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Canada

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FOX RANCH

SUMMERSIDE, P.E.I.

REPORT OF THE SUPERINTENDENT

G. ENNIS SMITH

FOR THE YEARS 1926 AND 1927

A view of the Experimental Fox Ranch.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1928

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DOMINION EXPERIMENTAL FOX RANCH, SUMMERSIDE, P.E.I.

REPORT OF THE SUPERINTENDENT, G. ENNIS SMITH

THE ESTABLISHMENT OF THE EXPERIMENTAL FOX RANCH

In 1920 the Research Council of Canada, in co-operation with the Health of Animals Branch of the Department of Agriculture, undertook the investigation of the nutritional problems relating to raising silver foxes in captivity. An Experimental Fox Ranch was constructed and operated under the direction of the superintendent of this ranch at the Research Station, Mountain Road, Hull, P.Q. The foxes required to initiate this work were donated by the deputation of fox breeders who had been sent to Ottawa to petition the department to undertake national registration of silver foxes in connection with the National Live Stock Records. The research work had not been under way very long before it became obvious that there were many more problems to be solved than had been at first contemplated. Therefore the superintendent of this ranch made a recommendation to the Research Council that the work should be undertaken on a larger scale on Prince Edward Island, under the Department of Agriculture. At the same time the Canadian National Fox Breeders' Association came forward with an offer to construct an experimental fox ranch in Prince Edward Island and on the recommendation of the superintendent of this ranch, made a petition to that effect to the Minister of Agriculture. On April 1, 1925, the Department of Agriculture, in agreement with the Research Council of Canada, took over the work of studying nutritional, breeding and other problems in connection with the raising of silver foxes in captivity. In July of the same year an agreement was made between the Department of Agriculture and the Canadian National Fox Breeders' Association, to the effect that, provided the association constructed a fully equipped ranch and donated twenty-five pairs of registered silver foxes, the department would construct laboratories and offices and carry on, maintain and operate them as an experimental fox ranch and fox research station. The construction of the ranch was commenced on September 1, 1925, and it was ready for operation in October of the same year. The land on which the ranch has been constructed was donated by the business men of Summerside. It was constructed at the expense of the Canadian National Fox Breeders' Association, and twenty-five pairs of registered silver foxes were donated by the fox breeders of Prince County, P.E.I. The work was carried out according to the plans and specifications of the Department of Agriculture, under the supervision and instructions of Mr. Peter G. Clark, and the Department wishes to express its thanks and appreciation to Mr. Clark for the able and efficient manner in which the ranch and buildings were constructed.

It should be remembered, in reading this report, that the information it contains is based on the results of experiments that have so far been carried on for only a few years.

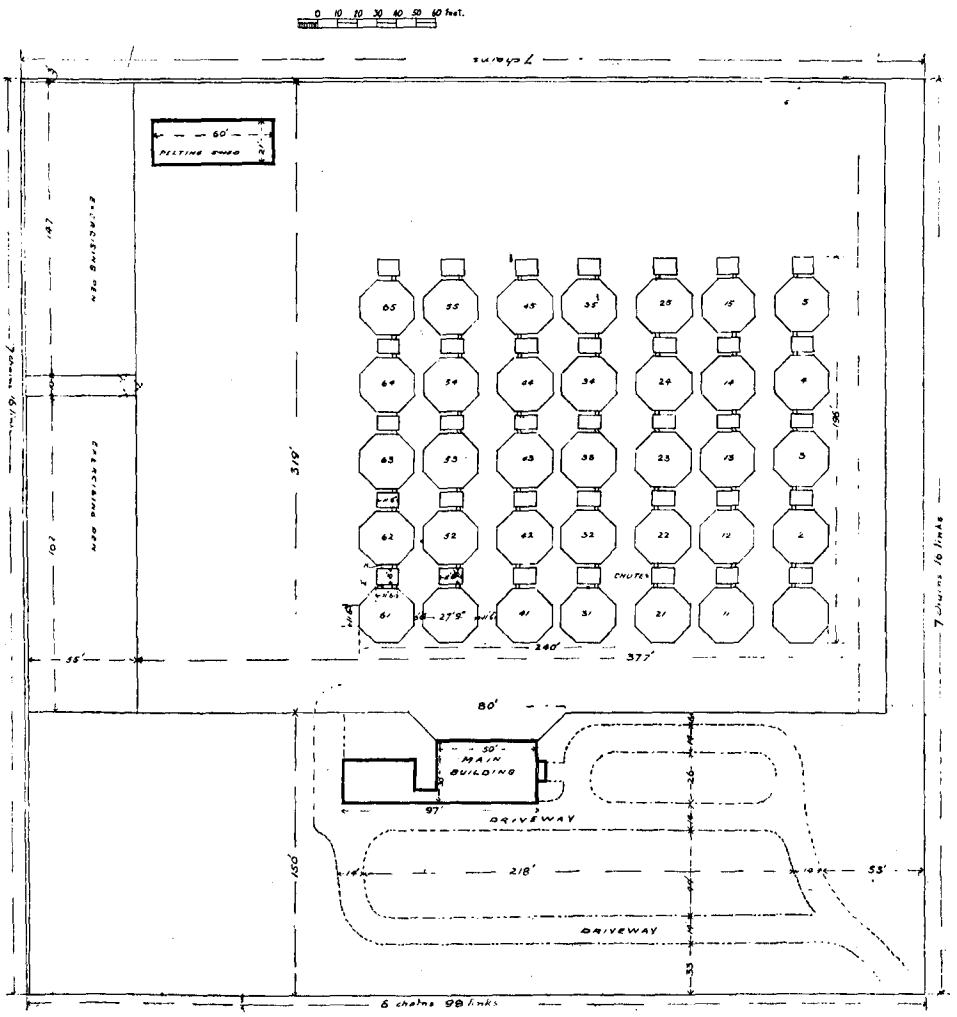
THE RANCH AND ITS EQUIPMENT

LOCATION

The Ranch is situated within the town limits of Summerside, on Central avenue, about seven-tenths of a mile from the centre of the town.

MAIN BUILDING

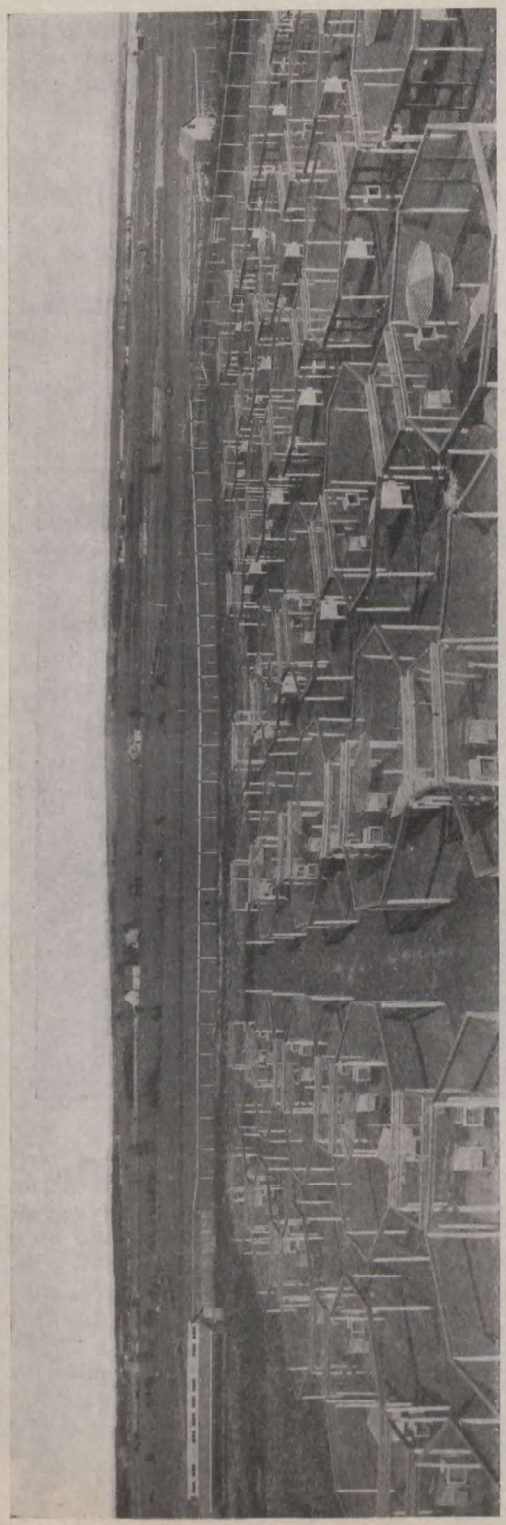
The main building is sixty feet by thirty feet, with an annex thirty feet by twenty feet. There are three floors in the main building. The ground floor contains the feed rooms, workshops, heating plant, etc. The second floor contains two laboratories, a general and private office, and storage room. The top floor is used for storage purposes, a watch tower being constructed on the top of the building.



Plan of Experimental Fox Ranch, Summerside.

SITE

The site of the Experimental Fox Ranch is in the open without any trees whatever. According to the evidence obtained in the experimental work, foxes require more shade during the months of July, August and September than during the other parts of the year, and pens should be so constructed that the foxes should not be entirely exposed during that time of the year, but have



General view of the Experimental Fox Ranch.

some protection, preferably by shade of deciduous trees or by shades similar to those shown on page 12. In an open ranch the ground is subject to the sterilizing action of the wind and sun. With the present status of knowledge regarding the diseases and parasites of silver foxes and the methods for controlling same, undoubtedly there is a great risk in keeping foxes in heavily shaded ranches. At the present time it is considered that an open site is more suitable for fox ranching. The Experimental Fox Ranch is situated on a light clay soil. To what extent this may be a factor in controlling parasitic and other infective agents it is not possible to state, but at the same time observations and experience indicate that fox breeders, wherever possible, should locate fox ranches preferably on sandy or gravel soils.

FOX RANCH

The enclosure of the fox ranch measures four hundred and thirty-two feet by three hundred and nineteen feet, and contains, at the present time, thirty-five breeding pens, thirty-five male pens, two exercising pens, one of which is one hundred and sixty-two feet by fifty-five feet, and the other one hundred and forty-seven feet by fifty-five feet, and a pelting shed containing twenty pens, each eight feet by six feet.

GUARD FENCE

There is a space of twenty feet or more between the guard fence and the pens on all sides. The upper portion of the wire wall of the fence is made from three-foot width, 2-inch mesh, No. 16 gauge, and the lower portion of six-foot width, 2-inch mesh, No. 15 gauge, with a two-foot overhang of 2-inch mesh, No. 16 gauge. It was not considered necessary to have a

carpet wire in the guard fence, the wire being carried below the ground to the depth of one foot. The average height of the guard fence is approximately eight and a half feet. For the top purline of this fence one-inch by six-inch spruce lumber was used.

BREEDING PENS

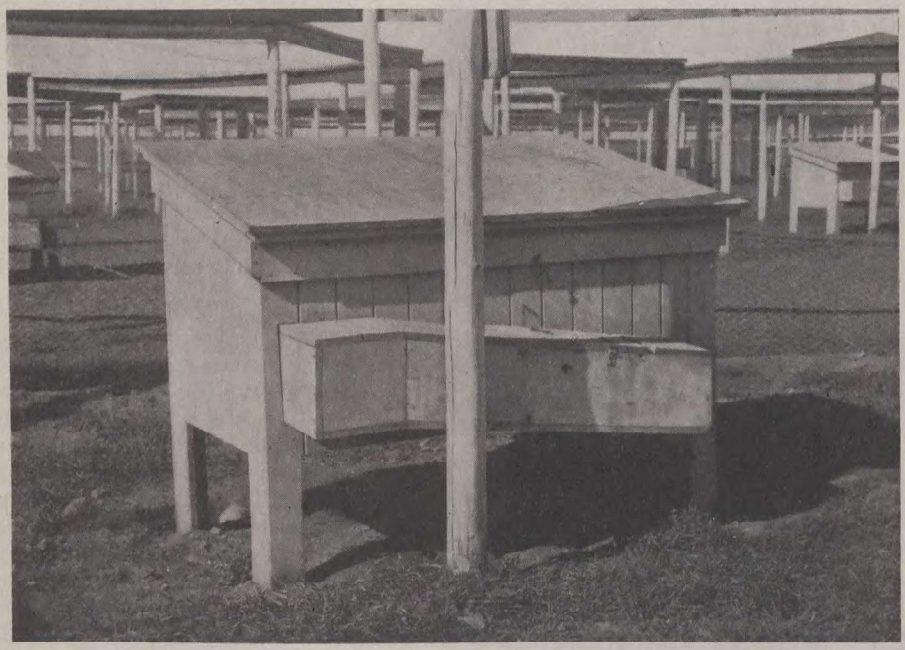
All the breeding pens in the Experimental Fox Ranch are octagonal. Pens of this shape have several favourable features:—

(1) With the same length of wire a large space larger by from 20 to 30 per cent, can be inclosed than with a rectangular pen.

(2) The top can be covered and kept in place in a more satisfactory manner.

(3) The side walls need only be about six feet in height, or even less. The one and a half foot slope to the centre gives sufficient overhead space.

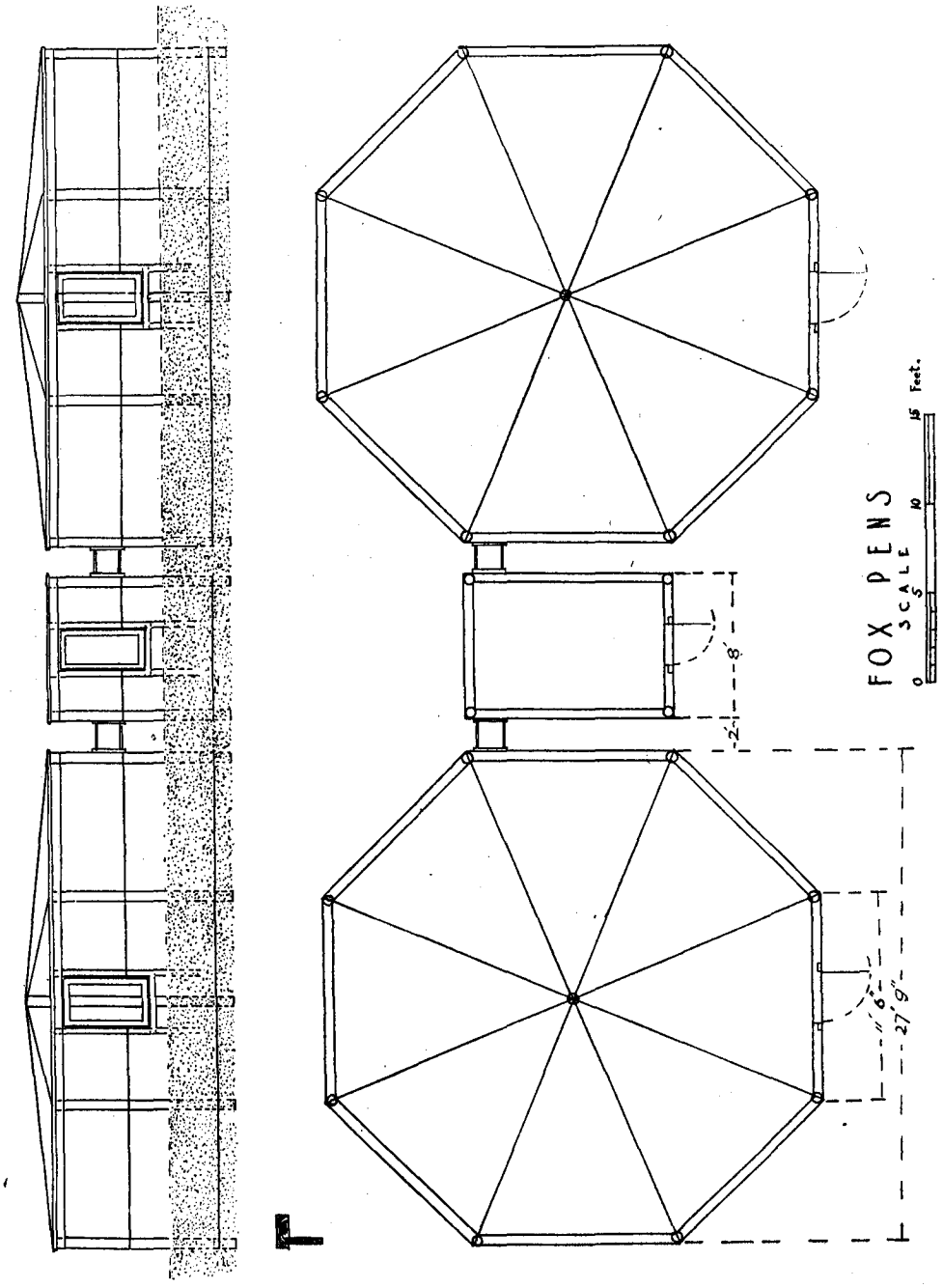
(4) There are no pronounced corners and the risk of pups climbing the wires is greatly minimized.



Breeding kennel.

It is well known that many pups are injured each year, either by breaking their legs or other bones, or injuring their spine through falling from unnecessary high walls of the pens. Fox breeders are therefore advised to use only covered pens. The cost of covering the pens does not increase their total cost, when the amount of wire saved in the walls is considered. For the convenience of fox breeders the formula from which the area of any octagonal pen with sides of equal length can be readily determined is given here. Area = 4·8284 multiplied by the square of one side. Dealing with the area of pens with twelve and a half, eleven and a half, and ten-foot sides:—

$4 \cdot 8284 \times (12 \cdot 5)^2 = 754 \cdot 44$ square feet.
$4 \cdot 8284 \times (11 \cdot 5)^2 = 638 \cdot 56$ square feet.
$4 \cdot 8284 \times 10^2 = 482 \cdot 84$ square feet.

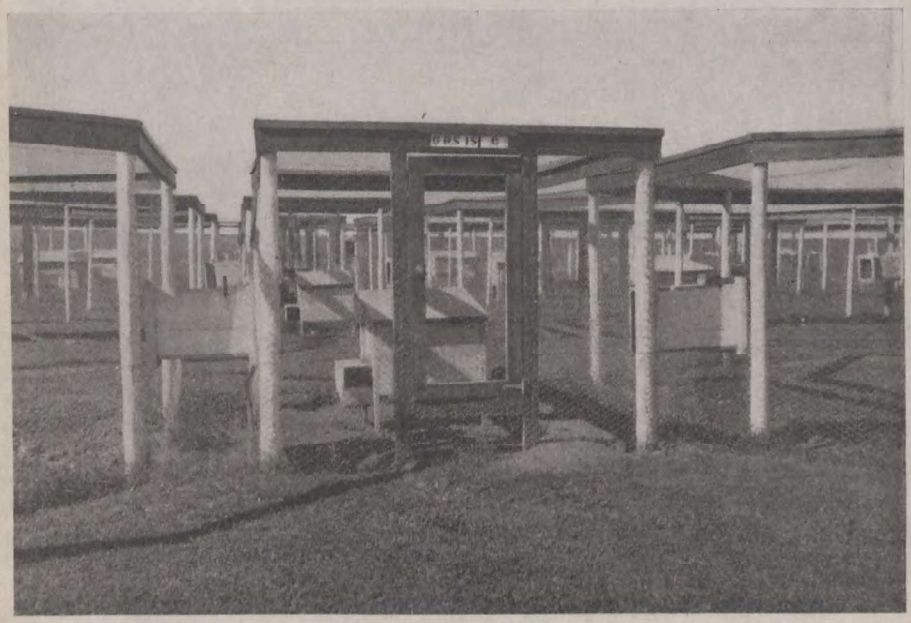

FOX PENS
SCALE
0 5 10 15 Feet.
8'
27'9"

The sides of the pen are made of a nine-foot wall without any carpet wire, as experience shows that the carpet wire is not necessary. The wire wall extends two and a half feet below the ground, the trench being dug on the outside so as to avoid loose soil in the pen, which would be an inducement for foxes to dig. For the wooden frame work, round cedar posts, four to five inches in diameter, were used for the upright corners, the upper purline being made with a horizontal piece two by five inches, grooved as shown in the accompanying plan for a fox pen, and into which a vertical piece, one inch by six inches, is inset. The upper portion of the wire wall consists of a four-foot width, of 2-inch mesh, No. 16 gauge, and the lower portion of a five-foot width, 1½-inch mesh, No. 15 gauge. The top of the pens is covered with four-foot widths, 2-inch mesh, No. 16 gauge, the lengths being laced together and cut on the ground and drawn into position.

The gates are made from 1-inch by 4-inch dressed lumber, two frames, thirty-four inches by fifty-eight inches being made separately and then nailed together, and the wire placed between the two frames. All the gates of the pens open outwardly. This obviates a great deal of trouble, especially where the ranch is exposed to heavy snow falls.

MALE PENS

Adjacent to each breeding pen a small male pen, eight feet by eleven and a half feet, has been constructed, the walls of which are made in a similar manner to those of the breeding pen. A chute 15 inches square, inside measurement, connects the breeding pen and the male pen. In order to make the chute removable it is attached at each end to the pen by a frame of 2-inch by 2-inch, which completely surrounds the chute. The chute is placed about two and a half feet from the ground, at the top of the five-foot width of 1½-inch mesh, a chute being on each side of the male pen for purposes of double mating during the breeding season.



Male pen, showing chutes on either side.

KENNELS

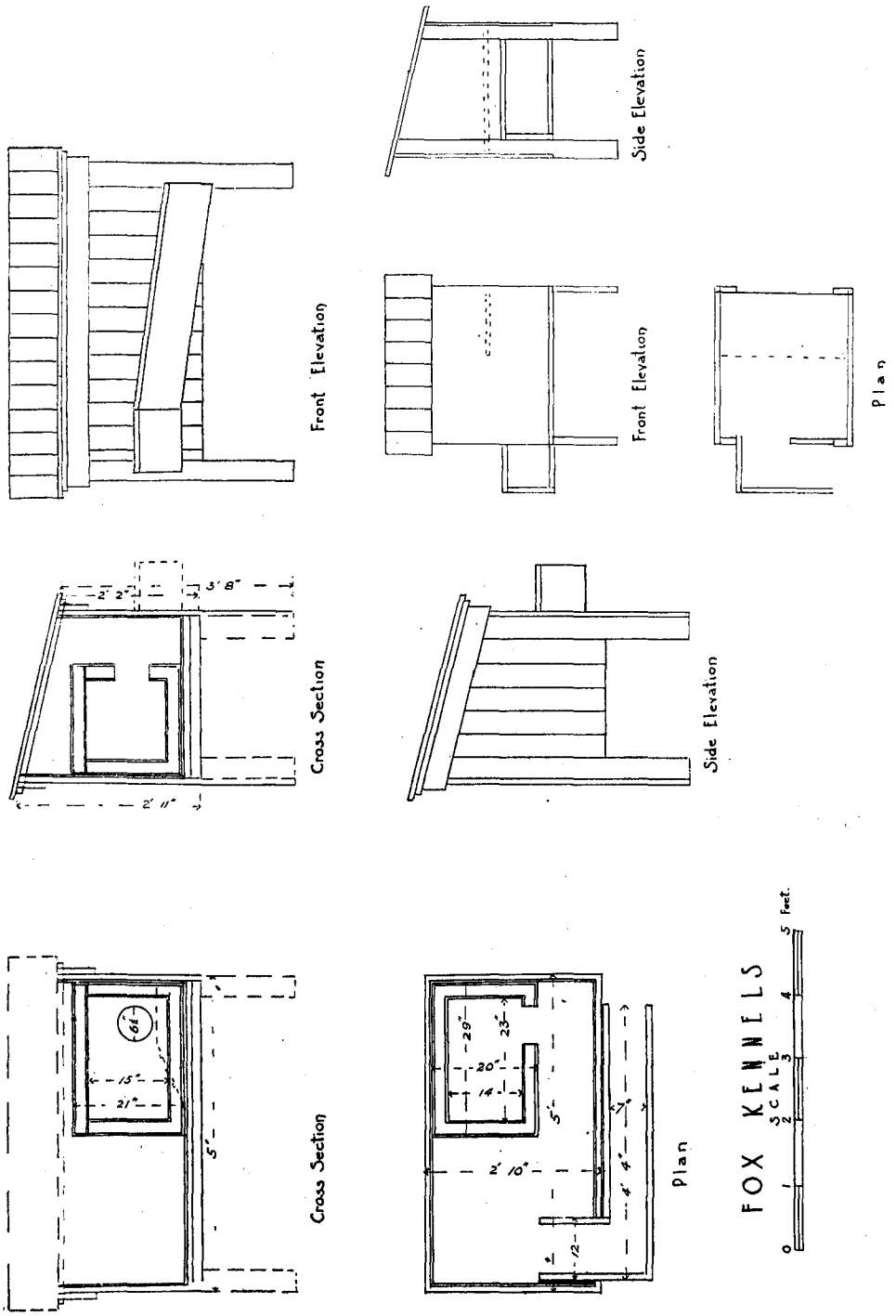
The kennels are constructed with double walls, the outside being 1½-inch tongued and grooved dressed spruce, and the inside ⅝-inch tongued and grooved dressed cedar, with tar paper placed between the walls. In the outside walls the grooves run perpendicularly, allowing the rain to run off, which materially lengthens the life of the kennels. The outside walls of the kennels were constructed separately and then nailed together, the legs being an extension of the corner end pieces. The inside sheeting of cedar was placed in position after the outside shell had been built. A runner of 1-inch by 1-inch lumber is placed on the rim of the underside of the top to avoid the rain beating underneath the cover and unnecessary draught.

The chutes to the kennels have a right angle turn at the entrance to the kennels. The use of a straight chute is not advised, as when there is a large amount of snow the female in many cases has been known to scratch the snow into the kennel until it has been filled to the top. We have not known this to occur with a chute that has a right angle turn. The chute should be so constructed that the top piece extends the whole length of the top, and the sides of the chute should be extended to the bottom, the bottom portion being inserted between the sides as shown in the accompanying plan of a fox kennel. Constructing the chutes in this manner lengthens the life and keeps the rain from running in. The inside dimensions of the chute are 7 inches by 7 inches, and at a right angle turn it is recommended that the width be increased to 10 inches.

NESTS

The nests are made in two sections. The outside dimensions of the outside section are 29 inches by 20 inches by 21 inches. The inside dimensions of the inner section are 23 inches by 14 inches by 15 inches, the nests being constructed of ½-inch tongued and grooved dressed pine. There is a 2-inch air space between the sections on each side and on top and bottom. The hole into the nest is 6½ inches in diameter and between the two sections, at that point a piece of 8-inch by 8-inch by 2-inch, in which a circular hole 6½ inches in diameter has been made, is inserted. There is a small run-a-way up to the nest, running within one-half inch of the bottom of the hole on the outside. This we would recommend both for the use of the pups and for the females. While the average size of the entrance to a burrow in the ground is not over five inches it must be remembered that it is even along the bottom and that the female enters the burrow in a crouching position, and it is therefore recommended that the entrance to the nest should be so constructed that the female can enter it in a crouching position.

The general type of nests and kennels that are in use at the present time, both at the Experimental Fox Ranch and throughout the fox industry, are unsatisfactory and could be greatly improved. The records of the maximum and minimum temperatures of the general type of nests shows a very marked variation in temperature according to the outside climatic conditions. With the types of kennels that are in general use according to our observations the minimum temperature of the nests approaches to within ten to twelve degrees of the outside minimum temperature, that is to say, when the minimum temperature approaches twenty degrees Fahrenheit, the minimum temperature of the nests, with pups two days old and more, is lowered to practically freezing point. It does not appear probable that such a variation would take place in a burrow in the ground and it is our conclusion that for the early part of the whelping season the temperatures of the kennels and nests are too low, which undoubtedly leads to a large number of fatalities. While disastrous results are undoubtedly produced by the temperature of the nests fluctuating with the


Front Elevation
Side Elevation
Front Elevation
Plan
Cross Section
Side Elevation
Cross Section
Plan
FOX KENNELS
SCALE
0 1 2 3 4 5 Feet.

outside temperatures during the early breeding season, when the nests become altogether too cold, equally disastrous results appear to be induced by the susceptibility of the temperature of the nests to the outside climatic conditions during the late breeding season, when the temperature of the nests becomes altogether too high. It is therefore recommended, with litters born after May 1, by which time all the snow has disappeared from the ground, that by some means or other the female should be induced to take her pups into the ground, where the temperature would be less susceptible to outside influence, and the ill effects of the pups being over heated, to some extent would be avoided.

PELTING SHED

The measurements of the pelting shed are 60 feet by 21 feet, containing twenty pens 6 feet by 8 feet with a 5-foot alley-way in the centre of the shed. The floor of the shed was first made and the superstructure built on it. The floor and partitions were made with 1¼-inch tongued and grooved dressed spruce. This has made a satisfactory partition and up to the present time has not presented any opportunity for the foxes in the adjacent pens to injure each other. Each pen in the shed is provided with an outside removable shutter for use during the winter months or during rainy days. These shutters are held in place by two fixed buttons at the bottom and a revolving button at the top. The alley way is boarded on each side to the bottom but there is a 1½-foot space at the bottom of the sides of the shed allowing free ventilation under the floor of the pens.

RECOMMENDATIONS REGARDING USE OF PELTING SHEDS

While we are not in a position to definitely state exactly what should be the normal function of a covered shed as an integral part of a fox ranch, at the present time we are not prepared to recommend it other than as a pelting shed for foxes that are to be eliminated from the ranch. Certainly at present we are not prepared to recommend it for general use for breeding stock. It has been our experience with the covered shed that males that have been placed in this pen for several months previous to the breeding season, although some of them were proven breeders, were practically worthless for breeding purposes. The great majority of them were incompetent and those that did mate failed to produce any offspring. Foxes that were kept in a shed during the summer months, although they were registered as medium silvers, and in some cases had been such for one or more seasons, developed very few silver hairs, the majority being black foxes, nor did foxes in the covered shed develop a good lustre or fur of the same strength as foxes ranched in the open. Undoubtedly with the general rations that are being fed at the present time it does help to a marked extent to the production of a clearer black colour of the fur, especially with dark silver and extra dark silver foxes. It has been our experience that pale silver foxes will hold their colour in the open much more satisfactorily than dark silver foxes.

With regard to its use as a pelting shed we would recommend that those foxes which it is intended to pelt at the end of the season, be placed in it during July or August or as soon as the silver has developed in the fur, but not previous to that, because it might seriously effect the amount of silver that would be produced. It would be probably advantageous to keep them under cover until about the beginning or middle of October, when they should be placed out in the open pens.

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SPECIAL REQUIREMENTS OF FOXES IN SHADED PENS AND COVERED SHEDS

During the season of 1926-27 a certain number of foxes were kept in the covered shed and some were fed a ration containing cod liver oil. The foxes in the covered shed retained a clear black colour throughout the season and during the spring, whereas the foxes on the same ration receiving the cod liver oil in the open pens developed a very pronounced brown shade. In our experimental work so far the limit of the extent to which cod liver oil may be fed to foxes has been determined by its influence on the colour of the fur and we have used this as a specific indication with regard to the extent of feeding cod liver oil. If this criterion be correct then the results obtained in this respect would indicate that it is very desirable that a certain amount of cod liver oil should be fed to foxes kept in covered sheds or in extremely shaded ranches,

Shade in use at the Experimental Fox Ranch.

especially during the fall and winter months. It should be definitely understood, however, that up to the present time the only factor that we have been able to take into consideration with regard to the desirability of feeding cod liver oil with the rations has been its influence on the colour of the fur. Other experiments have demonstrated very definitely that foxes in the covered sheds do not develop a favourable lustre on the average rations that are being fed in general to foxes. Further evidence also indicates that a favourable lustre is developed when relatively large amounts of fish and cod liver oil have been fed, therefore it seems that it would be advisable that the foxes kept in covered sheds should receive a certain amount of cod liver oil, somewhere in the neighbourhood of ¼ ounce to each fox daily. The feeding of cod liver oil to foxes in open or fairly exposed pens, except in small quantities during the breeding season, is not recommended.

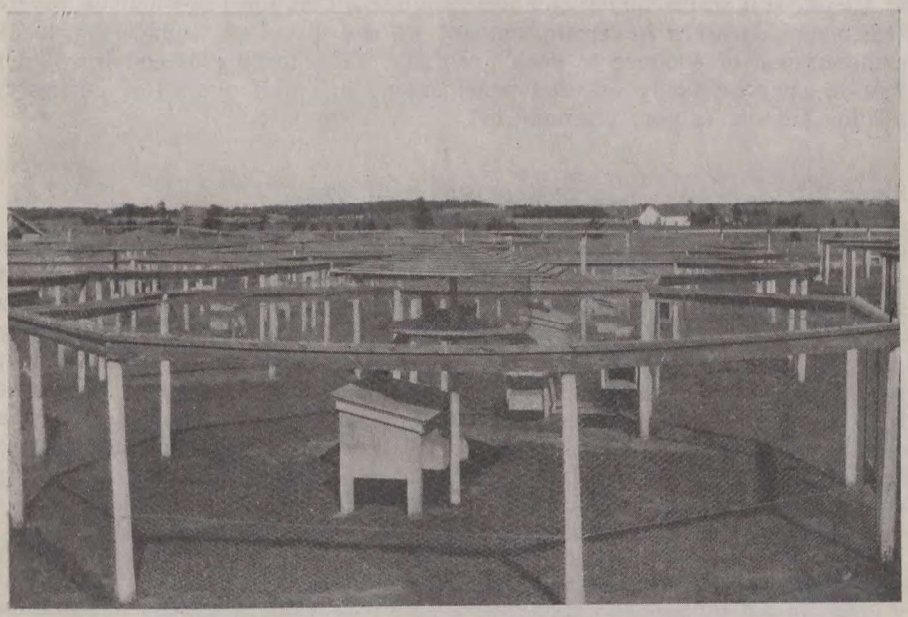
EXERCISING PENS

Each year the large exercising pens have been used extensively for experimental work but in no case up to the present time has this enhanced the quality of the fur. In the great majority of cases the fur was of a poorer quality than when the foxes were ranched in relatively small pens during previous years. During 1927 a number of females that had produced litters in the previous breeding season were placed in the large pen during the month of June, when all the pups had been weaned. Some of these were placed back into the small pens during August, and ten of them were allowed to remain in the pens until the beginning of December. Only one out of the ten that had been in the large pens for six months raised a litter during the subsequent breeding season.

RECOMMENDATIONS REGARDING EXERCISING PENS

We are not prepared to recommend the use of exercising pens to accommodate a large number of foxes, especially for those that it is intended to retain for breeding purposes. If foxes in any particular ranch should happen to be entirely free of any parasitic infestation, or other infective agents, there might be some advantage gained by giving them the opportunity of taking more exercise, but even that is very questionable with the limited knowledge of the nutritional requirements of silver foxes. Besides, the foxes being liable to infest other animals with parasites, there is evidence that many foxes are subject to infective agents that infest the intestinal tract. Obviously such infective agents would necessarily fall under the typhoid, para typhoid, typhus or some such group of bacteria, the seat of infestation of which is in the intestinal tract. It is well known that with typhoid fever some individuals that have been subject to the disease and have recovered are still heavily infested with the bacteria, and may infect other individuals. A great number of the recent outbreaks of typhoid fever have been traced to such individuals. It is quite possible that some foxes are carriers of a disease of an infective nature, from which they themselves have completely recovered, but may convey the disease to other foxes with fatal results. In view of the fact that it is well known that a very large percentage of foxes are infested to a greater or less extent with parasites and other infective agents, there is altogether too much risk in having a large number of foxes in one pen, no matter how large the pen. It is a safer procedure to keep foxes in individual pens where the path of one fox does not cross that of

another and in this way reduce the possibilities of the spread of parasites and disease throughout the ranch. It should be the policy of fox breeders to isolate as much as possible each individual fox and to guard against all possible channels of contact. Each ranch should live up to the policy of rigidly keeping each individual fox in the same pen, and when it is found necessary to place a fox in a pen that has been occupied by another, the pen should first be thoroughly sterilized with a fire-gun.



Pen with shade at the Experimental Fox Ranch.

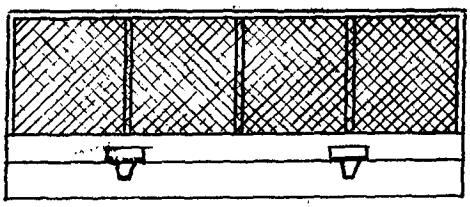
FEEDING STALLS

Many different systems have been tried at the Experimental Fox Ranch for individual feeding of foxes. It may be definitely stated that it would well repay fox breeders to have individual pens for all foxes in the ranch, and as a rigid system the foxes should be fed individually. In cases where there have been a number of pups in one pen very satisfactory results have been obtained with regard to feeding these pups individually by introducing stalls. This is simply a box divided into four partitions measuring about 37 by 27 by 15 inches, open at the back, with a door at the front for placing the food. On page 15 a plan is shown of feeding boxes that have proved very satisfactory at the Experimental Fox Ranch. In practically all cases, in feeding in this manner, a very even rate of growth amongst the litter has been obtained. In every case where there has been two or three females in the same litter that have been fed in stalls the females have come in heat that year within two or three days of each other. On the other hand with other methods of feeding, there has been quite a wide variation in the time at which the different females, born at the same time, came in heat. It has been our experience that when any fox or pup gets into the stall and starts to eat, it will not allow another fox to pass it after it has been using the stall for a few days.

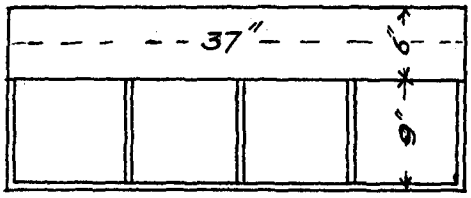
FEEDING BOX.

SCALE.

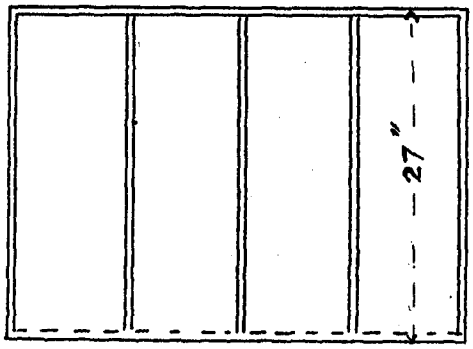
0 5 10 15 20 25 30 Inches.



FRONT ELEVATION



REAR ELEVATION



PLAN

MANAGEMENT AND FEEDING OF FOXES INFESTED WITH PARASITES

EAR MITES

A large number of preparations have been systematically used in order to control infestation of ear mites. The most satisfactory results have been obtained by scorching out the kennels and other dry places in the ranch, using a torch or fire-gun and simultaneously treating the ears of the foxes with the following iodine solution:

Ear Mite Remedy

Sublimed iodine, four parts;
Potassium iodide, four parts;
Water, four parts.
When the iodine is dissolved add glycerine, ninety parts.

Apply with ordinary camel's hair brush.

During the winter months when the temperature is below the freezing point particular care should be taken to apply this solution only in small quantities so that all of it remains on the walls of the ear.

Optional Formula

Tincture of iodine } equal parts.
Glycerine }

It has been found, after using this method for controlling ear mites for several seasons, that when this treatment was carried out at least three times during the year, that is, about the first weeks of June, September and December, the foxes have been free of ear mites. With proper precautions ear mites should not be the source of any trouble whatever to fox breeders.

FLEAS

Up to the present time it has been found that in order to control the infestation of fleas, it is necessary to scorch out the kennels and dry places in the pen with a torch, or fire-gun, and none of the preparations that we have used have been efficient without this precaution. On the other hand, when the kennels and pens have been systematically scorched and the foxes dusted with flea powder, it has been an easy matter to control the infestation of fleas. The evidence obtained would indicate that it is advisable to avoid dipping foxes. While it does not appear to have had any injurious effect upon foxes that were in good health when they were dipped during the extreme hot weather, yet, it had a marked ill effect upon foxes that were in a run-down condition, and as the evidence obtained would indicate that fleas may be controlled by scorching out the kennels and applying flea powder, it has not been considered necessary to dip the foxes in order to control flea infestation.

INTERNAL PARASITES

The faeces of all the foxes in the Experimental Fox Ranch are examined every two weeks if possible, in order to ascertain the amount of worm infestation present. The samples are collected in one-half pint milk bottles, using about the amount of faeces a fox would pass in two days. The bottle is then filled with a salt solution of sp. gr. 1.15. A salt solution of this gravity may be obtained by dissolving two and one-half pounds of salt in one gallon of water.

The samples are then allowed to stand for twenty-four hours, by which time the eggs have floated to the surface of the solution. The eggs are removed from the surface of the solution to a microscopic slide, either with a loop or by a cover glass, which is carried out by placing some plastic clay on the end of a stick about ¼-inch diameter. The cover glass may be caused to adhere to the plastic clay by slightly pressing the end of the plastic clay against the upper side of the cover glass, the lower side of the cover glass is then brought in contact with the surface of the solution, when the eggs that are on the surface will adhere to the under side of the cover glass. The cover glass is then transferred to a microscopic slide and examined under the microscope. A parasitic record is kept of each individual fox and each individual pen in the ranch. The records are kept on forms which are reproduced on page 18. This makes it possible within certain limits, to know the amount of infestation of each particular fox and each particular pen in the ranch. We consider that it should be the policy of every fox breeder to have the faeces of all the foxes in his ranch examined at least once every month, otherwise he may be entirely ignorant as to the amount of worm infestation that occurs amongst his foxes.

TREATMENT FOR WORMS

It has been a general practice at the Experimental Fox Ranch to dose all the pups at least three times during the first three months of their growth, generally when they are four, five, and seven weeks old. The most favourable results have been obtained by giving from ½ to ¾ mm. of oil of chenopodium, administered in a small quantity of castor oil. There has been no signs of any ill effects and in all cases, according to the evidence obtained, three treatments have been one hundred per cent efficient. It does not appear to have had any ill effects on the growth of the pups. In several instances there has been a marked increase in the rate of growth after they have been treated with the above mentioned worm capsules, even when there was no signs that they were previously infested with worms.

With adult foxes, more favourable results for the control of parasites have been obtained when they have been systematically treated at the end of the breeding season, that is, about the last week in May or the first week in June, giving three administrations, seven days apart. At the same time it has been necessary during the summer months to keep down the growth of grass in the ranch. It has been noted that during the time when the pens were kept dry and the grass short the amount of infestation was much less than when the grass was allowed to grow, or during excessively wet seasons. While it has been found that when the pens are dry there has been a marked decrease in the amount of infestation in pens in the open, a number of foxes that have been kept in a dry condition in the covered shed, although their faeces were collected systematically and the pens systematically treated with disinfectant solutions, still remained heavily infested with worms. It would therefore appear advisable that foxes that are heavily infested with worms be kept in open pens where they have the full benefit of direct sunlight, rather than in covered pens or sheds.

There is a great risk in administering any of the anthelmintics or worm remedies in general use and sold throughout the industry. Unless they are given with extreme care the capsules are very liable to enter the windpipe. For this reason it is advisable to use a pilling gun and to insert it into the oesophagus at least one inch past the larynx, or opening to the windpipe, which will overcome the possibility of the capsule entering the windpipe. All the worm remedies

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FOX RANCH, SUMMERSIDE, P.E.I.

FORM 21

Fox.....

—	Week ending	Pen	Hook worms	Lung worms	Round worms	Coccidia	Ear mites	Fleas, etc.

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FOX RANCH, SUMMERSIDE, P.E.I.

FORM 31

Pen.....

—	Week ending	Pen	Hook worms	Lung worms	Round worms	Coccidia	Ear mites	Fleas, etc.

have a more or less marked injurious effect on the foxes. It will be readily understood that any substance that is potent enough to destroy worms would have a marked toxic action on the system of the fox. In view of the evidence as a whole fox breeders are advised to take sanitary measures to avoid reinfestation rather than to make extensive use of worm remedies. This will eliminate the possibility of a large number of losses through fatalities that are liable to occur when worm remedies are administered. At the same time there is little question that measures to prevent reinfestation would be the most efficient manner to control and eliminate worm infestation.

The foxes donated to the Experimental Fox Ranch were placed in the ranch during the months of December and January, 1925-6. It was considered advisable not to give any worm remedies to the foxes as it was altogether too near the breeding season, previous evidence having indicated that worm remedies administered near the breeding season undermine the breeding qualities. Consequently at the end of the breeding season of 1926, whilst the foxes were in a healthy and vigorous condition, the examination of the faeces showed that some of them were heavily infested with worms. During the summer of 1926 the grass was kept cut short in all the pens, the ground level and as dry as possible. There was a marked decrease in the worm infestation, a great majority of the foxes being practically free of this judging from their general condition and the results of the examination of the faeces for worm eggs.

The evidence would indicate that the action of direct sunlight and the wind, of which the pens at the Experimental Fox Ranch have the full benefit, were a great factor in controlling the worm infestation.

The summer of 1927 was extremely wet and the pens during that season were not as dry as in the preceeding year, and there was a particularly heavy growth of grass. It was found that there was a rapid increase in the worm infestation during the months of July and August. The evidence appeared to indicate that the warm, moist condition of the ground was favourable for the incubation of the worm eggs. In this respect according to the evidence from the examination of the faeces and the autopsies of carcasses sent to the Experimental Fox Ranch, there was a very pronounced increase in the worm infestation in the majority of ranches in the Maritime Provinces.

It was decided to study the effect of sterilizing the ground with fire-guns when it became obvious that the worm infestation could not be controlled except by such method or by removing the foxes from the pens. Unfortunately it was impossible to proceed with the work in what was considered an efficient manner on account of the excessive rain, and, therefore, no conclusive evidence upon the efficiency of fire-guns as sterilizing agents can be given. At the same time there was a marked decrease in the amount of worm infestation after the pens had been treated with a fire-gun.

It is our intention to make observations regarding the efficiency of fire-guns in counteracting worm infestation, and to ascertain to what extent the ranching of foxes on impervious flooring, that is on concrete or board floors raised from the ground, will assist in controlling and eliminating worms. The evidence so far obtained indicates that when it is necessary to use worm remedies, these should be given on an empty stomach, after the foxes have fasted twenty-four hours. In all cases the foxes should be fed within three or four hours after the worm remedy has been administered. As a general practice it is advisable to feed afterwards given amounts of cod liver oil and yeast in order to counteract the poisonous action of the worm remedy, giving about one-quarter of an ounce of cod liver oil and one-tenth of an ounce of yeast cake daily to each fox.

72395—3½

During each pelting season it has been our policy to administer worm remedies to foxes, generally two or three days before killing them for pelting. In the following table details are given regarding different worm remedies, the media administered at the same time, the condition of the alimentary tract and the number of worms present as shown by the post-mortem examination. It will be noted from these details that when carbontetrachloride has been administered without any media or with castor oil, while there appears to be no marked ill effects on the mucous lining of the stomach, a severe inflammatory condition was induced through the intestines, which was more severe in cases where castor oil had been administered. Oils are not digested by the secretions of the stomach but their digestion takes place in the intestines, and the total assimilation of fats and oils takes place from the intestines. It is extremely probable that a large assimilation of the carbontetrachloride occurs during the ingestion of the castor oil. On the other hand when the carbontetrachloride was administered with paraffin oil, which cannot be digested or acted upon by the digestive juices of the stomach or intestines, the inflammatory condition of the intestines was practically negligible. It is therefore evident that the most unfavourable media in which to administer anthelmintics are those substances which are acted upon by the digestive juices of the stomach and intestines, and which at the same time dissolve and absorb the anthelmintic. It may be mentioned here that heavy colorless paraffin oil was used which had about the same consistency as ordinary engine oil.

THE EFFICIENCY AND PHYSIOLOGICAL EFFECT OF VERMICIDES IN DIFFERENT MEDIA

Fox	Dose	Condition of the Alimentary Tract
GRS 19D	1cc carbontetrachloride; 25cc castor oil..	Stomach normal, bright red duodenitis, dull red and general severe enteritis throughout intestine. No hook worm or round worm observed.
GRS 42D	1cc carbontetrachloride; 25cc castor oil..	Stomach normal, bright red duodenitis and bright red enteritis in jejunum but very slight enteritis in ileum. No hook worm or round worm observed.
GRS 13A	1cc carbontetrachloride; 25cc paraffin oil..	Mucosa of stomach slightly catarrhal. No duodenitis, no enteritis. No hook worms or round worms observed.
GRS 4C	1cc carbontetrachloride; 25cc paraffin oil..	Slight gastritis, slight duodenitis, slight enteritis. No hook worms or round worms observed.
GRS 12B	1cc carbontetrachloride; 25cc paraffin oil..	Slight gastritis, slight duodenitis, no enteritis. No hook worms or round worms observed.
GRS 35D	1cc carbontetrachloride; 25cc paraffin oil..	Dull red and superficial gastritis, slight duodenitis and slight enteritis. No hook worms or round worms observed.
GRS 19A	1cc carbontetrachloride; 25cc paraffin oil..	Very slight gastritis, slight duodenitis, no enteritis. No hook worms observed. One round worm observed.
219C	1cc carbontetrachloride; 25cc paraffin oil..	Slight gastritis, very slight duodenitis, no enteritis. No hook worms or round worms observed.
9C	1cc carbontetrachloride; 25cc paraffin oil .	No gastritis, marked duodenitis, slight enteritis. No lung worms or round worms observed.
GRS 34E	1 Merck iodine vermicide capsule; 25cc paraffin oil.	Slight gastritis, slight duodenitis and very slight enteritis. Ten round worms present. No hook worms observed.
GRS 34D	1 Merck iodine vermicide capsule; 25cc paraffin oil.	Superficial gastritis, superficial duodenitis, no enteritis. No hook worms or round worms observed.
GRS 35E	1 Merck iodine vermicide capsule; 25cc paraffin oil.	Very slight gastritis, no enteritis, no duodenitis.
GRS 33E	1 Merck iodine vermicide capsule; 25cc paraffin oil.	Slight gastritis, slight enteritis, extensive duodenitis. No hook worm or round worms observed.
GRS 7B	1gm. pulverized "vermicide pill" iodine in capsule.	Slight gastritis, slight duodenitis. Little or no enteritis. No hook worm or round worms observed.

THE EFFICIENCY AND PHYSIOLOGICAL EFFECT OF VERMICIDES IN DIFFERENT MEDIA—*Concluded*

Fox	Dose	Condition of the Alimentary Tract
13C	1gm. pulverized "vermicide pill" in capsule.	Slight superficial gastritis, slight duodenitis, no enteritis. No hook worms or round worms observed.
11D	1gm. organic colloidal iodine in capsule..	Slight gastritis, slight duodenitis, very slight enteritis in jejunum, no enteritis in ileum. No hook worms or round worms observed.
15C	1 gm. organic colloidal iodine in capsule..	Severe but superficial gastritis, severe duodenitis, slight enteritis in jejunum but very little if any enteritis in ileum. One round worm and one hook worm observed.
GRS 21D	1cc carbontetrachloride.....	Stomach normal, very slight duodenitis and very slight enteritis throughout intestine.
GRS 44D	1cc carbontetrachloride.....	Slight gastritis, bright red duodenitis, bright red enteritis general throughout small intestine.

The administration of worm remedies to adult foxes should be confined to the first week of June and the last week of September as it is extremely dangerous to give worm remedies during the hot months of July and August. Besides, if worm remedies are given to foxes after they begin to put on weight during the fall they are very liable to undermine their breeding qualities during the subsequent breeding season.

The evidence obtained up to the present time indicates that as far as possible fox breeders should guard against the indiscriminate use of worm remedies and that their chief hope of controlling and eliminating the worm infestation is through sanitary precautions with the pens. It is advisable that the pens be sterilized with a fire-gun during the months of June, July, August and September, and if necessary the foxes should be removed during those months to small pens in the open with board floors one foot to eighteen inches from the ground. As previously stated we are not prepared at the present time to recommend moving foxes to covered sheds in order to control worm infestation.

FACTORS CONTROLLING REPRODUCTION

MEAT AND COD LIVER OIL REQUIREMENTS DURING THE BREEDING SEASON

It was considered advisable to make attempts to obtain more information regarding the amount of meat that should be fed during the breeding season, and to determine if it would be necessary to feed a certain amount of cod liver oil. During the breeding season of 1926 four different rations were fed, particulars of which are given in table No. 1. In table No. 2 is given a detailed statement of the varieties of meat fed throughout the breeding season. It will be seen from those particulars that the meat content of the low meat ration varied between 4½ ounces and 6 ounces according to the size of the fox and that of the high meat ration between 6¾ ounces and 9 ounces. To one-half of the foxes that were fed on these rations ¼ ounce of cod liver oil was given. The results obtained were in accordance with all the evidence obtained in our experimental work with regard to the advisability of feeding small quantities of meat during the breeding season. The breeding results obtained with the females fed on the different rations are given in tables No. 3, 4, 5 and 6. While a slightly greater number of females were placed on the high meat ration, particulars are given only regarding the females that produced pups. While all the females on the low meat ration plus cod liver oil came in heat, in several cases females mated with males which we have since demonstrated to be sterile. A large number of the females on the high meat ration did not come in heat and a number of those that did come in heat and mated failed to become pregnant. These have not been included in the table of results because the particulars might be misleading on account of the fact that there is no record of how these females were fed up to the end of December previous to the breeding season,

which, it is believed, to a great extent, governs the breeding results of the females in the subsequent season. The particulars given in tables No. 3, 4, 5 and 6 are presented to show the constitutional qualities of the offspring produced from the foxes fed different rations.

TABLE No. 1.—DETAILS OF RATIONS FED.—BREEDING SEASON 1926

January 15 to March 15

Rations	Gm/KW	Cal/KW	Small foxes	Medium foxes	Large foxes	Extra large foxes
Low meat rations—						
A.M.—						
Biscuits (alternate days)	8	30	1¼ oz.	1½ oz.	1½ oz.	1½ oz.
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	32	50	4½ "	5 "	5½ "	6 "
Low meat rations plus cod liver oil—						
A.M.—						
Biscuits (alternate days)	8	30	1¼ "	1½ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M—						
Meat	32	50	4½ "	5 "	5½ "	6 "
Cod liver oil	2	18	¼ "	¼ "	3/8 "	3/8 "
High meat rations—						
A.M.—						
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	48	75	6¾ "	7½ "	8¼ "	9 "
High meat rations plus cod liver oil—						
A.M.—						
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	48	75	6¾ "	7½ "	8¼ "	9 "
Cod liver oil	2	18	¼ "	¼ "	3/8 "	3/8 "

March 15 to whelping period

Low meat rations—						
A.M.—						
Milk	35	25	140 cc.	156 cc.	171 cc.	186 cc.
Yeast	.....	.....	1/16 oz.	1/16 oz.	1/16 oz.	1/16 oz.
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	32	50	4½ "	5 "	5½ "	6 "
Low meat ration plus cod liver oil—						
A.M.—						
Milk	35	25	140 cc.	156 cc.	171 cc.	186 cc.
Yeast	.....	.....	1/16 oz	1/16 oz.	1/16 oz.	1/16 oz.
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	32	50	4½ "	5 "	5½ "	6 "
Cod liver oil	2	18	¼ "	¼ "	3/8 "	3/8 "
High Meat rations—						
A.M.—						
Milk	35	25	140 cc.	156 cc.	171 cc.	186 cc.
Yeast	.....	.....	1/16 oz.	1/16 oz.	1/16 oz.	1/16 oz.
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	48	75	6¾ "	7½ "	8¼ "	9 "
High meat ration plus cod liver oil—						
A.M.—						
Milk	35	25	140 cc.	156 cc.	171 cc.	186 cc.
Yeast	.....	.....	1/16 oz.	1/16 oz.	1/16 oz.	1/16 oz.
Biscuits (alternate days)	8	30	1¼ "	1¼ "	1½ "	1½ "
or fish " "	24	30	3¾ "	4 "	4¼ "	4½ "
P.M.—						
Meat	48	75	6¾ "	7½ "	8¼ "	9 "
Cod liver oil	2	18	¼ "	¼ "	3/8 "	3/8 "

TABLE No. 2.—VARIETY OF MEAT FED THROUGHOUT THE BREEDING SEASON IN 1916

January		February		March		April	
1	Beef hearts	1	Horse meat	1	Boneless beef	1	Liver
2	Lamb plucks	2	Lamb plucks	2	Tripe	2	Beef scrap
3	Tripe	3	Lamb plucks	3	Beef tongue	3	Tripe
4	Lamb plucks	4	Lamb plucks	4	Beef scrap	4	Beef scrap
5	Horse meat	5	Horse meat	5	Tripe	5	Tripe
6	Lamb plucks	6	Lamb plucks	6	Boneless beef	6	Beef scrap
7	Horse meat	7	Lamb plucks	7	Beef tongue	7	Tripe
8	Lamb liver	8	Horse meat	8	Beef scrap	8	Beef scrap
9	Horse meat	9	Lamb plucks	9	Tripe	9	Tripe
10	Lamb hearts	10	Tripe	10	Boneless beef	10	Tripe
11	Lamb lungs	11	Beef chucks	11	Beef scrap	11	Liver
12	Horse meat	12	Lamb plucks	12	Tripe	12	Tripe
13	Lamb liver	13	Tripe	13	Beef scrap	13	Tripe
14	Horse meat	14	Horse meat	14	Beef scrap	14	Tripe
15		15	Lamb plucks	15	Tripe	15	Beef chucks
16		16	Beef chucks	16	Boneless beef	16	Fresh beef
17		17	Tripe	17	Tripe	17	Tripe
18		18	Horse meat	18	Boneless beef	18	Fresh beef
19		19	Lamb plucks	19	Boneless beef	19	Beef chucks
20		20	Beef chucks	20	Tripe	20	Beef chucks
21		21	Tripe	21	Tripe	21	Tripe
22		22	Lamb plucks	22	Boneless beef	22	Beef chucks
23		23	Horse meat	23	Tripe	23	Tripe
24		24	Tripe	24	Boneless beef	24	Liver
25		25	Lamb plucks	25	Tripe	25	Tripe
26		26	Tripe	26	Boneless beef	26	Tripe
27	Tripe	27	Horse meat	27	Tripe	27	Liver
28	Horse meat	28	Beef tongue	28	Boneless beef	28	Lamb plucks
29	Lamb plucks			29	Tripe	29	Lamb plucks
30	Tripe			30	Boneless beef	30	Lamb plucks
31	Lamb plucks			31	Tripe		

TABLE No. 3.—LOW MEAT RATION—DETAILS OF THE BREEDING RESULTS AND BREEDING QUALITIES OF OFFSPRING PRODUCED DURING THE BREEDING SEASON, 1926

Fox	Size of fox	Date of mating	Pups born	Breeding Season 1927-1928				Constitutional vigour of male offspring	Constitutional vigour of female offspring
				Offspring used for breeding	Number of successful breeders	Number of litters	Number of pups		
GRS 6	Small.....	Mar. 6	3	0	0	0	0	.....	
GRS 20A	Medium..	Feb. 16	4	3	3	4	14	Fair.....	Good
GRS 32	Medium..	Mar. 3	2	2	1	1	2	No males.	Fair
33A	Medium..	Feb. 22	4	0	0	0	0	.....	.....

TABLE No. 4.—LOW MEAT RATION PLUS COD LIVER OIL—DETAILS OF THE BREEDING RESULTS AND BREEDING QUALITIES OF OFFSPRING PRODUCED IN THE BREEDING SEASON 1926

Fox	Size of fox	Date of mating	Pups born	Breeding Season 1927-1928				Constitutional vigour of male offspring	Constitutional vigour of female offspring
				Offspring used for breeding	Number of successful breeders	Number of litters	Number of pups		
GRS 14	Medium..	Feb. 9	4	4	4	10	39	Excellent.	No female
GRS 18	Medium..	Feb. 3	4	2	2	4	17	Excellent.	Excellent
GRS 22A	Medium..	Feb. 17	3	2	2	5	16	Excellent.	Excellent
7B	Medium..	Mar. 25	4	0	0	0	0	.....	.....

TABLE No. 5.—HIGH MEAT RATION—DETAILS OF THE BREEDING RESULTS AND BREEDING QUALITIES OF OFFSPRING PRODUCED DURING THE BREEDING SEASON, 1926

Fox	Size of fox	Date of mating	Pups born	Breeding Season 1927-1928				Constitutional vigour of male offspring	Constitutional vigour of female offspring
				Offspring used for breeding	Number of successful breeders	Number of litters	Number of pups		
19C	Medium..	Feb. 20	5	5	3	5	25	Very poor	Good

TABLE No. 6.—HIGH MEAT RATION PLUS COD LIVER OIL—DETAILS OF THE BREEDING RESULTS AND BREEDING QUALITIES OF OFFSPRING PRODUCED DURING THE BREEDING SEASON 1926

Fox	Size of fox	Date of mating	Pups born	Breeding Season 1927-1928				Constitutional vigour of male offspring	Constitutional vigour of female offspring
				Offspring used for breeding	Number of successful breeders	Number of litters	Number of pups		
GRS 6A...	Medium..	Feb. 26	3	2	0	0	0	Poor.....	Poor
45C	Medium..	Mar. 30	3	2	0	0	0	Poor	Poor
13C	Medium..	Mar. 25	5	2	0	0	0	.....	Poor
96C	Medium..	Mar. 16	3	0	0	0	0	.....	.....

The females on the low meat rations maintained a better condition throughout the breeding season and there was a much higher yield of pups, but the most outstanding features were the development and constitutional vigour of the offspring of the females fed on the different rations. By constitutional vigour is meant the development as regards size, conformation, fur qualities and breeding qualities. All of the offspring of the females fed low meat rations plus cod liver oil during the breeding season, that were used for breeding purposes in the two subsequent breeding seasons, that is the seasons of 1927 and 1928, proved to be most successful breeders without any exception, and the females bred each year. In all cases the males have been vigorous polygamous animals. The offspring of the females on the low meat ration without cod liver oil proved to be successful breeders with one exception, but in this respect the breeding qualities were not as uniformly good and the constitutional vigour was not as desirable. While the males proved to be successful breeders they were not good polygamous foxes.

With regard to the offspring of the foxes that received high meat rations, with the exception of one litter not a single fox was a successful breeder. In the one litter that was the exception the three females were fairly successful breeders. In 1927 two of them raised litters but the third did not come in heat. In 1928 all three females raised litters but both in 1927 and 1928 the two males were worthless for breeding purposes.

In all our experimental work up to the present time when the females have been fed a high meat ration during the breeding season, although one of the offspring produced may be a successful breeder, in all cases the majority have been worthless for breeding purposes. On the other hand, when the females have been fed a low meat ration, other conditions being favourable, the offspring have all been efficient breeders, therefore, it is recommended that from the beginning of January until the time the female whelps not more than five ounces of meat should be fed daily, with the addition of about ¼ ounce of cod liver oil at least three times each week.

While an equal number of pups might be obtained when high meat rations are fed during the breeding season it is our contention that the offspring pro-

duced under those conditions will not contain a high percentage of successful breeders. The high meat rations are liable to undermine the breeding qualities and constitutional vigour of the females and jeopardize the reproduction in future years. When high meat rations are fed during the breeding season it is very questionable if the females will continue to produce each year. On the other hand the evidence obtained indicates that when a low meat ration is fed during the breeding season other conditions being favourable the females tend to be successful breeders each successive season.

MILK REQUIREMENTS DURING THE LACTATION PERIOD AND DURING GROWTH OF PUPS

In the tables No. 8 to 18 are given full particulars of the rations fed during the breeding season, the lactation period and the period of growth of pups for four different litters that were produced from females fed low meat rations and low meat rations plus cod liver oil during the breeding season. The direct object in view in outlining the rations for the lactation period and for the period of growth of the pups was to ascertain more definitely the amount of milk that should be fed. In previous years favourable results had been obtained when milk was fed to the extent of 25 per cent, the percentage being expressed in caloric value. On the other hand, when 35 per cent to 40 per cent had been fed, although there was favourable growth as far as size and weight of the pups were concerned, these developed a pronounced brown shade. It was therefore decided to feed different rations, some containing over 30 per cent and others under. The milk content of the rations fed to litter 1D and litter 6D varied between 27 per cent and 30 per cent. Those fed to litter 3D and litter 4D varied between 30 per cent and 32 per cent.

With regard to litter 1D and litter 6D it will be seen from the tables giving the weight and measurements of the pups during the period of their growth that there was a very desirable development as to size. These foxes developed fur of a very desirable strength, length and texture, and at the end of December had a clear black colour. All five males from these two litters have been used very extensively for mating and both as pups and as one-year-olds they have all been mated with two or more females and have been most successful breeders and there has been no difficulty with the mating even as pups. On the average they did not take more than five minutes to mate with the different females.

Litter 4D, receiving the greatest amount of milk, made a very favourable growth and while their fur was of a very desirable length, strength and texture, they developed a brown shade early in the season which was fairly pronounced at the end of December. Between nine and ten weeks old they began to show a slight enlargement of the joints of the fore legs. It was thought desirable to slightly reduce the amount of milk and there was no further unfavourable development, in fact, when they had fully grown their legs were straight, long and well formed. Two of the foxes were used for breeding purposes and the male sired two litters in 1927 and four litters in 1928. The females also raised a litter in both seasons.

All the pups in litter 3D developed fur of a good length, strength and texture. The females had fur of a good clear black colour at the end of December. The males developed a slight brown shade but not so great as that shown by litter 4D. Each of the females raised litters in 1927 and the one male also sired a litter but although he was tried in another case he failed to mate with the female.

While we have been aware that the feeding of milk is very liable to produce most unfavourable results, which we have obtained ourselves to a very marked extent in some of our experimental work, yet, we have always been of the opinion that it appeared impossible to raise silver fox pups in captivity, without feeding a certain amount of milk. In all our recommendations that we have made regarding the rations to be fed to pups we have advised that about 25 per cent to be fed, the percentage being expressed in caloric value. In the above results it will be seen that when the pups received, during the period of their growth, about 28 per cent there was a good development both as regards size, conformation, fur and breeding qualities. Therefore, we believe that we are on a very sound basis in recommending milk to be fed to the extent of 25 per cent of the rations during the period of growth of pups.

TABLE No. 7.—DAILY RATIONS DURING LACTATION PERIOD AND PERIOD OF GROWTH OF PUPS

Litter No. 1D:—Pups, GRS 1D. GRS 4D. Dam GRS18. Sire GT 1B. Born March 27, 1926.

Daily Ration, Breeding season	Daily Ration during Lactation Period, vixen and four pups						
Jan. 15 to Mar. 15.	—	2nd week April 4 to 10	3rd week April 11 to 17	4th week April 18 to 26	5th week April 27 to 30	6th week May 1 to 11	7th week May 11 to 22
A.M.—	*A.M.*—						
	Meat	4 oz.	8 oz.	8 oz.	8 oz.	4 oz.	4 oz.
Biscuit 1¼ oz.	Porridge*	2 oz.	1 oz.	1 oz.	1½ oz.	2 oz.	3 oz.
or	Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	½ pt.	½ pt.
Fish 4 oz.	*Noon*—						
(alternate days)	Bread	.....	2 oz.	2 oz.	2 oz.	2 oz.	3 oz.
	Milk	.....	½ pt.	½ pt.	½ pt.	¾ pt.	¾ pt.
P.M.—	Eggs	.....	1	1	1	1	2
Meat 5 oz.	Yeast	.....	.....	¼ oz.	¼ oz.	¼ oz.	¼ oz.
Cod liver oil ¼ oz.	*P.M.*—						
	Meat	8 oz.	8 oz.	8 oz.	8 oz.	6 oz.	4 oz.
	Porridge*	1 oz.	1 oz.	1 oz.	1½ oz.	3 oz.	3 oz.
	Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	½ pt.	½ pt.
	Total calorific value	1030	1455	1455	1555	1815	1880
Mar. 15 to Mar. 27	Daily Ration for each Pup during Growth Period						
A.M.—	*A.M.*—	2 months old May 22 to June 5	2½ months old June 6 to June 19	3 months old June 19 to July 17	4 months old July 18 to Aug. 5	5 months old Aug. 5 to Sept. 30	
Milk ¼ pt.	Meat	.....	1 oz.	2 oz.	2 oz.	3 oz.	
Yeast ⅛ oz.	Porridge*	¼ oz.	½ oz.	¾ oz.	1¼oz.	1 oz.	
Biscuit 1¼ oz.	Milk	½ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	
or	*Noon*—						
Fish 4 oz.	Bread	¼ oz.	1 oz.	1 oz.	1 oz.	1 oz.	
(alternate days)	Milk	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	
	Eggs	½	½	½	½	½	
P.M.—	Yeast						
Meat 5 oz.	*P.M.*—						
Cod liver oil ¼ oz.	Meat	1 oz.	1 oz.	2 oz.	2 oz.	3 oz.	
	Porridge*	¼ oz.	½ oz.	¾ oz.	1 oz.	1 oz.	
	Milk	.....	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	
	Total calorific value	300	435	605	715	717	

* Dry weight of cereals before cooking is given as the weight of the porridge.

TABLE No. 8.—WEIGHTS OF PUPS DURING GROWTH PERIOD
Litter No. 1D. Dam GRS 18. Sire GT 1B. Born March 27, 1926.

—	Week	Pup 1D		Pup 4D		Total		Average		Total	Average	Gain
		lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	grams	grams	grams
May 1	5	1	11	1	10	3	5	1	10	1,502	751	
" 8	6	2	11	2	7½	5	2½	2	9¼	2,310	1,155	418
" 15	7	3	9	3	1	6	10	3	5	3,005	1,502	475
" 22	8	4	0	3	5	7	5	3	10½	3,321	1,660	158
" 29	9	4	5	3	6	7	11	3	15½	3,487	1,743	83
June 5	10	4	6	3	9	7	15	3	15½	3,600	1,800	56
" 12	11	5	11	4	5	10	0	5	0	4,536	2,268	468
" 19	12	6	8	4	14	11	6	5	11	5,160	2,580	312
" 26	13	7	1	5	13	12	14	6	7	5,840	2,920	340
July 3	14	7	10	6	7	14	1	7	0½	6,378	3,189	269
" 10	15	7	15	6	13	14	12	7	6	6,690	3,345	156
" 17	16	7	14	6	11	14	9	7	4½	6,606	3,303	42
" 24	17	7	14	7	3	15	1	7	8½	6,832	3,416	113
" 31	18	8	3	6	6	14	9	7	4½	6,606	3,303	113
Aug. 7	19	9	0	7	4	16	4	8	2	7,371	3,680	377
" 14	20	9	4	8	0	17	4	8	10	7,824	3,912	231
" 21	21	9	3	7	14	17	1	8	8½	7,740	3,870	42
" 28	22	10	1	8	13	18	4	9	7	8,561	4,280	410
Sept. 4	23	10	9	9	9	20	2	10	1	9,128	4,564	283
" 11	24	10	12	9	11	20	7	10	3½	9,280	4,640	75
" 18	25	11	2	9	14	21	0	10	8	9,525	4,762	122
" 25	26	11	10	10	2	21	12	10	14	9,865	4,932	170
Oct. 2	27	11	9	10	4	21	13	10	14½	9,894	4,947	14
" 9	28	11	15	10	6	22	5	11	2½	10,120	5,060	113
" 20	29	11	9	10	5	21	14	10	15	9,922	4,961	99
" 27	30	11	11	10	9	22	4	11	2	10,092	5,046	85
Nov. 3	31	12	0	10	9	22	9	11	4½	10,234	5,117	70
" 10	32	11	15	10	11	22	10	11	5	10,262	5,132	14
" 17	33	12	1	10	14	22	15	11	7½	10,404	5,202	69
" 24	34	11	15	10	7	22	6	11	3	10,149	5,074	127
Dec. 2	35	12	6	10	15	23	5	11	10½	10,574	5,287	212
" 8	36	12	5	10	15	23	4	11	10	10,546	5,273	14
" 15	37	13	0	11	8							
" 22	38	13	3	11	9							
" 30	39	13	2	11	4							
Jan. 5	40	13	15	11	14							
" 13	41			11	10							
" 19	42			11	11							
" 28	43			11	3							
Feb. 9	44			10	11							
" 25				10	6							

TABLE No. 9.—MEASUREMENT OF FOX PUPS DURING PERIOD OF GROWTH
Litter No. 1D. Sire GT 1B. Dam GRS 18. Born, March 27, 1926.

Date	Week	Pup GRS 1D			Pup GRS 4D		
		Body	Tail	Total	Body	Tail	Total
		inches	inches	inches	inches	inches	inches
May 1	5	11½	5	16½	9¾	5¼	15
" 8	6	14	6¾	20¾	13	6½	19½
" 16	7	15½	8	23½	15	7	22
" 22	8	16½	8½	25	16	8¼	24¼
" 29	9	17¾	9¾	27½	16½	9	25½
June 5	10	17½	10¾	28¼	17¾	9	26¾
" 12	11	19	11½	30½	17½	10	27½
" 19	12	18¾	13¼	32	19¼	11¼	30½
" 26	13	19½	13¾	33¼	19½	11¾	31¼
July 3	14	20½	14¾	35¼	19½	12¾	32¼
" 10	15	22	15½	37½	20½	13½	34
" 17	16	22	16	38	20½	14½	35
" 24	17	21¾	16¾	38½	21¼	14¾	36
" 31	18	22½	17½	39½	21¾	15¼	37
Aug. 3	19	23	17½	40½	21¾	15½	37
" 7	20	23½	17½	41	22½	15½	37½
" 14	21	23½	17½	41	22½	16	38½
" 21	22	24½	17½	42	22½	16	38½
" 28	23	24½	17¾	42¼	22¾	16	38¾
Sept. 4	24	25	18	43	23½	16	39½
" 11	25	26	17	43	24	16	40
" 18	26	26	17½	43½	24	16	40
" 25	27	26	17½	43½	24	16	40
Oct. 2	28	26	17½	43½	24	16	40

TABLE No. 10—DAILY RATIONS DURING LACTATION PERIOD AND PERIOD OF GROWTH OF PUPS

Litter No. 3D:—Pups, GRS 5D, GRS 6D, GRS 7D, GRS 8D Dam GRS 20A. Sire GRS 27. Born, April 9, 1926.

Daily Ration Breeding Season	—	Daily Ration—Lactation Period—Vixen and Four Pups					
March 15 to April 9		2nd week April 16 to 23	3rd week April 23 to 30	4th week May 1 to 7	5th week May 8 to 15	6th week May 16 to 21	7th week May 21 to 28
A.M.	*A.M.*						
Biscuit 1¼ oz.	Meat	4 oz.	4 oz.	4 oz.	.....	5 oz.	3 oz.
or	Porridge*.....	1 oz.	1 oz.	1 oz.	4 oz.	4 oz.	2 oz.
Fish 4 oz.	Milk.....	½ pt.	½ pt.	½ pt.	⅜ pt.	⅜ pt.	⅓ pt.
(alternate days)	*Noon*						
P.M.	Bread.....	2 oz.	2 oz.	2 oz.	3 oz.	3 oz.	3 oz.
Meat 5 oz.	Milk.....	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.
	Egg.....	1	1	1	2	2	3
	Yeast.....	¼ oz.	¼ oz.	¼ oz.	¼ oz.	¼ oz.	
	P.M.						
	Meat.....	4 oz.	4 oz.	8 oz.	.....	.....	3 oz.
	Porridge*.....	.....	.....	1 oz.	4 oz.	4 oz.	2 oz.
	Milk.....	.....	.....	½ pt.	⅜ pt.	⅜ pt.	½ pt.
	Total caloric value.....	935	935	1,295	1,180	1,380	1,585

March 15 to April 9		Daily Ration for each Pup during Growth Period				
			2 months old May 29 to June 19	2½ months old June 20 to July 9	3 months old July 10 to Aug. 5	4 months old Aug. 6 to Sept. 3	5 months old Sept. 3 to Oct. 7
A.M.		*A.M.*					
Milk	½ pt.	Meat.....	.....	1 oz.	2 oz.	3 oz.	3 oz.
Yeast	⅛ oz.	Porridge*.....	¾ oz.	½ oz.	1 oz.	1 oz.	1 oz.
Biscuit	1½ oz.	Milk.....	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.
or		*Noon*					
Fish	4 oz.	Bread.....	¾ oz.	1¼ oz.	1 oz.	1 oz.	1 oz.
(alternate days)		Milk.....	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.
P.M.		Eggs.....	½	½	½	½	½
Meat	5 oz.	*P.M.*					
		Meat	¾ oz.	1 oz.	2 oz.	3 oz.	3 oz.
		Porridge*.....	¾ oz.	¼ oz.	¾ oz.	1 oz.	1 oz.
		Milk.....	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.
		Total caloric value..	315	455	615	730	730

* Dry weight of cereals before cooking is given as the weight of the porridge.

TABLE No. 11—WEIGHTS OF PUPS DURING GROWTH PERIOD

Litter No. 3D. Dam GRS 20A. Sire GRS 27. Born: April 9, 1926

—		Pup 5D		Pup 6D		Pup 7D		Pup 8D		Total		Average		Total	Average	Gain
	Week	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	Grams	Grams	Grams
May 8	4	1	8	1	10	1	3½	1	7½	5	13	1	7½	2,636	659	
" 15	5	1	13	1	14	1	7½	1	15	7	1½	1	12½	3,217	804	145
" 22	6	2	6½	2	7½	2	0	2	5	9	3	2	4¾	4,167	1,041	237
" 29	7	3	3	3	2	2	7	2	15	11	11	2	15	5,301	1,325	283
June 5	8	3	10	3	3	2	14	3	3	12	14	3	3½	5,840	1,460	134
" 12	9	4	3	3	6	3	3	3	7	14	3	3	8¾	6,435	1,608	148
" 19	10	4	9	3	15	3	10	3	13	15	15	3	15¾	7,229	1,807	198
" 26	11	5	4½	4	4	4	4½	4	9	18	6	4	9½	8,334	2,083	276
July 3	12	5	14	4	14	4	11	5	15	20	6	5	1½	9,242	2,310	226
" 10	13	5	4	5	5	5	2	5	6	22	1	5	8¼	10,007	2,501	191
" 17	14	6	12	6	6	5	12	6	3	25	1	6	4¼	11,368	2,842	340
" 24	15	6	12	5	13	5	10	6	0	24	3	6	0¾	10,971	2,742	−99
" 31	16	6	8	5	11	5	11	5	12	23	10	5	14½	10,716	2,679	−63
Aug. 7	17	7	2	6	2	6	0	6	5	25	9	6	6¼	11,595	2,898	217
" 14	18	7	2	6	4	5	12	6	2	25	4	6	5	11,453	2,863	−35
" 21	19	7	12	6	5	6	1	6	9	26	11	6	10¾	12,105	3,026	163
" 28	20	8	3	6	12	6	1	7	4	28	4	7	1	12,814	3,203	177
Sept. 4	21	8	10	7	6	7	1	7	15	31	0	7	12	14,061	3,515	311
" 11	22	8	11	7	9	7	4	8	5	31	13	7	15¼	14,430	3,607	92
" 18	23	9	8	8	2	7	14	8	14	34	6	8	9½	15,592	3,898	290
" 25	24	10	0	8	7	8	5	8	15	35	11	8	14¾	16,187	4,047	148
Oct. 2	25	10	2	8	10	8	10	9	1	36	7	9	1¼	16,528	4,132	85
" 9	26	10	4	8	12	8	11	9	2	36	13	9	3½	16,698	4,174	42
" 20	27	10	7	8	14	8	15	9	6	37	10	9	6½	17,066	4,266	92
" 27	28	10	11	9	0	9	4	9	8	38	7	9	9¼	17,435	4,358	92
Nov. 3	29	10	13	9	3	9	3	9	9	38	12	9	11	17,577	4,394	35
" 10	30	10	15	9	2	9	5	9	8	38	14	9	11½	17,633	4,408	14
" 17	31	11	1	9	7	9	9	9	9	39	10	9	14½	17,973	4,493	85
" 24	32	10	14	9	1	9	5	9	7	38	11	9	10¾	17,548	4,387	106
Dec. 2	33	10	4	9	8	9	11	9	13	40	4	10	1	18,257	4,564	177
" 8	34	11	3	9	8	9	13	9	13	40	5	10	1¼	18,285	4,571	7
" 15	35	11	13	10	1	10	9	10	5							
" 22	.....	12	1	10	4	10	10	10	9							
" 30	.....	11	15	10	1	10	12	10	7							
Jan. 5	.....	12	8	10	12	11	8	11	2							
" 13	.....	.....		10	7	.....		10	14							
" 19	.....	.....		10	3	.....		10	11							
" 28	.....	.....		9	13	.....		10	10							
Feb. 9	.....	.....		9	10	.....		10	7							
" 25	.....	.....		9	5	.....		10	1							
Mar. 16	.....	.....		9	6	.....		10	0							

TABLE No. 12—MEASUREMENT OF FOX PUPS DURING PERIOD OF GROWTH
Litter No. 3D. Dam GRS 20A. Sire GRS 27. Born, April 9, 1926

Date		Pup 5D			Pup 6D			Pup 7D			Pup 8D		
		Body	Tail	Total	Body	Tail	Total	Body	Tail	Total	Body	Tail	Total
	Week	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
May 8	4	11½	4½	16	11¾	5¼	17	10½	4	14½	11¼	4¼	15½
" 15	5	12¾	5¼	18	13	6	19	11	4½	15½	12¼	5	17¼
" 22	6	13¾	5¾	19½	13½	7	20½	12¾	5¼	18	13¾	5½	19¼
" 29	7	15½	7¼	22¾	15½	8	23¼	13¾	6	19¾	14½	6½	21
June 5	8	15¾	8¼	24	15¼	8¾	24	14¼	6¾	21	15¾	7¼	23
" 12	9	17¼	9½	26¾	16¾	9½	26¼	15¾	7½	23¼	16½	8½	25
" 19	10	18	10¼	28¼	16½	10½	27	17½	8½	26¼	16¾	9¼	26
" 26	11	18½	11	29½	17½	3¾	21¼	16¾	9½	26¼	17½	10	27½
July 3	12	19¼	12¼	31¼	20	2¼	22	17¼	10½	27¾	18¼	10¾	29
" 10	13	20½	12½	33½	19½	4	23½	19	10	29	20	11½	31½
" 17	14	20½	13¾	34¼	20	4	24	19½	11	20¼	19¼	12¾	32
" 24	15	21½	13½	35	20½	4½	25	20½	11	31½	21	13	34
" 31	16	21¾	14¼	36	20¾	4½	25¼	20	12	32	21	13	34
Aug. 7	17	22¾	14¼	37	21	5	26	21	12	33	22	13½	35½
" 14	18	23¾	14¼	38	21½	5½	27	21½	12½	34	22½	13½	36
" 21	19	23½	14½	38	22	5½	27	21½	12½	34	22½	14	36½
" 28	20	23½	14½	38	22	5½	27½	22	12½	34½	23	14	37
Sept. 4	21	24½	14½	39	22	6	28	22¼	13	35¼	23½	14	37½
" 11	22	25	15	40	23	6	29	22½	14	36½	24	14	38
" 18	23	26	15	41	23	6	29	23½	13½	37	24½	14	38½
" 25	24	25½	15	40½	.....	.....	.....	23½	13½	37	24½	14	38½
Oct. 2	25	26	15½	41½	.....	.....	.....	24	13½	37½	24½	14	38½
" 9	26	26	15½	41½	.....	.....	.....	24	14	38	24½	14	38½
" 20	27												
" 27	28												
	29												

TABLE No. 13—DAILY RATIONS DURING LACTATION PERIOD AND PERIOD OF GROWTH OF PUPS
Litter No. 4D—Pups, GRS 9D, GRS 10D, GRS 11D. Dam GRS 22A. Sire GRS 27. Born, April 9, 1926

Daily Ration Breeding Season	—	Daily Ration—Lactation Period—Vixen and Three Pups					
Jan. 15 to Mar. 15		2nd week April 16 to 23	3rd week April 23 to 30th	4th week May 1 to 9	5th week May 9 to 15	6th week May 15 to 21	7th week May 22 to 29
A.M.	*A.M.*						
	Meat	2 oz.	2 oz.	4 oz.	2 oz.	2 oz.	3 oz.
Biscuit 1½ oz.	Porridge*	1 oz.	1 oz.	1 oz.	2 oz.	2 oz.	2 oz.
or	Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.	⅓ pt.
Fish 4 oz.	*Noon*						
(alternate days)	Bread	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.	3 oz.
	Milk	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.
P.M.	Egg	1	1	1	1	1	3
Meat 5 oz.	Yeast	¼ oz.	¼ oz.	¼ oz.	¼ oz.	¼ oz.	
	P.M.						
Cod-liver-	Meat	6 oz.	6 oz.	8 oz.	2 oz.	2 oz.	3 oz.
oil ¼ oz.	Porridge*	.....	.....	.....	2 oz.	2 oz.	2 oz.
	Milk	.....	.....	.....	¼ pt.	¼ pt.	⅓ pt.
	Total caloric value	935	935	1,095	1,075	1,075	1,580

March 15 to April 9		Daily Ration for each Pup during Growth Period				
		2 months old June 6 to 19	2½ months old June 20 to July 10	3 months old July 11 to Aug. 5	4 months old Aug. 6 to Sept. 8	5 months old Sept. 4 to Oct. 1
A.M.	*A.M.*					
	Meat	½ oz.	1 oz.	2 oz.	3 oz.	3 oz.
Milk ¼ pt.	Porridge*	½ oz.	½ oz.	1½ oz.	1 oz.	1 oz.
Yeast ½ oz.	Milk	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.
Biscuit 1½ oz.	*Noon*					
or	Bread	1½ oz.	1 oz.	1 oz.	1 oz.	1 oz.
Fish 4 oz.	Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.
(alternate days)	Eggs	½	½	½	½	½
P.M.	*P.M.*					
Meat 5 oz.	Meat	½ oz.	1 oz.	2 oz.	3 oz.	3 oz.
Cod-liver-	Porridge*	½ oz.	½ oz.	1½ oz.	1 oz.	1 oz.
oil ¼ oz.	Milk	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.	⅛ pt.
	Total caloric value	525	425	744	717	717

* Dry weight of cereals before cooking is given as the weight of the porridge.

TABLE No. 14—WEIGHTS OF PUPS DURING GROWTH PERIOD
Litter No. 4D:—Dam GRS 22A. Sire GRS 27. Born April 9, 1926

—	Week	Pup 9D		Pup 10D		Pup 11D		Total		Average		Total	Average	Gain
		lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	Grams	Grams	Grams
May 8	4	1	10	1	9	1	9½	4	12½	1	8½	2,168	722	
" 15	5	2	1	2	0	2	0	6	1	2	0⅓	2,749	916	193
" 22	6	2	9	2	7½	2	7½	7	8	2	8	3,402	1,134	217
" 29	7	3	3½	2	14	3	0	9	½	3	0	4,096	1,365	231
June 5	8	3	13	3	9	3	9	10	15	3	10	4,961	1,653	288
" 12	9	4	6	4	4½	4	1½	12	12	4	4	5,783	1,927	274
" 19	10	5	1	4	15	4	15	14	15	5	0	6,775	2,258	330
" 26	11	5	9	5	7	5	9½	16	9½	5	8½	7,526	2,509	250
July 3	12	6	0	5	13	5	11	17	8	5	13	7,938	2,646	137
" 10	13	6	7	5	14	5	15	18	4	6	1¼	8,278	2,759	113
" 17	14	6	12	6	1	6	11	19	8	6	8	8,845	2,948	189
" 24	15	7	0	6	10	7	2	20	12	6	14⅜	9,412	3,137	189
" 31	16	6	15	6	7	7	2	20	8	6	13	9,298	3,099	−37
Aug. 7	17	7	12	7	2	7	14	22	12	7	9½	10,319	3,439	340
" 14	18	7	12	7	3	7	7	22	6	7	7⅓	10,149	3,383	−56
" 21	19	7	13	7	2	7	9	22	8	7	8	10,206	3,402	18
" 28	20	8	10	7	5	7	14	23	13	7	15	10,801	3,600	198
Sept. 4	21	9	1	8	0	8	8	25	9	8	8⅓	11,595	3,865	264
" 11	22	9	8	8	4	8	14	26	10	8	14	12,077	4,025	160
" 18	23	10	0	8	10	9	7	28	1	9	5⅔	12,729	4,243	217
" 25	24	10	5	9	2	9	13	29	4	9	12	13,267	4,422	179
Oct. 2	25	10	8	9	4	9	14	29	10	9	14	13,437	4,479	56
" 9	26	10	11	9	10	10	1	30	6	10	2	13,778	4,592	113
" 20	27	10	15	9	11	10	0	30	10	10	3⅓	13,891	4,630	37
" 27	28	10	11	9	12	10	2	30	9	10	3	13,863	4,621	9
Nov. 3	29	11	3	10	0	10	0	31	3	10	6⅓	14,146	4,715	94
" 10	30	11	0	10	1	10	1	31	2	10	6	14,118	4,706	9
" 17	31	10	15	10	3	10	0	31	2	10	6	14,118	4,706	00
" 24	32	10	9	9	13	9	15	30	5	10	1⅔	13,749	4,583	−122
Dec. 2	33	10	15	10	7	10	10	32	0	10	10⅔	14,515	4,838	255
" 8	34	11	0	10	5	10	4	31	9	10	8⅓	14,316	4,772	
" 15	35	11	4	10	14	10	15							
" 22	.....	11	8	10	14	11	3							
" 30	.....	11	6	10	12	11	0							
Jan. 5	.....	12	2	11	3	11	8							
" 13	.....	.....		11	1									
" 19	.....	.....		.....										
" 28	.....	.....		10	12									
Feb. 9	.....	.....		10	6									
" 25	.....	.....		9	15									
Mar. 16	.....	.....		10	0									

TABLE No. 15—MEASUREMENT OF FOX PUPS DURING PERIOD OF GROWTH
Litter No. 4D:—Dam GRS 22A. Sire GRS 27. Born, April 9, 1926

—	Week	Pup GRS 9D			Pup GRS 10D			Pup GRS 11D		
		Body	Tail	Total	Body	Tail	Total	Body	Tail	Total
		in.	in.	in.	in.	in.	in.	in.	in.	in.
May 8	4	11¾	5½	17¼	11½	5½	17	11¾	4½	16¼
" 15	5	12½	6½	19	12½	6¾	19¼	12½	5¾	18¼
" 22	6	14¼	7½	21¾	13½	7½	21	13¾	6½	20¼
" 29	7	15¼	9	24¼	15½	8½	24¼	15	7¾	22¾
June 5	8	16½	9¾	26¼	16½	9½	25¾	16	9	25
" 12	9	18	11	29	18½	10½	28¾	17½	9¾	27
" 19	10	18½	12	30½	19½	11	30¼	19	10½	29½
" 26	11	19¼	12¾	31	19½	12½	32	18½	11	29½
July 3	12	20	13	33	19½	13½	33¼	19½	12	31½
" 10	13	21½	13½	35	21	14	35	21	12½	33½
" 17	14	21½	15	36½	21	14¾	35¾	21½	13½	35
" 24	15	23	15	38	22	15	37	22½	14	36½
" 31	16	22¾	16	38¾	21½	16	37½	22½	14¾	37
Aug. 7	17	23½	16	39½	22½	16	38½	23	15	38
" 14	18	24	16½	40½	23½	16	39½	23½	15½	39
" 21	19	24½	16½	41	23½	16½	40	24½	15½	40
" 28	20	25	17	42	24	16½	40½	24	16½	40½
Sept. 4	21	24¾	17½	42¼	24	17	41	24¼	16¼	40½
" 11	22	26	17½	43½	24½	17	41½	25	16½	41½
" 18	23	26½	17½	44	25	17	42	26	16½	42½
" 26	24	26½	17½	44	25	17	42	26	16½	42½
Oct. 2	25	26½	18	44½	25	17	42	26	16½	42½
" 9	26	27	18	45	25	17½	42½	27	16½	43½
" 20	27									
" 27	28									
	29									

TABLE No. 16.—DAILY RATIONS DURING LACTATION PERIOD AND PERIOD OF GROWTH OF PUPS

Litter No. 6D.—Pups, GRS 23D, GRS 25D, GRS 27D, GRS 29D, Dam GRS 14. Sire GT 1B. Born, April 13, 1926

Daily ration breeding season	—	Daily ration—Lactation period—Vixen and four pups					
		2nd week April 20 to 29	3rd week May 1 to 5	4th week May 6 to 12	5th week May 12 to 19	6th week May 20 to 27	7th week May 27 to June 2
Jan. 15 to March 15							
A.M.—	*A.M.*—						
Biscuit 1¼ oz.	Meat	2 oz.	4 oz.	4 oz.	4 oz.	3 oz.	3 oz.
or	Porridge*	1 oz.	1 oz.	1 oz.	1 oz.	2 oz.	2 oz.
Fish 4 oz.	Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	½ pt.	½ pt.
(alternate days).	*Noon*—						
	Bread	2 oz.	2 oz.	2 oz.	2 oz.	3 oz.	3 oz.
	Milk	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.
	Egg	1	1	1	1	3	3
	Yeast	¼ oz.	¼ oz.	¼ oz.	¼ oz.		
P.M.—	*P.M.*—						
Meat 5 oz.	Meat	6 oz.	8 oz.	8 oz.	9 oz.	3 oz.	3 oz.
Cod liver oil ¼ oz.	Porridge*	.....	1 oz.	1 oz.	1 oz.	2 oz.	2 oz.
	Milk	.....	⅛ pt.	⅛ pt.	⅛ pt.	1/3 pt.	1/3 pt.
	Total caloric value	955	1,260	1,260	1,500	1,725	1,725

——	—	Daily Ration for Each Pup during Growth Period				
		2 months old June 7 to 22	2½ months old June 23 to July 10	3 months old July 11 to Aug. 5	4 months old Aug. 6 to Sept. 5	5 months old Sept. 6 to Oct. 7
March 15 to April 13						
A.M.—	*A.M.*—					
Milk ¼ pt.	Meat	½ oz.	1 oz.	2 oz.	3 oz.	3 oz.
Yeast 1/16 oz.	Porridge*	¼ oz.	½ oz.	1½ oz.	1 oz.	1 oz.
Biscuit 1¼ oz.	Milk	1/8 pt.	1/8 pt.	⅛ pt.	⅛ pt.	⅛ pt.
or	*Noon*—					
Fish 4 oz.	Bread	1 oz.	1 oz.	1 oz.	1 oz.	1 oz.
(alternate days)	Milk	1/8 pt.	1/8 pt.	1/8 pt.	1/8 pt.	1/8 pt.
	Egg	1/20	½	½	½	½
P.M.—	*P.M.*—					
Meat 5 oz.	Meat	½ oz.	1 oz.	2 oz.	3 oz.	3 oz.
Cod liver oil ¼ oz.	Porridge*	¼ oz.	½ oz.	5/8 oz.	1 oz.	1 oz.
	Milk	1/8 pt.	1/8 pt.	1/12 pt.	⅛ pt.	⅛ pt.
	Total caloric value	345	435	605	725	725

* Dry weight of cereals before cooking is given as the weight of the porridge.

TABLE No. 17.—WEIGHTS OF PUPS DURING GROWTH PERIOD

Litter No. 6D. Dam GRS 14—Sire GT 1B. Born April 13, 1926

——	Pups	23D	25D	27D	29D	Total	Average	Total	Average	Gain
	Week	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	Grams	Grams	Grams
May 12	4	1 4½	1 3	1 2	1 4	4 13½	1 3⅜	2,197	549	.....
" 19	5	1 13	1 13½	1 11	1 12	7 1½	1 12⅜	3,217	80	255
" 26	6	2 8½	2 7½	2 3	2 6½	9 9½	2 6⅜	4,351	1,087	283
June 2	7	3 2	3 0	2 12½	3 2½	12 1	3 ¼	5,471	1,367	280
" 9	8	3 11	3 7	3 4	3 10½	14 0½	3 8⅛	6,364	1,591	223
" 16	9	4 1	3 14	3 11	3 14	15 8	3 14	7,030	1,757	166
" 23	10	4 6	4 6	4 0	4 4	17 0	4 4	7,711	1,927	170
" 30	11	5 4	5 2	4 14	5 0	20 4	5 1	9,185	2,296	368
July 7	12	5 7	5 6½	5 6	5 0	21 3½	5 5	9,624	2,406	109
" 14	13	6 0	5 15	6 1	5 15	23 15	5 15⅜	10,858	2,714	308
" 21	14	6 3	6 2	6 2	6 3	24 10	6 2½	11,169	2,792	78
" 28	15	6 6½	6 5	6 8	6 8½	25 12	6 7	11,680	2,920	127
Aug. 4	16	6 2	6 6	6 8	6 2	25 2	6 4½	11,396	2,849	-70
" 11	17	7 1	6 13	7 1	7 3	28 2	7 0½	12,757	3,189	340
" 18	18	7 10	7 7	7 10	7 15	30 10	7 10½	13,891	3,472	283
" 25	19	7 4	7 3	7 9	7 14	29 14	7 7½	13,551	3,387	-85
Sept. 1	20	7 14	7 15	8 4	8 12	32 13	8 3¼	14,883	3,721	333
" 8	21	8 10	8 10	8 14	9 3	35 5	8 13¼	16,017	4,004	283
" 15	22	9 7	8 13	9 1	9 13	37 2	9 4½	16,839	4,210	205
" 22	23	9 7	9 5	9 9	10 3	38 8	9 10	17,463	4,365	155
" 29	24	9 8	9 9	9 10	10 5	39	9 12	17,690	4,422	56
Oct. 6	25	9 15	9 11	9 12	10 12	40 2	10 0½	18,200	4,550	127
" 13	26	9 14	10 0	9 14	10 10	40 6	10 1½	18,314	4,578	28
" 20	27	9 14	9 2	10 0	10 14	39 14	9 15½	18,087	4,521	-56
" 27	28	10 3	9 12	10 6	10 15	41 4	10 5	18,711	4,677	156
Nov. 3	29	10 2	10 2	10 3	11 1	41 8	10 6	18,824	4,706	28
" 10	30	10 2	10 2	10 5	11 4	41 13	10 7½	18,966	4,741	35
" 17	31	10 4	10 3	10 10	11 2	42 3	10 8¾	19,136	4,784	42
" 24	32	9 13	9 12	10 1	10 14	40 8	10 2	18,370	4,592	-191
Dec. 2	33	10 7	10 5	10 8	11 5	42 9	10 10¼	19,306	4,826	233
" 8	34	10 3	10 4	10 8	11 5					
" 15	35	11 0	11 0	11 0	12 0					
" 22	.....	10 14	11 3	11 3	11 15					
" 30	.....	10 10	10 15	11 1	10 13					
Jan. 5	.....	11 10	11 14	11 13	12 9					

TABLE No. 18.—MEASUREMENT OF FOX PUPS DURING PERIOD OF GROWTH

Litter No. 6D. Dam GRS 14. Sire GT 1B. Born, April 13, 1926

Date	Week	Pup GRS 23D			Pup GRS 25D			Pup GRS 27D			Pup GRS 29D		
		Body	Tail	Total	Body	Tail	Total	Body	Tail	Total	Body	Tail	Total
		in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
May 12	4	11	4⅜	15⅜	10½	5	15½	10	4½	14½	10½	4⅜	15½
" 19	5	12½	5¼	18	11¾	6	17¾	11⅜	5½	17	11½	5½	17
" 26	6	13¾	7¼	21	13	7	20	13½	5⅝	19	12¾	6¾	19½
June 2	7	15	8½	23½	15	8½	23½	14½	7½	21½	15	7½	22½
" 9	8	16½	9½	25½	15½	9½	24¾	15½	8½	24	15½	8½	24¼
" 15	9	17	10¼	27¼	17½	10¼	27½	16⅝	9½	26½	17	9½	26½
" 23	10	18	10½	28½	17⅝	11½	29	17	10½	27½	17½	10⅝	28¼
" 30	11	19	12	31	18	12	30	17½	11½	28⅝	19	11¼	30¼
July 7	12	19	13½	32½	19	13	32	19½	12½	31	18	13	31
" 14	13	19½	14½	34½	20	13½	33½	20	13½	33½	20	13½	33½
" 21	14	20½	14½	35	21	14	35	20½	13¾	34¼	20½	13½	34
" 28	15	20¾	14¼	36	20½	14¾	35¼	21½	14½	36	20½	14½	35
Aug. 4	16	22½	15	37½	21½	15	36½	22	15	37	21	15	36
" 11	17	23	15½	38½	22	15½	37½	22½	15½	38	22½	15½	38
" 18	18	23	16	39	22	16	38	23	16	39	23	16	39
" 25	19	23	16½	39½	22½	16	38½	23	16	39	23	16	39
Sept. 1	20	23½	17	40½	23½	16	39½	24	16½	40½	23½	17	40½
" 8	21	24	17	41	24	16½	40½	24	17	41	24	17	41
" 15	22	24½	17	41½	24½	17	41½	24½	17	41½	25	17½	42½
" 22	23	25	17	42	24½	17	41½	24½	17	41½	25	17½	42½
" 29	24	25	17½	42½	24½	17½	41¾	24½	17½	41¾	24½	17½	42¼
Oct. 6	25	25	17½	42½	25	17½	42½	25½	16½	41¾	25½	17½	43
" 13	26												
" 20	27												
" 27	28												

THE INFLUENCE OF DIET UPON THE GUARD HAIR, UNDERFUR COLOUR OF FUR, AND BREEDING QUALITIES

At the beginning of September 1927 the foxes were divided into several groups and were fed rations as shown in table No. 19. For convenience those rations having a high meat content were designated "Carnivorous", those having high meat content, low fat and vegetable content were designated "Low Fat"; the rations containing low meat, high vegetable and cereal content were designated "Omnivorous" and the rations containing the mean between the Carnivorous and Omnivorous were designated as "Mean". In tables No. 20 to 24 are given the weights of the foxes during the months they were fed on the respective rations.

INFLUENCE OF DIET UPON THE GAIN OF WEIGHT DURING THE FALL MONTHS

It will be observed that there was practically very little difference in the increase in weight of the foxes during the month of September and the first part of October, but later on in the season those foxes fed carnivorous, low fat and mean rations made a more rapid gain in weight, in general the increase in weight being greater for the foxes that were fed the carnivorous rations. All the previous evidence that we have obtained demonstrated very conclusively that a large increase in weight during the fall months is conducive to good breeding results in the subsequent season. As there was very little difference in the increase in weight of the foxes on the various rations during the month of September and part of October it appears very questionable whether it is desirable to feed large quantities of meat during the early fall months in order to produce a favourable increase in weight. On the other hand the results would indicate that the amount of meat in the rations should be increased during the latter part of October or the beginning of November in order to have the foxes in good condition for breeding purposes.

TABLE No. 19.—DETAILS OF DAILY RATIONS FED FROM BEGINNING OF SEPTEMBER TO END OF DECEMBER, 1927

Type of Ration	Gm/Kw	Cal/Kw	Small foxes	Medium foxes	Large foxes	Ex. large foxes
Mean Rations—						
Meat	32	40	4½	5	5½	6
Cereals	8	30	1⅛	1¼	1⅜	1½
Milk	35	25	140cc.	156cc.	171cc.	187cc.
Suet	1	9	⅝	⅝	1¼	1⅜
Vegetables	8	?	1⅛	1¼	1⅜	1½
Carnivorous Rations—						
Meat	64	80	9	10	11	12
Cereals	4	15	⅝	⅝	1⅛	⅞
Milk	17½	12	70	78	85	93
Omnivorous Rations—						
Meat	16	20	2¼	2½	2¾	3
Cereals	12	45	1⅝	1¾	2 1/16	2¼
Milk	52½	37	210 cc.	234 cc.	256 cc.	280 cc.
Vegetables	12	?	1⅝	1¾	2 1/16	2¼
Added Proteins—						
Meat	32	40	4½	5	5½	6
Cereals	8	30	1⅛	1¼	1⅜	1½
Milk	35	25	140 cc.	145cc.	171 cc.	187 cc.
Suet	1	9	⅝	⅝	1¼	1⅜
Vegetables	8	?	1⅛	1¼	1⅜	1½
Cowhide, liquid stick, q.s	?					
Low Fat Ration—						
Meat	48	60	6¾	7½	8¼	9
Cereals	8	30	1⅛	1¼	1⅜	1½
Skim milk	35	12	140 cc.	156 cc.	171 cc.	187 cc.
Vegetables	8	.....	1⅛	1¼	1⅜	1½

TABLE NO. 20.—WEIGHTS OF FOXES FED ON MEAN RATION

Fox	September								October								November												December							
	7		14		21		28		5		12		19		26		2		9		16		23		30		7		14		21		28			
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.		
4A	10	11	10	09	11	00	10	15	10	14	11	00	11	03	10	11	11	01	10	13	11	02	11	06	11	09	11	12	12	02	12	08	12	09		
GRS 27D	10	05	9	15	10	07	10	09	10	11	10	01	10	06	10	01	10	11	10	06	11	00	11	04	11	08	11	10	11	14	12	11	12	05		
GRS 1D	11	04	10	15	10	06	11	08	11	08	11	08	11	14	11	00	11	10	11	06	11	13	12	01	12	08	12	04	12	08	12	15	12	15		
GRS 9D	10	11	10	11	10	15	11	08	11	06	11	07	11	06	10	14	11	09	11	04	12	04	12	07	12	10	12	14	13	02	12	10	12	15		
GRS 7D	10	00	9	11	10	03	10	04	10	06	10	01	10	07	10	01	10	10	10	10	11	05	11	15	12	10	12	13	13	03	13	08	13	07		
GRS 14D	8	08	8	04	8	13	8	10	8	11	9	08	9	02	8	07	9	06	9	04	10	01	10	02	10	06	10	06	10	07	10	04	10	01		
7B	10	03	9	15	10	04	9	09	10	09	10	10	10	13	10	00	10	09	10	08	11	09	11	10	12	01	12	04	12	11	13	08	13	01		
19C	9	00	8	07	8	09	8	10	8	11	8	05	9	06	8	10	9	14	9	00	9	09	9	15	10	05	10	03	10	14	11	04	11	03		
42C	9	02	8	10	8	15	9	02	8	15	8	06	8	12	8	08	8	14	9	00	9	12	9	15	10	09	10	09	11	00	11	07	11	01		
GRS 52D	7	04	7	00	7	04	6	15	7	04	7	00	7	05	7	01	7	12	7	02	8	02	8	04	8	11	9	00	9	03	9	05	9	09		
33A	7	04	7	00	7	04	7	07	7	11	7	13	8	02	7	13	8	06	8	04	9	03	9	08	10	00	10	03	10	07	10	11	10	14		
GRS 22D	8	12	8	07	8	12	8	10	8	13	8	02	8	11	8	05	8	12	8	12	9	09	9	14	10	01	10	04	10	08	11	10	10	08		
113C	10	12	10	05	10	12	10	04	11	01	11	00	11	11	11	02	11	12	11	08	12	07	12	14	13	09	13	13	14	03	14	04	14	05		
GRS 14	9	13	9	11	10	03	10	00	10	00	9	10	9	11	9	00	9	10	9	04	9	14	10	08	10	12	11	01	10	15	11	03	11	04		
Aggregate	133	09	129	08	133	11	133	15	136	08	134	07	138	13	131	09	140	80	137	01	147	10	151	11	157	03	159	00	163	01	166	13	166	01		
Average	9	09	9	04	9	09	9	09	9	12	9	10	9	15	9	06	10	01	9	13	10	09	11	13	11	04	11	06	11	10	11	15	11	14		
GRS 15C	9	15	9	12	10	06	10	08	10	10	10	07	11	02	10	05	11	00	10	08	11	02	12	04	12	13	13	03									
GRS 35D	9	00	8	12	9	04	9	00	9	08	.....		9	03	8	13	9	07	9	04	9	15	10	05	10	11	10	10									
GRS 13A	12	07	12	00	12	09	12	06	12	10	12	03	13	01	12	05	13	02	13	02	13	12	14	02	14	09	14	11									
Aggregate	31	06	30	08	33	03	31	14	32	12	.....		33	06	31	07	33	09	33	14	34	13	16	13	38	01	38	08									
Average	10	07	10	03	11	01	10	10	10	15	.....		11	02	10	08	11	03	10	15	11	10	12	04	12	11	12	13									

TABLE No. 21.—WEIGHTS OF FOXES FED ON CARNIVOROUS RATION

Fox	September				October				November					December			
	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
GRS 23B.....	9 06	9 09	10 01	10 07	10 10	10 12	11 08	10 15	12 00	11 08	12 15	13 14	14 11	15 05	15 13	16 04	16 06
GRS 13.....	10 03	10 04	10 11	11 06	11 07	11 00	11 07	11 03	12 00	11 10	12 15	13 10	14 04	14 06	14 08	14 12	14 09
GRS 29D....	11 08	11 06	11 10	11 12	12 02	12 10	12 14	12 05	13 04	13 00	14 10	14 14	15 11	16 05	16 10	16 12	16 12
GRS 1A.....	9 04	9 12	9 00	9 06	9 08	9 01	9 08	8 15	9 08	9 04	10 09	11 06	12 03	12 06	12 07	12 11	12 13
43C.....	10 00	9 10	10 06	10 10	10 11	11 00	11 10	11 01	11 15	11 08	12 14	13 06	13 07	13 05	13 02	13 06	12 08
45C.....	8 06	8 06	8 10	9 02	9 03	9 02	9 07	9 02	10 00	9 07	10 10	11 04	11 13	12 03	12 09	12 13	12 11
GRS 4D....	10 00	9 10	10 02	10 04	10 08	10 11	11 01	10 09	11 03	11 00	12 04	12 14	13 06	13 06	13 06	13 01	12 08
GRS 18.....	9 04	9 04	9 08	9 13	10 02	9 15	10 10	10 03	10 13	10 09	11 11	12 07	13 02	13 09	13 15	14 03	14 02
145C.....	9 06	8 04	8 11	8 09	8 12	8 02	8 12	8 02	8 08	8 02	9 04	9 04	9 07	9 02	9 05	9 09	9 06
GRS 22A.....	8 00	7 13	8 03	8 10	8 10	8 02	9 00	8 08	9 04	8 15	9 15	10 04	10 13	11 15	11 08	11 08	11 12
Aggregate.....	95 05	89 13	96 14	99 15	101 99	100 07	105 13	100 15	108 07	104 15	117 11	123 03	128 13	131 14	133 03	134 15	133 07
Average.....	9 08	9 00	9 11	10 00	10 02	10 01	10 09	10 01	10 13	10 08	11 12	12 05	12 14	13 03	13 05	13 08	13 05
GRS 12B.....	10 01	9 14	10 02	10 05	10 07	9 10	8 10	7 08	.....	.....	7 07	8 01	8 12	8 14			
GRS 6.....	8 14	8 12	9 00	9 00	9 06	8 14	7 10	7 01									

TABLE No. 22.—WEIGHTS OF FOXES FED ON OMNIVOROUS RATION

Fox	September				October				November					December			
	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
1B.....	11 11	11 06	11 12	11 10	11 12	12 02	11 14	11 07	12 00	11 14	12 08	12 10	12 14	12 15	13 00	13 08	13 05
51C.....	8 04	8 06	8 14	8 12	9 04	9 06	10 01	9 03	10 02	10 00	10 08	10 06	10 12	10 12	10 11	10 15	10 11
6C.....	8 14	8 10	9 02	8 12	8 14	8 14	9 08	8 14	9 06	9 04	9 12	9 14	9 00	10 01	10 05	10 07	10 05
9C.....	7 14	7 10	8 05	8 00	8 06	8 14	9 03	8 08	9 04	9 03	9 11	9 14	10 03	10 04	10 09	10 11	11 02
GRS 5D.....	10 04	9 12	9 14	10 02	9 14	10 00	10 02	9 09	10 04	10 02	10 08	10 12	10 15	10 12	10 15	11 01	11 04
16C.....	7 14	7 10	7 15	8 02	8 02	8 03	8 08	7 13	8 07	8 02	8 14	8 15	9 03	9 05	9 05	10 01	9 12
GRS 12D....	8 08	8 06	8 12	8 12	9 00	9 00	9 06	8 13	9 08	9 04	9 15	9 10	9 13	9 15	10 02	10 03	10 01
GRS 8D.....	8 14	8 14	8 10	8 08	8 12	8 10	9 00	8 09	9 00	8 14	9 07	9 05	9 08	9 10	9 15	10 03	10 01
30C.....	8 04	7 14	8 04	7 14	8 01	8 01	8 00	7 11	8 00	7 06	7 13	7 14	7 10	7 04	7 05		
219C.....	7 04	7 00	7 06	7 06	7 04	7 04	7 06	7 01	7 10	7 05	7 12	7 12	7 12	7 12	7 13		
137C.....	8 00	7 08	7 12	7 10	7 11	7 06	7 10	7 01	7 12	7 04	7 13	7 08	7 10	7 00	6 09		
Aggregate.....	95 11	93 00	96 10	95 08	97 00	97 12	100 10	94 09	101 05	98 10	104 09	104 08	105 04	105 10	106 09	87 01	86 09
Average.....	8 11	8 07	8 13	8 11	8 13	8 14	9 02	8 09	9 03	9 00	9 08	9 08	9 09	9 09	9 11	10 14	10 13

TABLE No. 23.—WEIGHTS OF FOXES FED ON ADDED PROTEIN RATION

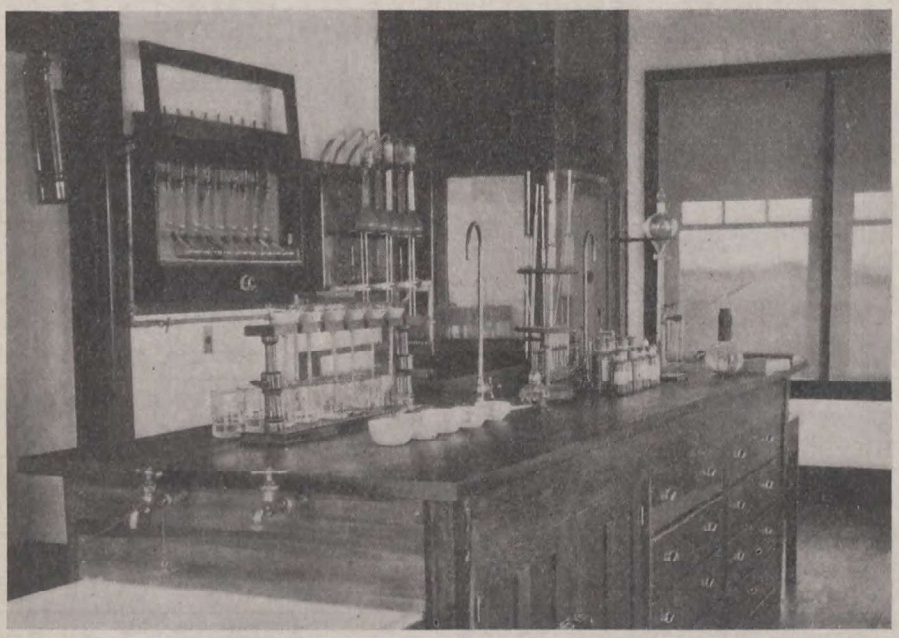
Fox	September				October				November					December			
	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
GRS 21A.....	9 00	8 14	9 04	9 08	9 12	9 04	10 01	9 05	10 04	9 12	10 12	10 15	11 04	11 09	11 12		
GRS 19A.....	10 07	10 06	10 12	11 00	11 06	11 12	11 12	11 03	12 04	12 00	12 15	13 02	13 09	13 11	14 01		
47C.....	8 06	8 04	8 12	9 00	9 02	9 06	9 08	9 01	9 13	9 12	10 08	10 10	11 00	11 03	11 09	11 12	11 11
GRS 53D.....	8 08	8 03	9 00	9 02	9 04	9 02	10 00	9 03	10 00	9 07	10 03	10 06	10 12	10 15	11 03	11 05	11 00
GRS 4C.....	9 08	9 02	9 06	9 06	9 07	9 03	7 10	7 07	8 08	8 08	9 03	9 07	9 14	10 00			
GRS 6A.....	7 12	7 14	8 05	8 10	8 14	9 00	9 03	8 13	9 10	9 08	10 02	10 09	10 11	11 01	11 08	11 11	11 10
GRS 30.....	9 04	8 14	9 09	9 13	10 00	9 07	10 08	9 14	10 12	10 08	11 03	11 06	11 09	11 09	12 09	12 01	11 08
GRS 34D.....	8 04	8 09	8 12	8 12	9 00	8 10	8 13	8 05	9 00	8 15	9 08	9 10	9 15	9 12	9 13		
232C.....	8 02	7 08	8 00	8 04	8 06	8 06	8 10	8 03	8 13	8 04	9 04	9 00	8 14	8 11	8 15	9 01	8 14
117B.....	7 13	7 11	8 01	8 01	8 04	8 00	8 08	8 00	8 05	8 08	9 02	9 06	9 10	9 12	10 02	10 02	10 05
Aggregate.....	83 13	80 11	89 13	91 08	93 07	92 02	94 00	89 06	97 05	95 02	102 12	104 07	107 02	108 06	100 08	66 00	65 00
Average.....	8 06	8 01	9 00	9 02	9 05	9 03	9 07	8 15	9 12	9 08	10 04	10 07	10 11	10 13	11 03	11 00	10 13
102C.....	7 09	7 06	8 02	8 06	8 08	7 14	8 08	8 00	8 06	8 00	8 14	8 13	8 13	8 09	8 11	8 13	8 13
GRS 32.....	9 03	8 12	9 04	9 10	9 12	8 08	9 06	8 11	9 08	9 04	9 14	9 01	8 00				

TABLE No. 24.—WEIGHTS OF FOXES FED ON LOW FAT RATION

Fox	September				October				November					December			
	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
GRS 11D.....	10 02	10 05	10 07	10 09	10 13	10 03	11 00	10 09	11 05	11 00	11 12	12 00	12 07	12 07			
GRS 25D.....	10 13	10 12	11 05	11 04	11 08	11 09	12 06	11 09	12 06	12 00	12 15	13 00	13 08	13 11	13 13	14 03	14 01
GRS 9C.....	9 13	9 13	10 08	10 09	11 01	10 11	11 03	10 09	11 05	11 12	11 12	12 04	12 10	12 09	12 09		
GRS 7B.....	10 10	10 10	11 04	11 03	11 09	11 10	12 00	11 07	12 04	12 00	12 12	13 02	13 07	13 04			
51C.....	9 14	8 15	9 05	9 08	9 12	9 04	9 12	9 07	10 04	10 00	10 10	10 14	11 04	11 08	11 14	12 06	12 01
GRS 10D.....	9 01	8 10	9 04	9 09	9 07	9 04	10 07	9 05	10 02	9 12	10 07	10 11	11 03	11 06	11 11	11 11	11 12
GRS 24B.....	7 12	7 10	8 00	8 00	8 03	8 01	8 09	8 05	8 04	8 04	8 11	8 14	9 02	9 06	9 08	9 10	9 10
136C.....	7 10	7 07	8 02	8 02	8 06	8 00	9 02	8 07	9 04	8 15	9 10	9 08	9 06	9 09	10 02	10 07	10 03
Aggregate.....	75 11	74 02	78 03	78 12	80 11	78 10	84 07	79 10	85 02	83 11	88 09	90 05	92 15	93 12	69 09	58 05	57 11
Average.....	9 07	9 04	9 12	9 13	10 01	9 13	10 09	10 00	10 10	10 07	11 01	11 05	11 10	11 11	11 09	11 10	11 08
50C.....	7 06	7 14	8 04	8 08	9 00	9 02	9 11										
GRS 14B.....	8 08	8 00	8 08	8 10	8 12	8 02	6 60	6 00	7 00	7 04	8 03	8 06	8 11	8 13	9 01	9 07	9 09

INFLUENCE OF DIET ON THE GUARD HAIR

The foxes that were fed the carnivorous and low fat rations early in September began to develop a large volume of fur but the guard hair was weak and very open which gave a streaky appearance to the fur and, as a whole, the development of the guard hair as regards strength and density was not in any way favourable. After the month of November there was a slight improvement in the fur but it still maintained a streaky and open appearance. On the other hand foxes fed omnivorous and mean rations developed a guard hair of a good strength and density and the fur was close and dense and during the months of September and October presented very desirable characteristics. The evidence which we obtained regarding the development of the guard hair with the foxes on the different rations demonstrates very conclusively that it is very disastrous to feed foxes a high meat ration during the early fall months.



Laboratory at the Experimental Fox Ranch.

INFLUENCE OF DIET UPON THE UNDERFUR

The foxes that were fed on the carnivorous and the low fat ration developed early in the fall a large volume of underfur, but it was poor in texture and was inclined to mat, which tended to give an open and streaky appearance to the fur. A number of the foxes developed a white underfur which was very pronounced with regard to the brush. On the other hand the foxes fed on omnivorous and mean rations had a very favourable development of the underfur which was of a very good texture and a desirable dark slate colour. The foxes fed a mean ration developed eventually as large a volume of underfur as the foxes fed on the carnivorous and low fat rations, while the foxes on the omnivorous rations had not a very great volume of underfur. The results with regard to the development of the underfur also indicate that it is not desirable to feed high meat rations during the early fall months.

INFLUENCE OF DIET ON THE COLOUR OF THE FUR

A great number of the foxes that were fed on carnivorous and low fat rations developed a pronounced brown shade early in September and October. During the months of November and December it was noted that there was not much increase in the brown shade that had developed early in the fall and in cases where there was an extremely slight brown shade this could not be observed at the end of December and the foxes had a clear black colour. It might be stated here that early in the spring all the foxes that were fed these rations developed a light brown colour, and a number of the pups acquired a very unfavourable brown colour during the breeding season. With the foxes fed an omnivorous ration all retained, without exception, a clear black colour throughout the fall and spring months and, in general, the same results obtained with the foxes that were fed on a mean ration.

The results obtained with regard to the colour of the fur demonstrate very conclusively that as far as the colour of the fur is concerned high meat rations during the early fall months should be rigidly avoided.

THE INFLUENCE OF DIET FED DURING THE FALL MONTHS UPON THE BREEDING QUALITIES OF THE FOXES

The foxes that were fed on mean and carnivorous rations gave the most favourable breeding results during the subsequent breeding season, but in this respect it should be here stated that in all cases with the females that had developed a brown shade losses occurred at the whelping time. Where there was a very pronounced brown shade, whilst the pups appeared to be born strong and vigorous, they all died within the first two or three days. Where the brown shade was less pronounced one or more of the pups died during the first two weeks. In all of these cases the females, upon being examined, had an excessive amount of milk and from these results and the experience that we have had with other foxes that have a pronounced brown shade at whelping time, it would seem advisable in such cases, on the first signs of any irregularities, to catch the female and to milk her dry and then place the pups on her to suck for two or three times before placing them back in the pen. Probably it would be advisable to repeat this two or three times during the first two or three weeks after birth.

GENERAL DISCUSSION

As the foxes fed high meat rations develop during the early fall months a very pronounced brown shade and have a poor development both as regards the quality of the guard hair and underfur, it seems fairly conclusive evidence that high meat rations should be tabooed during the early fall months. On the other hand the breeding results would indicate that sometime during the fall months the foxes should receive an increased amount of meat. An analysis of the results as a whole indicate that the change in the rations should be made about the beginning of November and that for practical purposes the foxes should be fed a ration which would be a compromise between the mean and carnivorous rations. The meat content of the rations fed to foxes during the months of September and October should be in the neighbourhood of that shown in the mean ration but during the months of November and December the amount of meat fed should be slightly increased. All the results obtained on the meat requirements would indicate that during the breeding season the meat content of the ration, certainly for the females, should be reduced to not more than five ounces daily.

The evidence obtained would indicate that it is not desirable to feed large quantities of meat before the beginning of November. On the other hand increasing the amount of meat during the months of November and December

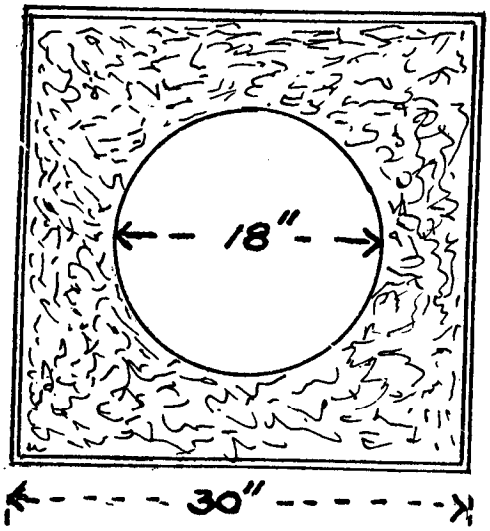
appears to induce favourable breeding results. In the wild state foxes will eat large quantities of vegetable matter. When the temperature drops in the fall below the freezing point some of the edible vegetation would be destroyed and after a few frosts it would be very questionable if there is any form of edible vegetation except wild berries left for foxes in the wild state. Naturally they would become mainly meat eating animals. The results that we have obtained in this respect appear to be in accordance with natural conditions.

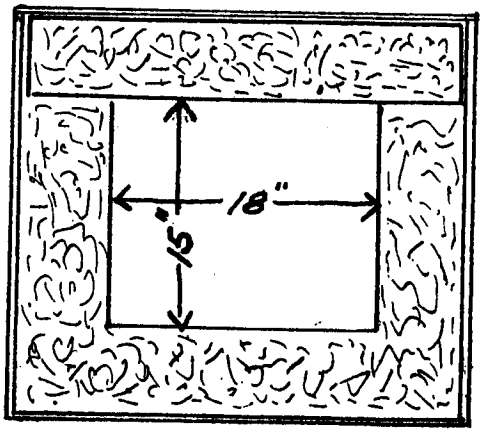
SCURVY IN SILVER FOXES

In studying the total caloric requirements, protein requirements, fat requirements, etc., of silver foxes it has been our general policy to add to the rations all the well known food accessories. It was decided to study the effect of rations to which none of the vitamins were added. The rations that were outlined contained varying amounts of meat, cooked cereals and milk. The milk and cereals were cooked together over a fire and then placed in a fireless cooker for twenty-four hours. We have found that it is not desirable to leave the cooked cereals in the fireless cooker for more than two hours. Undoubtedly after the hot cereals have been in the fireless cooker for twenty-four hours most of the vitamin content has been destroyed. Frozen meat was fed, but we have no definite evidence with regard to the length of time it had been in storage. These rations were fed to a large number of foxes during the fall months of 1926. Foxes on this ration did not make a favourable gain in weight during the fall. Although they were fed a ration of slightly higher caloric value than had been the case in previous years, foxes whose average weight at the end of December had been over fourteen pounds weighed less than eleven pounds and foxes whose average weight had been twelve pounds weighed under ten pounds. In January it was noted that some of the females had difficulty in chewing their meat rations. Upon examination it was found that the molar teeth were loose, the gums were swollen and showed a very pronounced dark bluish hyperemia. In many cases there was pronounced swelling of the tail which was dry and scaly. The pups born from these females appeared to be healthy and vigorous at birth but in many cases the entire litter died within two days. It was noted with these pups that there was a marked palor of the skin and that the legs were swollen. In the litters that survived it was observed when the pups were about two weeks old that the swelling of the hind legs became more pronounced, in many cases being stiff and helpless and the pups dragging them behind as they crawled around the nests. Numerous subcutaneous haemorrhagic areas appeared on the tail and in some cases all of the hind quarters were dry and scaly. In some cases there was spontaneous fracture of the tails and in all cases where the females had been fed the scorbutic ration there were numerous subcutaneous haemorrhages on the white tips of the tails of the pups which had a dry and dead appearance. These symptoms appeared to present convincing evidence that a severe form of infantile scurvy was to be contended with, therefore, it was decided to ascertain the effect of feeding lemon juice to females nursing the affected pups. In a few days marked beneficial results were observed. The skin of the tails assumed a natural fresh pink colour and there was a rapid decrease in the swelling of the limbs and within two or three days the pups had a normal gait with their hind legs.

Previous to the subsequent breeding season the females were fed relatively large amounts of vegetables and in all cases where the females that had lost their pups in previous years had been retained for breeding purposes they raised their litters and in no case where vegetables were fed has there been any sign of subcutaneous hæmorrhagic areas on the tails of the pups. Without question the above-mentioned foxes were suffering from a form of scurvy and the pups that they produced were subject to a very severe form of infantile scurvy.

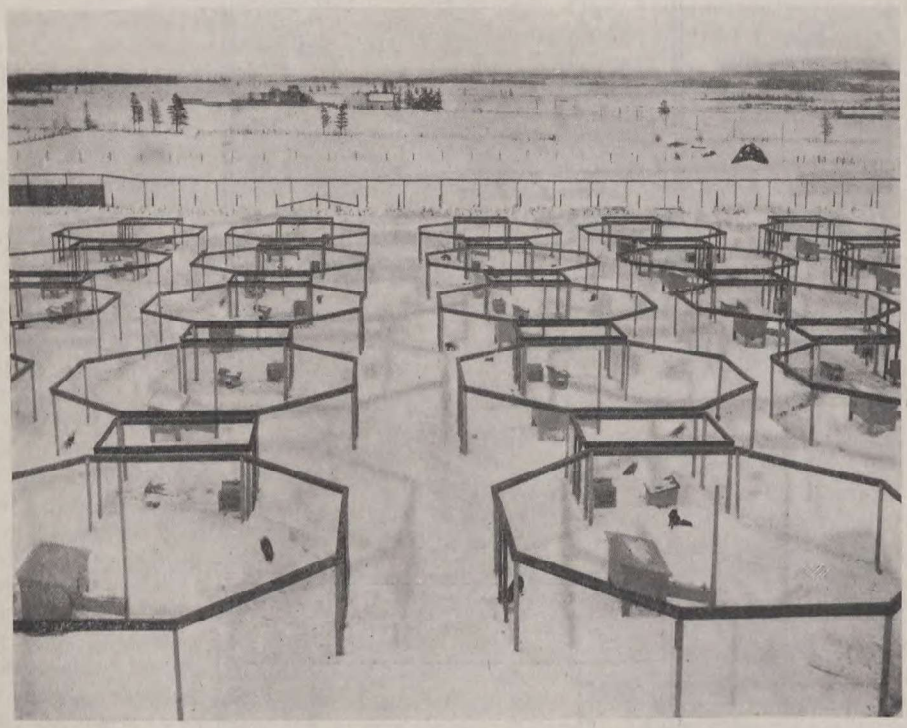
FIRELESS COOKER.





However great may have been the ravages that scurvy has made upon human beings that have been confined during long sieges or during long sea voyages and on various expeditions, to the same extent, if not greater, scurvy appears to have been a great scourge and ravage to silver foxes confined in captivity. Innumerable foxes have been brought to the Experimental Fox Ranch showing typical signs of scurvy, and numerous reports by letter and phone describing symptoms have continually been received.

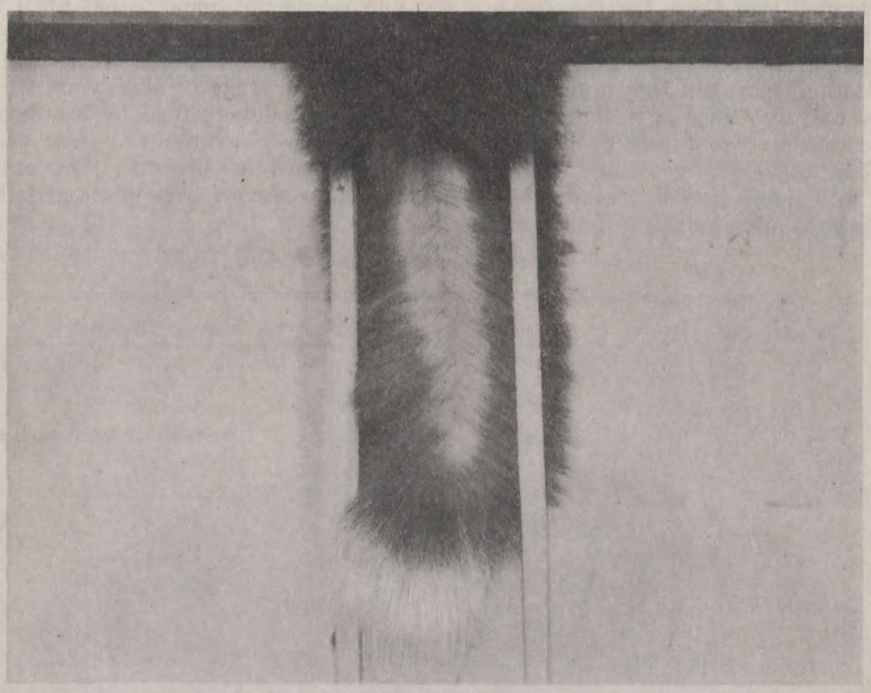
The symptoms of scurvy in silver foxes are first shown by a marked palor of the skin which may progress until the condition which is known among breeders as " white nose " is observed. This is followed by a peculiar swelling of the extremities, more particularly of the tail, which becomes dry and scaly and shows many subcutaneous haemorrhagic areas, especially under the white tip. The teeth become loose and the gums swollen and there is a dark bluish hyperemia extending as a dark band along the full length of the gums. Generally this is accompanied by chronic constipation and by internal haemorrhages of the intestines.



Winter view of the Experimental Fox Ranch.

During recent years there has been a great increase in the number of cloudy tips in silver foxes. It appears extremely probable that the subcutaneous haemorrhages that are liable to occur in the extremity of the tails when the foxes are subject to scurvy are the immediate cause of the great majority of the cases of the clouded tips that at the present time are very general. In many ranches a large percentage of the pups lose the white tips before they are four weeks old. Undoubtedly this is due to a form of infantile scurvy that causes spontaneous fracture of the tail. The Experimental Fox Ranch has received through the mail a large number of white tips that have been found in the nest before the pups were a month old.

In our experimental work we have demonstrated that scurvy and infantile scurvy can be counteracted by feeding a certain amount of vegetables in season. During the summer months the foxes should receive about two ounces of green vegetables daily, preferably cabbage, young turnip tops, young beet tops, spinach or other green vegetables of that nature, but it must be remembered that it is not desirable to feed the turnip tops and the beet tops after the root has begun to develop to a marked extent. During the fall months ripe vegetables should be fed in about the same quantity, viz., swede turnips, carrots, tomatoes, onions, etc., but in all cases with both classes of vegetables it is necessary that they should be ground to a fine pulp and we would recommend that they should be ground with part of the meat rations and fed together.



Developments of white underfur in the brush.

The evidence that we have obtained would indicate that with silver foxes in captivity all forms of scurvy can be guarded against if fresh vegetables are fed during the summer and fall months, and if the foxes have been fed these during those months they do not require the vegetables during the winter months. The evidence indicates that fresh vegetables fed during the winter months are of little value in warding off infantile scurvy in new born pups. On the other hand during the early growth of the pups there appears to be a large requirement for the vitamin " C " and for that reason we believe that it is very necessary to feed relatively large quantities during the first few weeks of the lactation period and that the best form in which to give it to the foxes is by feeding lemon juice to the female suckling her young, as the lemon juice appears to be more potent than either orange juice or canned tomatoes.

PRODUCTION OF WHITE UNDERFUR

On different occasions a number of foxes have shown a very pronounced development of white underfur. The white underfur would start as a streak at the base of the fur and as the fur grew would develop into a well defined white band. In some cases there would be, in a short time, a marked change and the fur would become dark at the base and form a dark band. In several cases foxes have shown as many as five or six alternating bands of white and dark underfur. These cases have occurred when the foxes have been fed a high meat ration or for some reason or other have been subject to some metabolic disturbances. We are herewith submitting the weights of two foxes both of which developed a very pronounced white underfur in the brush, a photograph of which is shown here. These foxes were placed in large exercising pens during the month of July, one with a number of males and the other with a number of females. It was noted that these foxes were very shy and would not come to eat until the feeder had left the vicinity of the pens. As there had been a rapid decrease in weight after the foxes had been in the pen for one week they were moved to individual pens but they appeared to have reached a stage of starvation where they had lost their appetite and it was only by introducing food by a stomach tube that we eventually got the foxes after about two weeks into a state where they would eat any rations. The male was not used for breeding purposes in the subsequent breeding season but the female gave birth to two pups and they have developed into very fine foxes.

TABLE No. 25.—WEIGHT OF FOXES SHOWING WHITE UNDERFUR

Dates	9C		33A		Remarks
	lb.	oz	lb.	oz.	
July 27	8	04	7	08	
Aug. 3	7	10	6	00	
" 10	7	08	5	10	White streak began to develop
" 17	6	15	5	03	
" 25	6	13	5	13	
" 31	7	08	6	08	
Sept. 7	7	14	7	04	
" 14	7	10	7	00	
" 21	8	05	7	04	
" 28	8	00	7	07	Photograph taken
Oct. 5	8	06	7	11	
" 12	8	14	7	13	
" 19	9	03	8	02	
" 26	8	08	7	13	
Nov. 2	9	04	8	06	
" 9	9	03	8	04	
" 16	9	11	9	03	
" 23	9	14	9	08	
Dec. 7	10	04	10	03	
" 14	10	09	10	07	
" 21	10	11	10	11	

In a large number of ranches it has been observed that foxes have an extremely white underfur. In many of these cases a large quantity of meat is being fed without the addition of any bones or bone meal to the ration. In many cases the fox rancher throws in a bone for the foxes to gnaw but undoubtedly they are not able to obtain the full amount of their bone requirements from bones of cows, etc. In a large number of post mortem examinations we have found that there is a pronounced distention and an inflammatory condition of the stomach where the foxes have been fed a heavy meat ration, especially without the addition of ground bone or bone meal. In our experimental work where bone meal has been added to the daily rations, the fur of the brush has maintained a dark slate colour, much darker than is found in the average ranch.

The evidence that we have obtained regarding the white underfur indicates that it was due to gastric disturbances which, in some cases, can be controlled by the feeding of either freshly ground bone or dried bone meal. Without question it is a very vital mistake to attempt to feed foxes in captivity any meat without adding at the same time a certain amount of bone. In the wild state when a fox catches a mouse, rabbit, ground hog, etc., he eats the whole carcass so that every time he has a meal of meat he gets a certain amount of bone. On account of the greater number of irregularities that occur when meat is being fed to foxes in captivity we consider that the fox breeders are taking altogether too much risk in feeding meat without adding at the same time a certain amount of bone meal and we would recommend that with every ten pounds of meat at least one pound of bone, either freshly ground or the meal, should be fed at the same time.

FIELD DAY

During the annual meetings of the Canadian National Fox Breeders Association on July 13 and 14, 1927, " Field Day " was held at the Experimental Fox Ranch. During the afternoon the fox breeders were taken through the building and the ranch and given particulars and direct evidence of the experimental work that was being carried on. Addresses were given by E. H. Raynor of E. H. Raynor, Ltd., Montreal, and G. Ennis Smith, Superintendent of the Ranch. Refreshments were served during the afternoon.

Members of the Canadian National Fox Breeders' Association. Field Day, July 14, 1927.

APPENDIX

As an appendix to this report we have outlined daily rations for adult foxes during different seasons of the year, for vixens during the lactation period, and for pups for different periods of growth. These rations are based upon the results of the experimental work that has been carried out up to date.

It must be understood that as the experimental work is still under way that these rations will be subject to further modification. As far as caloric value is concerned they are in accordance with the rations that have been recommended previously. The rations, we believe, are self explanatory.

With regard to the Potassium iodide solution, we are herewith giving the method in which this should be prepared:—

POTASSIUM IODIDE SOLUTION

Take one ounce of potassium iodide and dissolve in one quart of water. Label this "Strong Solution of Potassium Iodide".

Take one ounce of this strong solution and make up to one quart with water. Label this "Weak Solution of Potassium Iodide".

One ounce of the weak solution of potassium iodide is sufficient for the daily requirements of twenty foxes. We would warn the fox breeders against using the strong solution of potassium iodide and it should be understood that, wherever a solution of potassium iodide is mentioned in the following outline of rations, it refers only to the weak solution of potassium iodide.

With regard to the cereals in the rations, in all cases the weight has been given of the cereals in the dry state before cooking. The cereals should be well cooked, but not overcooked, in the form of either porridge or bread or biscuits. We would recommend that, during the summer and early fall months, the cereals should be fed as a porridge, but when the temperature falls below freezing point, they should be fed as a well-cooked bread or biscuit.

According to the evidence that we have obtained, the cereals should be cooked in three to four times their weight of water, should be brought to boil over a stove and then placed in a fireless cooker, particulars of the structure of which is shown on page 41. It is not advisable that these should be left in more than two hours as a longer period would tend to overcook the cereals and hydrolize them which would have a detrimental effect on their value and also the prolonged heat would destroy the vitamin content.

With regard to the vegetables, it is necessary that they should be ground to a fairly fine pulp.

Outline of rations has been given for small and large foxes. Foxes having a body measurement, that is the length from the tip of the nose to the base of the tail, of approximately 24 inches are considered small foxes; those having a body measurement of 26 inches or over, as large foxes. We would recommend that all foxes born during the year should be fed as large foxes in the fall months and in the subsequent breeding season.

TABLE No. 26—SUMMER RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

SMALL FOXES

From June 1 to September 1

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.						
Rice.....15 oz.	Soda biscuit...20 oz.	Bread.....30 oz.	Rice.....15 oz.	Soda biscuits..20 oz.	Rice.....15 oz.	Bread.....30 oz.
Wheat flour..... 2½ oz.	.....	.....	Wheat flour.....2½ oz.	.....	Wheat flour.... 2½ oz.	
Rolled oats..... 2½ oz.	.....	.....	Rolled oats.....2½ oz.	.....	Rolled oats.... 2½ oz.	
Tripe, ground.....20 oz.	Tripe, ground..20 oz.	Tripe, ground..20 oz.	Tripe, ground..20 oz.	Tripe, ground..20 oz.	Tripe, ground.. 20 oz.	Tripe, ground..20 oz.
Whole milk..... 4½ pt.	Whole milk.... 4½ oz.	Whole milk.... 4½ pt.	Whole milk.....4½ pt.	Whole milk.... 4½ pt.	Whole milk..... 4½ pt.	Whole milk.... 4½ pt.
Yeast cake..... 1 oz.	Yeast..... 1 oz.	Yeast..... 1 oz.	Yeast..... 1 oz.	Yeast..... 1 oz.	Yeast..... 1 oz.	Yeast..... 1 oz.
P.M.	*P.M.*					
Rice.....15 oz.	Fish.....	Bread.....30 oz.	Rice.....15 oz.	Fish..... 4½ lb.	Rice.....15 oz.	
Wheat flour..... 2½ oz.	.....	.....	Wheat flour.... 2½ oz.	.....	Wheat flour.... 2½ oz.	
Rolled oats..... 2½ oz.	.....	.....	Rolled oats.... 2½ oz.	.....	Rolled oats.... 2½ oz.	
Beef..... 2½ lb.	.....	Beef..... 2½ lb.	Beef hearts.... 2½ lb.	.....	Beef hearts.... 2½ lb.	
Bone, ground or meal..... 4 oz.	.....	Bone, ground or meal..... 4 oz.	Bone, ground or meal..... 4 oz.	.....	Bone, ground or meal..... 4 oz.	
Vegetables..... 2½ lb.	.....	Vegetables..... 2½ lb.	Vegetables..... 2½ lb.	.....	Vegetables..... 2½ lb.	
Potassium iodide solution..... 1 oz.	.....	Potassium iodide solution 1 oz.	Potassium iodide solution 1 oz.	.....	Potassium iodide solution 1 oz.	

NOTE.—Vegetables, young turnip tops, young beet tops, cabbage, spinach, cress, young clover, etc.

TABLE No. 27—SUMMER RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

LARGE FOXES

From June 1 to September 1

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Rice.....21 oz.	Soda biscuits...27 oz.	Bread.....40 oz.	Rice.....21 oz.	Soda biscuits...27 oz.	Rice.....21 oz.	Bread.....40 oz.
Wheat flour.....3½ oz.	.....	.....	Wheat flour.....3½ oz.	.....	Wheat flour.....3½ oz.	
Rolled oats.....3½ oz.	.....	.....	Rolled oats.....3½ oz.	.....	Rolled oats.....3½ oz.	
Tripe.....27 oz.	Tripe, ground...27 oz.	Tripe, ground...27 oz.	Tripe, ground...27 oz.	Tripe, ground...27 oz.	Tripe, ground...27 oz.	Tripe, ground...27 oz.
Whole milk.....5½ pt.	Whole milk.....5½ oz.	Whole milk.....5½ pt.	Whole milk.....5½ pt.	Whole milk.....5½ oz.	Whole milk.....5½ pt.	Whole milk.....5½ pt.
Yeast.....1¼ oz.	Yeast.....1¼ oz.	Yeast.....1¼ oz.	Yeast.....1¼ oz.	Yeast.....1¼ oz.	Yeast.....1¼ oz.	Yeast.....1¼ oz.
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Rice.....21 oz.	Fish.....5¾ lb.	Bread.....40 oz.	Rice.....21 oz.	Fish.....5¾ lb.	Rice.....21 oz.	
Wheat flour.....3½ oz.	.....	.....	Wheat flour.....3½ oz.	.....	Wheat flour.....3½ oz.	
Rolled oats.....3½ oz.	.....	.....	Rolled oats.....3½ oz.	.....	Rolled oats.....3½ oz.	
Beef.....3½ lb.	.....	Beef.....3½ lb.	Beef heart.....3½ lb.	.....	Beef heart.....3½ lb.	
Bone, ground or meal..... 6 oz.	.....	Bone, ground or meal..... 6 oz.	Bone, ground or meal..... 6 oz.	.....	Bone, ground or meal..... 6 oz.	
Vegetables.....3½ lb.	.....	Vegetables.....3½ lb.	Vegetables.....3½ lb.	.....	Vegetables.....3½ lb.	
Potassium iodide solution..... 1 oz.	.....	Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.	.....	Potassium iodide solution..... 1 oz.	

NOTE.—Vegetables, young turnip tops, young beet tops, cabbage, spinach, cress, young clover, etc.

TABLE NO. 28—EARLY FALL RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

SMALL FOXES

From September 1 to October 31

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M. Whole wheat flour.......... 7 oz. Rolled oats.......... 7 oz. Corn meal.......... 7 oz. Tripe..........20 oz. Whole milk.........4½ pt. Yeast.......... 1 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz. Beef suet........ 6 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz. Beef suet........ 6 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz.	*A.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Tripe..........20 oz. Whole milk.....4½ pt. Yeast.......... 1 oz. Beef suet........ 6 oz.
P.M. Whole wheat flour.. 7 oz. Rolled oats.......... 7 oz. Corn meal.......... 7 oz. Wheat germ........ 7 oz. Beef.......... 5 lb. Bone, ground or meal.......... 8 oz. Vegetables.......... 2½ lb. Potassium iodide solution.......... 1 oz.	*P.M.* Fish, fresh...... 5 lb.	*P.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Wheat germ.... 7 oz. Lamb plucks.... 5 lb. Bone, ground or meal.......... 8 oz. Vegetables...... 2½ lb. Potassium iodide solution....... 1 oz.	*P.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Wheat germ.... 7 oz. Lamb plucks.... 5 lb. Bone, ground or meal.......... 8 oz. Vegetables...... 2½ lb. Potassium iodide solution....... 1 oz.	*P.M.* Fish.......... 5 lb.	*P.M.* Whole wheat flour.......... 7 oz. Rolled oats..... 7 oz. Corn meal...... 7 oz. Wheat germ.... 7 oz. Beef heart...... 5 lb. Bone, ground or meal.......... 8 oz. Vegetables......2½ lb. Potassium iodide solution....... 1 oz.	*P.M.* Fish, fresh...... 5 lb.

NOTE.—Vegetables, turnips, beets, cabbage, tomatoes, onions, etc.

TABLE No. 29.—EARLY FALL RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

LARGE FOXES

From September 1 to October 31

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Whole wheat flour..9 oz.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.
Rolled oats.....9 oz.	Rolled oats....9 oz.	Rolled oats....9 oz.	Rolled oats....9 oz.	Rolled oats....9 oz.	Rolled oats....9 oz.	Rolled oats....9 oz.
Corn meal.....9 oz.	Corn meal.....9 oz.	Corn meal.....9 oz.	Corn meal.....9 oz.	Corn meal.....9 oz.	Corn meal.....9 oz.	Corn meal.....9 oz.
Tripe.....27 oz.	Tripe.....27 oz.	Tripe.....27 oz.	Tripe.....27 oz.	Tripe.....27 oz.	Tripe.....27 oz.	Tripe.....27 oz.
Whole milk.....5½ pt.	Whole milk....5½ pt.	Whole milk....5½ pt.	Whole milk....5½ pt.	Whole milk....5½ pt.	Whole milk....5½ pt.	Whole milk....5½ pt.
Yeast.....1 oz.	Yeast.....1 oz.	Yeast.....1 oz.	Yeast.....1 oz.	Yeast.....1 oz.	Yeast.....1 oz.	Yeast.....1 oz.
	Beef suet.....6 oz.			Beef suet.....6 oz.	Beef suet.....6 oz.	Beef suet.....6 oz.
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Whole wheat flour..9 oz.	Fish, fresh.....5 lb.	Whole wheat flour.....9 oz.	Whole wheat flour.....9 oz.	Fish, fresh.....5 lb.	Whole wheat flour.....9 oz.	Fish, fresh.....5 lb.
Rolled oats.....9 oz.		Rolled oats....9 oz.	Rolled oats....9 oz.		Rolled oats....9 oz.	
Corn meal.....9 oz.		Corn meal.....9 oz.	Corn meal.....9 oz.		Corn meal.....9 oz.	
Wheat germ.....9 oz.		Wheat germ....9 oz.	Wheat germ....9 oz.		Wheat germ....9 oz.	
Beef.....6½ lb.	.....	Lambs plucks...6½ lb.	Lamb plucks....6½ lb.	.....	Beef heart.....6½ lb.	
Bone, ground or meal.....8 oz.	.....	Bone, ground or meal.....8 oz.	Bone, ground or meal.....8 oz.	.....	Bone, ground or meal.....8 oz.	
Vegetables.....3½ lb.	.....	Vegetables.....3½ lb.	Vegetables.....3½ lb.	.....	Vegetables.....3½ lb.	
Potassium iodide solution.....1 oz.		Potassium iodide solution.....1 oz.	Potassium iodide solution.....1 oz.		Potassium iodide solution.....1 oz.	

NOTE.—Vegetables: Turnips, beets, cabbage, tomatoes, onions, etc.

TABLE No. 30.—LATE FALL RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

SMALL FOXES

From November 1 to December 31

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Whole wheat flour....10 oz.		Whole wheat flour....10 oz.	Whole wheat flour....10 oz.		Whole wheat flour....10 oz.	
Rolled oats....10 oz.	Fish....5½ lb.	Rolled oats....10 oz.	Rolled oats....10 oz.	Fish....5½ lb.	Rolled oats....10 oz.	Fish....5½ lb.
Corn meal....10 oz.		Corn meal....10 oz.	Corn meal....10 oz.		Corn meal....10 oz.	
Wheat germ....7 oz.		Wheat germ....7 oz.	Wheat germ....7 oz.		Wheat germ....7 oz.	
Tripe....20 oz.		Tripe....20 oz.	Tripe....20 oz.		Tripe....20 oz.	
Whole milk....4½ pt.		Whole milk....4½ pt.	Whole milk....4½ pt.		Whole milk....4½ pt.	
Vegetables....2½ lb.		Vegetables....2½ lb.	Vegetables....2½ lb.		Vegetables....2½ lb.	
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Beef....5½ lb.	Lamb plucks....5½ lb.	Beef hearts....5½ lb.	Beef....5½ lb.	Lamb plucks....5½ lb.	Beef hearts....5½ lb.	Lamb plucks....5½ lb.

NOTE.—Vegetables: Turnips, beets, cabbage, tomatoes, onions, etc.

TABLE No. 31.—LATE FALL RATIONS—DAILY RATION FOR TWENTY ADULT FOXES

LARGE FOXES

From November 1 to December 31

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Whole wheat flour....12 oz.		Whole wheat flour....12 oz.	Whole wheat flour....12 oz.		Whole wheat flour....12 oz.	
Rolled oats....12 oz.	Fish....7½ lb.	Rolled oats....12 oz.	Rolled oats....12 oz.	Fish....7½ lb.	Rolled oats....12 oz.	Fish....7½ lb.
Corn meal....12 oz.		Corn meal....12 oz.	Corn meal....12 oz.		Corn meal....12 oz.	
Wheat germ....9 oz.		Wheat germ....9 oz.	Wheat germ....9 oz.		Wheat germ....9 oz.	
Tripe....27 oz.		Tripe....27 oz.	Tripe....27 oz.		Tripe....27 oz.	
Whole milk....5½ pt.		Whole milk....5½ pt.	Whole milk....5½ pt.		Whole milk....5½ pt.	
Vegetables....3½ lb.		Vegetables....3½ lb.	Vegetables....3½ lb.		Vegetables....3½ lb.	
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Beef....7½ lb.	Lamb plucks....7½ lb.	Beef hearts....7½ lb.	Beef....7½ lb.	Lamb plucks....	Beef heart....7½ lb.	Lamb plucks....7½ lb.

NOTE.—Vegetables: Turnips, beets, cabbage, tomatoes, onions, etc.

TABLE No. 32.—BREEDING SEASON RATIONS—DAILY RATIONS FOR TWENTY ADULT FOXES

SMALL FOXES

Females—From January 1 to March 15. Males—From January 1 to May 30

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M. Biscuits.....1¼ lb.	*A.M.* Fish.....5 lb.	*A.M.* Biscuits.....1¼ lb.	*A.M.* Fish.....5 lb.	*A.M.* Biscuits.....1¼ lb.	*A.M.* Fish.....5 lb.	*A.M.* Biscuits.....1¼ lb.
P.M. Beef.....5½ lb. Cod liver oil.....5 oz. Potassium iodide solution.....1 oz.	*P.M.* Horse meat.....5½ lb. Canned tomatoes1 lb. Biscuits.....10 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef hearts.....5½ lb. Cod liver oil....5 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef liver.....4 lb. Potassium iodide solution.....1 oz.	*P.M.* Horse meat.....5½ lb. Canned tomatoes 1 lb. Biscuits.....10 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef.....5½ lb. Cod liver oil....5 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef hearts.....5½ lb. Canned tomatoes 1 lb. Biscuits.....10 oz. Potassium iodide solution.....1 oz.

LARGE FOXES

A.M. Biscuits.....2 lb.	*A.M.* Fish.....6 lb.	*A.M.* Biscuits.....2 lb.	*A.M.* Fish.....6 lb.	*A.M.* Biscuits.....2 lb.	*A.M.* Fish.....6 lb.	*A.M.* Biscuits.....2 lb.
P.M. Beef.....7½ lb. Cod liver oil.....6 oz. Potassium iodide solution.....1 oz.	*P.M.* Horse meat.....7½ lb. Canned tomatoes 1 lb. Biscuit.....10 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef hearts.....7½ lb. Cod liver oil....6 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef liver.....6 lb. Potassium iodide solution.....1 oz.	*P.M.* Horse meat.....7½ lb. Canned tomatoes 1 lb. Biscuit.....10 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef.....7½ lb. Cod liver oil....6 oz. Potassium iodide solution.....1 oz.	*P.M.* Beef hearts.....7½ lb. Canned tomatoes 1 lb. Biscuit.....10 oz. Potassium iodide solution.....1 oz.

TABLE No. 33.—BREEDING SEASON RATIONS.—DAILY RATION FOR TWENTY FEMALES

SMALL FOXES

From March 15 to Seven Days after Whelping

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Biscuit or cooked cereal....1¼ lb.	Fish.....5 lb.	Biscuit or cooked cereals....1¼ lb.	Fish.....5 lb.	Biscuit or cooked cereals....1¼ lb.	Fish..... 5 lb.	Biscuit or cooked cereals....1¼ lb.
Tripe.....1¼ lb.		Tripe.....1¼ lb.		Tripe.....1¼ lb.		Tripe.....1¼ lb.
Milk.....4½ pt.		Milk.....4½ pt.		Milk.....4½ pt.		Milk.....4½ pt.
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Beef liver..... 4 lb.	Beef..... 4 lb.	Beef heart..... 4 lb.	Beef..... 4 lb.	Beef liver..... 4 lb.	Beef heart..... 4 lb.	Beef..... 4 lb.
	Juice of lemons.. 5	Juice of lemons.. 5	Juice of lemons.. 5		Juice of lemons.. 5	Juice of lemons.. 5
	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.

TABLE No. 34.—DAILY RATIONS DURING LACTATION PERIOD
Vixen and Three Pups

——	2nd week	3rd week	4th week	5th week	6th week	7th week
A.M.—						
Milk	¼ pt.	¼ pt.	¼ pt.	⅜ pt.	½ pt.	½ pt.
Tripe	1 oz.	2 oz.	2 oz.	3 oz.	4 oz.	4 oz.
Cooked cereals	½ oz.	1 oz.	1 oz.	1½ oz.	2 oz.	2 oz.
Noon—						
Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.
Tripe	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.
Bread	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.
Egg	1	1	1	1	1	1
P.M.—						
Meat	4 oz.	6 oz.	6 oz.	6 oz.	6 oz.	8 oz.
Cooked cereals	1 oz.	1½ oz.	1½ oz.	1½ oz.	1½ oz.	2 oz.
Juice of lemon	1	1	1	1		
Yeast	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.

TABLE No. 35.—DAILY RATIONS DURING LACTATION PERIOD
Vixen and Four Pups

——	2nd week	3rd week	4th week	5th week	6th week	7th week
A.M.—						
Milk	¼ pt.	¼ pt.	⅜ pt.	½ pt.	¼ pt.	½ pt.
Tripe	1 oz.	2 oz.	3 oz.	4 oz.	4 oz.	4 oz.
Cooked cereals	½ oz.	1 oz.	1½ oz.	2 oz.	2 oz.	2 oz.
Noon—						
Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.	½ pt.
Tripe	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.	4 oz.
Bread	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.	4 oz.
Egg	1	1	1	1	1	2
P.M.—						
Meat	4 oz.	6 oz.	6 oz.	6 oz.	8 oz.	8 oz.
Cooked cereals	1 oz.	1½ oz.	1½ oz.	1½ oz.	2 oz.	2 oz.
Juice of lemon	1	1	1	1		
Yeast	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.

TABLE No. 36.—DAILY RATIONS DURING LACTATION PERIOD
Vixen and Five Pups

——	2nd week	3rd week	4th week	5th week	6th week	7th week
A.M.—						
Milk	¼ pt.	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.
Tripe	2 oz.	4 oz.	4 oz.	4 oz.	4 oz.	4 oz.
Cooked cereals	1 oz.	2 oz.	2 oz.	2 oz.	2 oz.	2 oz.
Noon—						
Milk	¼ pt.	¼ pt.	¼ pt.	¼ pt.	½ pt.	½ pt.
Tripe	2 oz.	2 oz.	2 oz.	2 oz.	4 oz.	4 oz.
Bread	2 oz.	2 oz.	2 oz.	2 oz.	4 oz.	4 oz.
Egg	1	1	1	1	1	1
P.M.—						
Meat	6 oz.	6 oz.	6 oz.	8 oz.	12 oz.	12 oz.
Cooked cereals	1½ oz.	1½ oz.	1½ oz.	2 oz.	3 oz.	3 oz.
Juice of lemon	1	1	1	1		
Yeast	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.	½ oz.

TABLE NO. 37—DAILY RATIONS FOR TWENTY PUPS

7 to 10 weeks old

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Rice.....4½ oz.	Soda biscuit.... 5 oz.	Bread..... 7 oz.	Rice.....4½ oz.	Soda biscuit.... 5 oz.	Rice.....4½ oz.	Bread..... 7 oz.
Wheat flour..... ¾ oz.			Wheat flour..... ¾ oz.		Wheat flour..... ¾ oz.	
Rolled oats..... ¾ oz.			Rolled oats..... ¾ oz.		Rolled oats..... ¾ oz.	
Tripe, ground.....10 oz.	Tripe, ground...10 oz.	Tripe, ground...10 oz.	Tripe, ground...10 oz.	Tripe, ground...10 oz.	Tripe, ground...10 oz.	Tripe, ground...10 oz.
Whole milk.....1¾ pt.	Whole milk.....1¾ pt.	Whole milk.....1¾ pt.	Whole milk.....1¾ pt.	Whole milk.....1¾ pt.	Whole milk.....1¾ pt.	Whole milk.....1¾ pt.
Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.
Noon	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*
Tripe, ground.....1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.
Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Rice.....4½ oz.	Fish.....1¼ lb.	Bread..... 7 oz.	Rice.....4½ lb.	Fish.....1¼ lb.	Rice.....4½ oz.	Bread..... 7 oz.
Wheat Flour..... ¾ oz.			Wheat flour..... ¾ oz.		Wheat flour..... ¾ oz.	
Rolled oats..... ¾ oz.			Rolled oats..... ¾ oz.		Rolled oats..... ¾ oz.	
Beef.....1¼ ib.		Beef.....1¼ lb.	Beef heart.....1¼ lb.		Beef heart.....1¼ lb.	Liver.....1¼ lb.
Bone, ground or meal..... 2 oz.		Bone, ground or meal..... 2 oz.	Bone, ground or meal..... 2 oz.		Bone, ground or meal..... 2 oz.	Bone..... 2 oz.
Vegetables.....1¼ lb.		Vegetables.....1¼ lb.	Vegetables.....1¼ lb.		Vegetables.....1¼ lb.	Vegetables.....1¼ lb.
Potassium iodide solution..... 1 oz.		Potassium iodide solntion..... 1 oz.	Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.

TABLE No. 38—DAILY RATIONS FOR TWENTY PUPS

10 to 13 weeks old

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Rice..... 9 oz.	Soda biscuits...12 oz.	Bread.....16 oz.	Rice..... 9 oz.	Soda biscuits...12 oz.	Rice..... 9 oz.	Bread.....16 oz.
Wheat flour.....1½ oz.			Wheat flour.....1½ oz.		Wheat flour.....1½ oz.	
Rolled oats.....1½ oz.			Rolled oats.....1½ oz.		Rolled oats.....1½ oz.	
Tripe, ground.....1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.
Noon	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*
Tripe, ground.....1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.
Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Rice..... 9 oz.	Fish.....2½ lb.	Bread.....16 oz.	Rice..... 9 oz.	Fish.....2½ lb.	Rice..... 9 oz.	Bread.....16 oz.
Wheat flour.....1½ oz.			Wheat flour.....1½ oz.		Wheat flour.....1½ oz.	
Rolled oats.....1½ oz.			Rolled oats.....1½ oz.		Rolled oats.....1½ oz.	
Beef.....2½ lb.		Beef.....2½ lb.	Beef heart.....2½ lb.		Beef heart.....2½ lb.	Liver.....2½ lb.
Bone, ground or meal..... 4 oz.		Bone, ground or meal..... 4 oz.	Bone, ground or meal..... 4 oz.		Bone, ground or meal..... 4 oz.	Bone, ground or meal..... 4 oz.
Vegetables.....1¼ lb.		Vegetables.....1¼ lb.	Vegetables.....1¼ lb.		Vegetables.....1¼ lb.	Vegetables.....1¼ lb.
Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.

TABLE No. 39—DAILY RATIONS FOR TWENTY PUPS

13 to 16 weeks old

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Rice..... 9 oz.	Soda biscuits...12 oz.	Bread.....16 oz.	Rice..... 9 oz.	Soda biscuits...12 oz.	Rice..... 9 oz.	Bread.....16 oz.
Wheat flour.....1½ oz.			Wheat flour.....1½ oz.		Wheat flour.....1½ oz.	
Rolled oats.....1½ oz.			Rolled oats.....1½ oz.		Rolled oats.....1½ oz.	
Tripe, ground.....1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.	Tripe, ground...1¼ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.
Noon	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*
Tripe.....1¼ lb.	Tripe.....1¼ lb.	Tripe.....1¼ lb.	Tripe.....1¼ lb.	Tripe.....1¼ lb.	Tripe.....1¼ lb.	Tripe.....1¼ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.	Bread.....1¼ lb.
Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Rice.....18 oz.	Fish.....3¾ lb.	Bread..... 2 lb.	Rice.....18 oz.	Fish.....3¾ lb.	Rice.....18 oz.	Bread..... 2 lb.
Wheat flour..... 3 oz.			Wheat flour..... 3 oz.		Wheat flour..... 3 oz.	
Rolled oats..... 3 oz.			Rolled oats..... 3 oz.		Rolled oats..... 3 oz.	
Beef.....3¾ lb.		Beef.....3¾ lb.	Beef heart.....3¾ lb.		Beef heart.....3¾ lb.	Liver.....3¾ lb.
Bone, ground or meal..... 8 oz.		Bone, ground or meal..... 8 oz.	Bone, ground or meal..... 8 oz.		Bone, ground or meal..... 8 oz.	Bone, ground or meal..... 8 oz.
Vegetables.....2½ lb.		Vegetables.....2½ lb.	Vegetables.....2½ lb		Vegetables.....2½ lb.	Vegetables.....2½ lb.
Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.

TABLE No. 40.—DAILY RATIONS FOR TWENTY PUPS

16 to 21 weeks old.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Rice.....12 oz.	Soda biscuits...16 oz.	Bread.....1½ lb.	Rice.....12 oz.	Soda biscuits...16 oz.	Rice.....12 oz.	Bread.....1½ lb.
Wheat flour..... 2 oz.			Wheat flour..... 2 oz.		Wheat flour..... 2 oz.	
Rolled oats..... 2 oz.			Rolled oats..... 2 oz.		Rolled oats..... 2 oz.	
Tripe ground..... 2 lb.	Tripe ground.... 2 lb.	Tripe ground.... 2 lb.	Tripe ground.... 2 lb.	Tripe ground.... 2 lb.	Tripe ground... 2 lb.	Tripe ground... 2 lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.
Noon	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*
Tripe.....1½ lb.	Tripe.....1½ lb.	Tripe.....1½ lb.	Tripe.....1½ lb.	Tripe.....1½ lb.	Tripe.....1½ lb.	Tripe.....1½ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.
Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Rice.....18 oz.	Fish..... 5 lb.	Bread..... 2 lb.	Rice.....18 oz.	Fish..... 5 lb.	Rice.....18 oz.	Bread..... 2 lb.
Wheat flour..... 3 oz.			Wheat flour..... 3 oz.		Wheat flour..... 3 oz.	
Rolled oats..... 3 oz.			Rolled oats..... 3 oz.		Rolled oats..... 3 oz.	
Beef..... 5 lb.		Beef..... 5 lb.	Beef heart..... 5 lb.		Beef heart..... 5 lb.	Liver..... 5 lb.
Bone, ground or meal.....12 oz.		Bone, ground or meal.....12 oz.	Bone. ground or meal.....12 oz.		Bone, ground or meal.....12 oz.	Bone, ground or meal.....12 oz.
Vegetables.....2½ lb.		Vegetables.....2½ lb.	Vegetables.....2½ lb.		Vegetables.....2½ lb.	Vegetables.....2½ lb.
Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.		Potassium iodide solution..... 1 oz.	Potassium iodide solution..... 1 oz.

TABLE No. 41.—DAILY RATIONS FOR TWENTY PUPS

21 to 26 weeks old

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A.M.	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*	*A.M.*
Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.	Whole wheat flour..... 5 oz.
Rolled oats..... 5 oz.	Rolled oats..... 5 oz.	Rolled oats..... 5 oz.	Rolled oats..... 5 oz.	Rolled oats..... 5 oz.	Rolled oats..... 5 oz.	Rolled oats..... 5 oz.
Corn meal..... 5 oz.	Corn meal..... 5 oz.	Corn meal..... 5 oz.	Corn meal..... 5 oz.	Corn meal..... 5 oz.	Corn meal..... 5 oz.	Corn meal..... 5 oz.
Tripe, ground.....2½ lb.	Tripe, ground...2½ lb.	Tripe, ground...2½ lb.	Tripe, ground...2½ lb.	Tripe, ground...2½ lb.	Tripe, ground...2½ lb.	Tripe, ground...2½ lb.
Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.	Whole milk.....3½ pt.
Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.	Yeast..... 2 oz.
	Beef suet..... 6 oz.	6 oz.	6 oz.	Beef suet..... 6 oz.		Beef suet..... 6 oz.
Noon	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*	*Noon*
Tripe, ground.....1½ lb.	Tripe, ground...1½ lb.	Tripe, ground...1½ lb.	Tripe, ground...1½ lb.	Tripe, ground...1½ lb.	Tripe, ground...1½ lb.	Tripe, ground...1½ lb.
Milk.....3½ pt.	Milk.....3½ pt.	Milk.....3½ pt.	Milk.....3½ pt.	Milk.....3½ pt.	Milk.....3½ pt.	Milk.....3½ pt.
Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.	Bread.....1½ lb.
Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5	Eggs..... 5
P.M.	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*	*P.M.*
Whole wheat flour..... 7 oz.	Fish fresh,.....6½ lb.	Whole wheat flour..... 7 oz.	Whole wheat flour..... 7 oz.	Fish, fresh.....6½ lb.	Whole wheat flour..... 7 oz.	Fish, fresh.....6½ lb.
Rolled oats..... 7 oz.		Rolled oats..... 7 oz.	Rolled oats..... 7 oz.		Rolled oats..... 7 oz.	
Corn meal..... 7 oz.		Corn meal..... 7 oz.	Corn meal..... 7 oz.		Corn meal..... 7 oz.	
Wheat germ..... 7 oz.		Wheat germ..... 7 oz.	Wheat germ..... 7 oz.		Wheat germ..... 7 oz.	
Beef.....6½ lb.		Lamb Plucks...6½ lb.	Lamb plucks....6½ lb.		Beef heart.....6½ lb.	
Bone, ground or meal.....12 oz.		Bone, ground or meal.....12 oz.	Bone, ground or meal.....12 oz.		Bone, ground or meal.....12 oz.	
Vegetables.....2½ lb.		Vegetables.....2½ lb.	Vegetables.....2½ lb.		Vegetables.....2½ lb.	
Potassium iodide solution..... 1 oz.		Potassium iodide solution.... 1 oz.	Potassium iodide solution.... 1 oz.		Potassium iodide solution.... 1 oz.	

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