia, salmonellosis, jaundice, rabies and other killer diseases.

GREED

The rat's voracious appetite and his droppings deprive humanity of huge quantities of food—and countries that can least afford it suffer most.

Hundreds of years ago attempts were made to bring rats under control. To preserve grain, an Act passed in the reign of Elizabeth I fixed a reward of a penny for three rat heads.

Today, aided by modern poisons—as well as natural predators such as weasels, stoats, kestrels and snakes—local authorities and pest-extermination firms continue the war.

But unfortunately for us, nature has endowed the rat with a special characteristic which aids greatly in his survival.

On his own hunting grounds, anything new such as poison bait is instinctively avoided. After the strange food has been ignored for a while, however, it becomes familiar, and the rat samples it in minute amounts.

If it is poisoned, the ill effects of a small dose may be noted without lethal consequence. Whereupon the

rat stops feeding completely and may sprinkle the food with his urine or faeces to warn other members of the pack.

One poison which outwits this keen suspicion is warfarin, which acts slowly. A rat eats warfarin which over a few days, mounts up in his body and produces internal haemorrhage. This kills him. But even warfarin, used with success since 1950, is not infallible.

For about eight years, scientists have been puzzled by the appearance, due to a genetic change, of warfarin-resistant rats in the United Kingdom. Ministry of Agriculture scientists and pest-control companies are still searching for an answer.

WILY WAYS

There is probably no animal more cunning. A pest expert who spent a night in a grocery shop watched a rat gnaw through a rope from which hams were suspended, while his friends waited eargerly below for the feast to descend.

A magistrate, on holidays tells of spending a night on what was a seemingly lifeless coral atoll in the Tobriand Islands. He was kept awake most of the night by rats crawling over him. Next morning, he scouted the area trying to find what it was on that barren island that could support such a large rat colony. He saw no sign of fruit, nuts, insects or other food.

"Then," said the magistrate, "I noticed some rats going down to the edge of the reef—lank, hungry-looking brutes with pink, naked tails. There, at the edge of the coral, rat after rat dangled his tail in the water.

Suddenly, one rat gave a violent leap of about a yard and, as he landed, I saw a crab clinging to his tail. Turning round, the rat grabbed the crab and devoured it, then returned to his perch. Meanwhile, other rats were repeating the same performance."

When a Farm is infested with rats, a good control programme becomes a "must." The work involved is just as essential as any other farm chore.

You can cut down rat population by poisoning, trapping, gassing, blocking, flooding, or any number of ways. But don't expect any one method to do the whole job. Poisoning, for example, may kill most of the rodents, but a few will survive. Trapping or gassing may then be necessary for complete control.

Remember, too, that you may kill off all the rats, but other may come if you don't eliminate their eating and nesting places.

Poisoning

Use the anti-coagulant poisons (warfarin, fumarin, pivalyl, etc.) for good control and less danger to pets and children.

You can also prepare baits from chopped lean meat, sausage, fish liver, bacon, eggs, apple, tomato, peanut butter, melon rind, sweet potato, banana, cheese, cereals, sweet corn, fresh blood, milk, and strawberry jam.

When using fresh baits you usually have to make daily replacements.

Place the baits in runways, near burrows, or wherever rats are feeding and living.

For permanent control use bait stations made of boxes, baskets, or boards with openings just large enough for the rodents to enter. The stations should be large enough to hold dry bait and poisoned water; they should be fastened down and baffled inside.

Stations protect the baits from pets, other farm animals, and children, and give rats a secured place to feed. Placed properly, feeding stations will also attract the rodents and can be kept supplied with fresh baits at all times.

Do not allow the baits to become old and mouldy. Use plenty of bait. It will take from 8 to 10 pounds of material for the average infestation and it takes from 7 to 10 feeding by rats to kill them.

CAUTION: (*Label poison containers and keep them out of reach of children, pets, and other farm animals. Destroy dead rats.*)

TRAPPING

Use traps along with poison bait or to get the rats that have survived poisoning. Use a wood base snap trap and enlarge its bait pan or trigger with cardboard or wire mesh.

Place the traps in dark corners, runways, and near burrows, or even tack them to move the dead rats. Fix with some of the fresh baits mentioned earlier.

GASSING

Control of rats with poisonous gas included gassing of burrows and fumigation of buildings. The latter should be done only by experienced operators.

Gassing of rat burrows out-of-doors is an excellent means of control. It is safe to use in the open when reasonable precautions are taken to avoid breathing the fumes or dust.

It is easily blown into rat burrows with a foot pump or garden duster. The gass kills rats quickly.

Most of the rats as well as their parasites die in the ground, and there is no secondary hazard to pets and other animals.

Carbon bisulphide and carbon monoxide gases have also been used seccessfully.

DESTROYING BURROWS

When rat burrows are numerous in fields or poultry pens, the first efforts at control should be by methods already described. Then the area should be plowed to a depth of 18 inches with a subsoiler or "chisel" to destroy most of the rat holes.

With fewer safety retreats, it will then be easier to keep down the number of rats.

Tunnels in yards or about buildings can be collapsed by use of a pick, crowbar, or shovel.

FLOODING

The rodents may sometimes be killed by flooding their burrows. Rats tunnel, however, are shorter than those of most field rodents, and the animals may escape the water. Results, therefore, are not always satisfactory.

BLOCKING

In some places it is possible to close all rat entrances to a building and then kill most or all of the rats inside. This practice is called blocking. A careful preliminary search is made and all but the one or two entrances in most active use are blocked securely with sheets of tin, large rocks, or stout boxes filled with soil.

On the night selected for blocking, the remaining entrances are quitely barricaded about an hour after dark. Then two or more persons, equipped with strong flashlights, enter and kill the rats with clubs.

POISONOUS DUST

In suitations where there is no hazard of contaminating human food or feedstuffs for domestic animals, a poisonous dust may be spread where rats run.

Some of the dust adheres to their hair and feet and is licked off and swallowed; soon the rodents die. Once placed, the dust should not be stirred up; kernels of small grains on a dusted area must not be swept up and fed to livestock.

Sodium flousilicate (Na_2SiF_6) is the most effective dust to use.

The material is placed in a narrow strip close to walls,

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LAUGH !!!

"Laugh and the whole world laughs with you, frown and you wrinkle your face alone."

IT WAS a Friday afternoon, and one of our friends gave little thought to having his motor mower borrowed by a neighbour—until he happened to mention it to another neighbour whose mower had also been borrowed. Later, he was even more surprised to learn that three more mowers had been loaned to the same man.

When the hoarder was pressed for an explanation, he assured the men that all mowers would be returned bright and early on Monday morning. "This is one week-end," he added with a grin, "that I intend to sleep late—in peace."

* * *

WE WERE driving through a sleepy little village one evening, when our headlights picked out the figure of a woman—running for all she was worth down the road. Close behind her followed a man who appeared to be gaining at every step.

We screeched to a halt and, leaping out, I asked the woman, "Can we be of any assistance?"

"Oh, no, thanks," she panted. "My husband and I always race home like this from the cinema. Last one in does the supper dishes."

* * *

ONE DAY my husband came home proudly displaying a handsome bonus cheque from his company. It was a complete surprise to both of us, and my first comment was, "Let's put it in our savings account and pretend we didn't get it."

"That would be fine," he reppllied, "if we didn't been pretending we'd already had it."

LEAVING for a week's visit to her sister, my wife handed me a gallon of paint and a four-inch brush. "Darling," she said, "in case you feel like painting the town as soon as I've gone, how about starting with the kitching?"

RADIO Free Europe tells of a nightclub behind the Iron Curtain which had been established by the communists to encourage tourtism. The club failed, and its manager was hauled before the party leader for an explanation. "Perhaps the food was no good," suggested the party leader.

"No, we hired the best chefs in town to prepare meals from the finest products," said the manager.

"What about the drinks, then?"

"The drinks were the finest," said the manager. "We searched out the best wine cellars and even imported the best whisky."

"Then, what about the girls?"

"Ah, they were the least of our worries," said the manager. "They have all been good party members since 1920

ON THE day of the club football match, those vehicles inched towards the Police waved the cars parking attendants squee into narrow spaces. By the game was under way, offi congratulating one anoth way they had handled t

Then they heard someon it was a woman sobbin wheel of a parked car frightened children in seat. They asked her w wrong. "All we were tryi sobbed the mother, "was shop for some bread."

* * *

MY YOUNG brother w ing a neighbour's d house for the first time, an him announce proudly passed the cocktail cabine this is my father's chemis

* * *

Continued from page 21

RATS

then boards may be leaned over the dust and against the wall to make a rodent corridor and prevent the dust from being scattered. Dust also may be put on overhead beams and pipes.

You don't have to put up with rats. These pests spread many animal and human diseases; they eat, waste, and contaminate incredible quantities of foodstuffs; they ruin property; and they maim and kill young livestock and doultry.

If your farm is infested with rats, now is the time to get rid of them.

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