SCIENTIFUR

Introductory Issue November 1976.

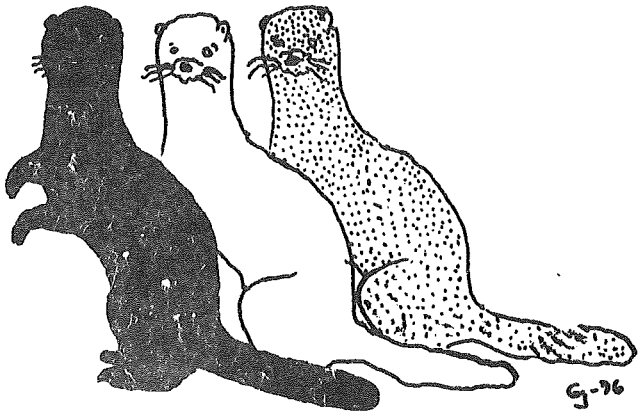
Contents.

INTRODUCTORY ISSUE

NOV. 1976

AND

REPORT ON THE FIRST INTER - NATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION .



THE FIRST INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION

The First International Scientific Congress in Fur Animal Production was held in Helsinki the 27-29th April 1976, on the initiative of the Scandinavian Association of Agricultural Scientists (Nordiske Jordbruksforskeres Forening), Division of Fur Bearing Animals.

Almost 1oo delegates from Canada, Japan, France, Holland, Polen, USA, England, Norway, Sweden, Finland and Denmark took part in the congress. Unfortunately, just before the start of the congress, the Sovjet Union informed that they would not be able to participate as planned.

At the congress many valuable contributions concerning genetics and reproduction, feeding and nutrition, and diseases were given. A short summary of each paper is given on the following pages. Complete reports may be requested from the authors directly.

As well as the giving of papers there was also time for discussion of general scientific problems in connection with fur animal production.

The question of scientific communication over borderlines was the subject of a lively discussion. Under this discussion it was suggested that an attempt be made to send out a form of Newsletter covering fur bearing animal production.

This suggestion proved to be very popular. Several speakers also expressed the hope that the congress would be repeated at regular intervals.

Conclusion of The First International Scientific Congress in Fur Animal Production.

1. The reaction both during and after the congress established that it had been very valuable both for research and production, and that such a congress should be held regularly, every 3rd or 4th year.

2. The Scandinavian countries, under the auspices of NJF, were urged to establish and send out a newsletter with fur animal production as theme. This newsletter should serve to communicate both scientific and other news between researchers in this field all over the world.

It has been an honour for the arrangements committee to have been involved in planning this congress, and we would like to take this opportunity to thank participant for making the congress such a successful beginning of a close co-operation between researchers in the field of fur bearing animals all over the world.

Till we meet again.

Outi Lohi

Outi Lohi Gunnar Jørgensen

SCIENTIFUR

One of the conclusions at the "First International Scientific Congress in Fur Animal Production" arranged by the Scandinavian Association of Agricultural Scientists, Division of Fur Bearing Animals in the period 27th-29th April 1976 in Helsinki was the desire to publish an international newsletter on scientific research work made by the fur division.

At the request of the congress the board of SAAS, Division of Fur Bearing Animals, have been working on this idea during the past 6 months. They have decided to realize it, and here they present the first issue of the SCIENTIFUR. The name, SCIENTIFUR, stresses that the principal aim of this newsletter is to communicate at a scientific level concerning problems about fur breeding.

The Scandinavian countries make it a condition, however, before they take an active part in the issue of the SCIENTIFUR, that it is actually an international newsletter and not a Scandinavian one. To fulfil this condition we appeal to all who are working at a scientific level on problems about fur breeding to publish their results as complete short articles (max. 4 pages) or abstracts in the SCIENTIFUR. In this way the demand for an international newsletter is fulfilled, and a basis of a personal contact between the scientists is established.

Another condition of making a success of the SCIENTIFUR is that we obtain a sufficient number of subscribers to provide a financial basis for the work, i.e. at least 3oo subscribers. Therefore we request everyone who reads this letter to spread their knowledge of the SCIENTIFUR, and to urge all relevant persons, institutions, and organizations to subscribe to the SCIENTIFUR.

A third condition of the existence of the SCIENTIFUR is a functual and inspiring editing. However, the board are convinced that they have found the best possible solution to this problem as Mr. Gunnar Jørgensen, experimenter, Denmark - who is well known to all delegates of the congress - has accepted to take on this job.

By taking this step to a better international communication between scientists who are working on the fur breeding we express the hope that the SCIENTIFUR will be favorably received and that it will provide good information, and further that the SCIENTIFUR will help to improve the personal contacts.

Scandinavian Association of Agricultural Scientists
Division of Fur Bearing Animals

Åke Qvist
Finland
(chairman)

Hans Rimeslåtten
Norway

Allan Olausson
Sweden

Helge Olsen
Denmark
(secretary)

NOTES.

SCIENTIFUR

Introductory issue November 1976.

This introductory issue of SCIENTIFUR (The Scientific Newsletter in Fur Animal Production) is designed firstly to inform participants in The First International Scientific Congress in Fur Animal Production about sending out the remaining manuscripts, secondly simply to broadcast that the newsletter has become a reality, and thirdly to draw the attention of as many as possible to the content of the congress and the newsletter (SCIENTIFUR) which we hope will become a valuable scientific connection between researchers and others who are interested in fur animal production.

1. Manuscripts.

Manuscripts which were not received early enough for them to be included in the congress, will be duplicated and send out to all congress participants. Otherwise the responsibility for duplicating lies with the author.

2. Newsletter.

NJF's Fur Animal Division has decided to publish a scientific newsletter in fur animal production from the beginning of 1977. It will be called SCIENTIFUR, for purposes of catalogueing and reference.

SCIENTIFUR will cost only what it costs to produce. It will be published four times a year, and its size will depend on how much material is send in. Subscription price is 150 Danish crowns per year.

The future of SCIENTIFUR is dependent on the number of subscribers (at least 3oo) and the availability of material for publication.

All forms of scientific news is welcome and will be accepted either as abstracts or short articles. Manuscripts must be in English and typed on white A-4 paper, ready for photographic reproduction. Lay out must be the same as the following abstracts and as shown under Instructions for Contributors. Manuscripts should have an appropriate title, and give the author's name and address to facilitate literature requests from colleagues. In connection with abstracts the original sources should also be given.

Congress participants and others, who receive this introductory issue of SCIENTIFUR are asked to contact persons, institutions and libraries they think will be interested in either subscribing to, or contributing to, SCIENTIFUR.

We, in the field of research into fur bearing animals must all be interested in having as large a circle of both readers and writers as possible.

3. Comments to the above, and to a possible next congress, regarding time and place etc., will naturally find a place in SCIENTIFUR as normal communication material, as well as discussive contributions, book reviews, and other things of common interest.

4. Dear colleague,
You know how long it takes to prepare such a publication.
You know how vulnerable it is to delays.
You know that if the first issue is to be ready in February 1977, then material must be in the hands of

the editor by the 15th January 1977.
You expect and look forward to SCIENTIFUR being your most important source of information where scientific theses about fur animal production are concerned.

Your colleagues expect to find you work in or through SCIENTIFUR. Therefore you should always send your contribution to SCIENTIFUR without unnecessary delay.

Therefore you should urge authors of work you think is of interest to fur animal researchers to send abstracts of their work to SCIENTIFUR. You are also welcome to make and send abstracts of other's work, as long as your name appears as abstracter.

The waiting editor.

OUTLINES OF SCIENTIFIC RESEARCH WORK ON FUR ANIMALS IN USSR.

G.A. Kuznecow, Institute of Scientific Research on Fur Animals and Rabbits.

Genetical and breeding questions.

In Russia special attention has been paid on improving the size of the mink. Nowadays there are farms that produce mink with medium weight at October 15th over 2.5 kg for males and over 1.5 kg for females. This has been achieved by effective selection of breeding animals. It is also important to keep the animals in good condition up to pelting because the size of the skin has a higher correlation to the weight (r=o.78-o.81) than to the length (r=o.154-o.548) for animals at different fatness.

For kit production it, however, is important to avoid overfeeding before mating time. For animals with a high "weight index" (the body weight in grams in proportion to the length in cm) the number of kits per mated female has been lower than for females in normal condition. The most suitable "weight index" at the beginning of mating time is for standards 25-35, for pastells 22-3o and for saphires 22-28. The females that looze their litter often have underdeveloped milk gland (the volume of it 3.2 times smaller than normal).

In genetical research the following genes have been found to be alleles:

MINK: An allele gene for gene k.

FOX: White face (W) allele for both platinum (W^p) and White Grusian (W^g).

NUTRIA: White Italian (t^a) allele for beige (t^s).

The dominant or recessive quality of different nutria colour genes has also been investigated.

Nutritional questions.

1. Amino acid requirements of fur animals.

Feeding experiments have shown that for pelt production there has to be 7o mg tryptophane and 215 mg methionine + cystine per loo kcal. This guarantees a normal growth and fur development if the feed intake is 33o-35o kcal per day and the feed contains 7.5 g digestible protein per loo kcal. The other limiting amino acids must be in proportion to tryptophane as follows: lysine 5.5-6.o, isoleucine 2.6-4.1 and histidine o.95-1.96 times the amount of tryptophane. For breeding animals the requirement is 86 mg tryptophane and 281 mg methionine + cystine per loo kcal, and the ratio for others: lysine 6.3, isoleucine 4.3 and histidine 1.6. The requirements for foxes are 7.5-8.5 g digestible protein and 7o mg tryptophane and 26o mg methionine + cystine per loo kcal.

2. Energy requirements.

The energy requirement depends on body weight bu not on colour phase. The requirement for convertible energy for maintenance per kg comparative weight (W o.73) is in summer 213 kcal, in autumn 2o1 kcal and in winter 175 kcal per day. A weight gain of 1 g equals 3.5 kcal. The need for convertible energy is 1.7 kcal per 1 kcal weight gain energy. This totals 6 kcal convertible energy per 1 g weight gain. For producing big mink (males 2.5-3.o kg and females 1.5-2.o kg) a diet with high caloric density (42o-44o kcal convertible energy per loo g air-dry matter) and with 8.2-8.6 g digestible protein per loo kcal is required.

For foxes in normal condition the heat production of the body is: for cubs of 2-3 months 142.2 kcal, 3-4 months 133.9 kcal, 4-5 months 115,1 kcal and 5-6 konths 1o7.7 kcal

per kg comparative weight (W o.73). Energy requirement for this is 1.4 times heat production. Energy requirement for maintenance is 4o% higher than for basal respiration. Thus the following total requirements for maintenance have been calculated for different age groups: cubs 2-3 months 2oo kcal, 3-4 months 187 kcal, 4-5 months 162 kcal, 5-6 months 15o kcal and 6-7 months 14o kcal per kg comparative weight. The respective energy requirements per gram of weight gain are: 5, 6, 7, 8 and 9 kcal.

3. The use of dry diets.

Both good size and quality of pelts and normal reproduction have been achieved when using diets in which for mink 5o% and for foxes 75% of fresh animal protein has been replaced by fishmeal. Experiments with loo % dry diet have also been successful. Special attention should be paid to the quality of the ingredients. A good fishmeal should include: moisture 8-12%, fat max. lo%, protein 6o%, ash max. 22%, NaCl max. 3%, ammonia nitrogen less than 2oo mg and free fatty acids less than 7 mg per loo g of fishmeal.

4. Fish products.

Different kinds of fish have been in feeding trials to ascertain their nutritive value, time limits for freeze storage e.t.c.

The fish induced anemia and vitamin B_1 deficiency have also been studied. In recent experiments an intramuscular iron treatment has been successful. The same kind of iron substance is now also in feeding trials.

3 Tables. Ref.: O. Lohi.

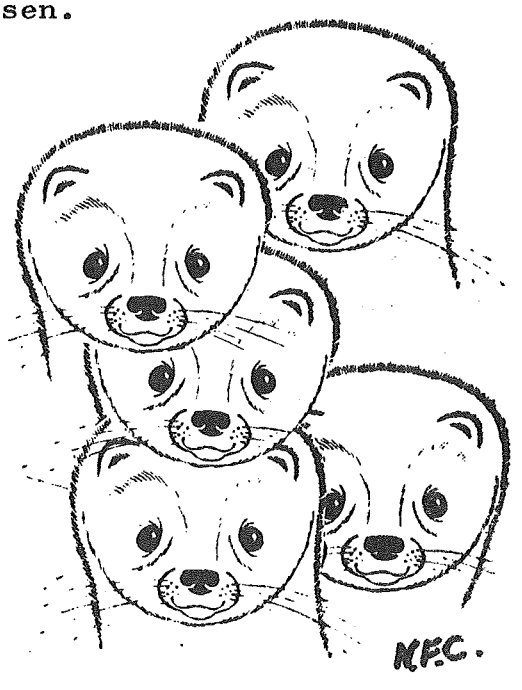
APPLIED SCIENCE IN MINK RANCHING.

Anthony A. Rietveld, National Northwood Co., 1219 Crystal Lake Rd., P.O. Box 4o, Cary, Illinois 6oo13.

The first contribution to the congress came from the USA. The general manager of the National Northwood Co. gave examples of how, at Northwood Farm, research results had been exploited in practice. His lecture was divided into 5 sections: Mating systems: use of light, hormone treatment, nutrition:combat of plasmacytose. To cut a long story short, this contribution was a shining example of how breeding results could be improved year by year using systematic mink breeding. A breeding result of just under 5 kits per female is impreisive especially on a farm with around 18ooo breeding females.

It is thus no coincidense that the 5 sections contained well documented facts. Reading of this 3o-page paper is instructive and pleasurable for the researcher and a veritable gold mine for the practical rancher.

Ref.: E. Hedegaard & G. Joergensen.



GENETIC AND PHENOTYPIC PARAMETERS FOR THE FUR DEFECT, METALLIC, AND SOME PRODUCTION CHARACTERS IN MINK.

Allan Olausson, Agricultural College of Sweden, Department of Animal Breeding, Section of Fur Production, Funbo-Lövsta, S-755 9o Uppsala, Sweden.

A fur defect called metallic, defected on dark mink collections in fur auction companies of Scandinavia in the late "sixties" has been studied together with body size, darkness of the fur and length of guard hairs. A histological investigation of mink hairs from metallic and normal furs is described as well as the effect of some environmental factors. Genetic parameters for the traits in live animals in August are estimated. The possibility of decreasing the frequency of metallic by selection is discussed.

1o Tables, 1 Fig., 22 References.

CANADIAN AND EUROPEAN BEAVER AS A FUR ANIMAL IN FINLAND.

Seppo Lahti, Zoological Institute, University of Helsinki, P. Rautatienkatu 13, ooloo Helsinki 1o, Finland.

The Finnish beaver population was estimated in 1975 at 4ooo-6ooo individuals and about 5oo are trapped every year. The most interesting fact is that 95% of the population and almost all of the trapped animals belong to the species Castor canadensis, Canadian beaver. European beaver, Castor fiber inhabits nowadays only one area on western coast. This Canadian beaver population is a result of introductions made in 1937, when 7 Canadian beavers were imported from New York State. In 1935-36 had 17 European beavers been introduced from Norway in order to start a

new beaver population in Finland. The original beaver stock had become extinct in 19th century because of trapping. The reproductive rate of Canadian beavers proved to be clearly higher than that of European ones; for example the litter size in Canadian beaver rises up to 4-5 when European beaver usually has 2-3 young. Canadian beavers can also reach sexual maturity even at the age of 2 years. Gradually Canadian beavers replaces European beavers from the areas, where both species had earlier occured together, and nowadays the Canadian beavers in Finland comprise the greatest population outside North America.

The import of Canadian beavers into Finland has been criticized, because it is a "strange species", but there are also some other strange animals in our faune (e.g. whitetailed deer, muskrat, raccoon dog). Hunters appreciate the fur of Canadian beavers. Especially wanted are the dark specimens trapped early in the spring, when the sunchine has not yet affected negatively the quality of the fur (pure melanistic type has not been found in Finland). The fur colour of European beaver in Finland is much greyer and, according to hunters, its fur is not so valuable as that of Canadian beaver.

The presence of two closely related species in the same country is also an interesting taxonomic problem, and it is not always easy to identify the beaver species. The studies are going on also in Finland in order to find reliable systematic methods. For example, those two species have different chromosome numbers (C.fiber 2n = 48, C.canadensis 2n = 4o), and we have not found any hybridization in the field. Our game authorities are nowadays inclined to accept the presence of Canadian beavers, and the surplus of the population will be trapped.

CURRENT RESEARCH PROBLEMS IN THE REPRODUCTION OF THE MINK.

C.E. Adams, A.R.C. Unit of Reproductive Physiology & Biochemistry, 307 Huntingdom Road, Cambridge, England.

Two main questions: 1. Artificial insemination and 2. Delayed implantation and blastocyst viability are discussed.

1. Artificial insemination.

In earlier investigations artificial insemination has proved to be difficult by conventional vaginal approach of semen. Intra uterine insemination by passing the sperm syringe needle through the cervix has not been successful and in experiments tried surgial methods can not be used in practice. The use of sterile or fertile males before AI has proved to increase the number of pregnancies considerably.

The other problem has been collecting and storing of semen. Electroejaculation results to a very low yield (3.75 million sperm) of sperm and recovery of semen from the vagina of mated females is not practical. The general practice to pelt quite a number of males in the end of mating season makes it, however, possible to obtain sperm from the excised testes if only it then can be stored for the next year. A new freezing technique by using liquid N_2 is under development and has in first experiments in 1974 proved to be successful.

The present experiments are concentrated on establishing the optimal time of insemination relative to ovulation because the fertile life of frozen sperm in the female tract seem to be shorter than that of fresh sperm.

2. Delayed implantation and blastocyst viability.

The average kit result by mink is affected, by two factors: the number of barren females, that often amounts to 15 to 2o% of mated females, and the size of litters. In both cases it can basically be question of the incidence of prenatal mortality.

Earlier approaches to reduce prenatal mortality by mating late in the season or by the application of additional lighting have not been satisfactory. The present investigations are directed to protecting the viability of the blastocysts by progesterone treatment during the time before implantation. In farm use a treatment by injectable progesterone, hydroxyprogesterone caproate (Primolut, Schering) is being tested on a larger scale.

15 References. Ref.: O. Lohi.

MINK SEMEN STUDIES.

W.D. Kitts, M.S. Ahmad, J.W. Kim, C.R. Krishnamurti and D.M. Shackleton, University of British Columbia, Vancouver, B.C., Canada.

1. Although general morphological structure of mink spermatozoa resembles the standard mammalian type, occurence of swellings on the head surfaces, and some structural variations in the neck region may be characteristic of this species.
2. Cytochemical localization of 13 enzymes, representing phosphatases, esterases, and dehydrogenases, present in mink spermatozoa are described.
3. An unusually intense response of acid phosphatase activity was observed in the epididymal spermatozoa, indicative of structural modifications in the head region.

4. The tube-syringe method for collecting semen from naturally inseminated females was found to provide a consistently larger volume of semen than the use of a dropper or an electroejaculator.

5. Standard morphological examination appears to be suitable for evaluation of semen from individual sires.

6. Inclusion of milk in extenders was found to be the simplest method for liquid preservation of mink semen.

7. Freeze-preservation of high quality semen appears to have potential value for artificial insemination of mink.

8. Further studies are currently being conducted to evaluate the success of freeze-preserved semen with artificially inseminated females.

6 Tables, 1 Fig., 23 References.

ARTIFICIAL INSEMINATION IN FOXES.

J. Aamdal, J. Fougner and K. Nyberg, Department of Reproductive Physiology and Pathology, The Veterinary College of Norway, Oslo.

Experiments with AI in foxes have been carried out by the authors since 1969.

Earlier described method for collecting sperm by electro-ejaculation has been found to be slow and slightly painful to the animal. A digital manipulation is considered more suitable specially if the foxes are used to be handled.

The volume of spermrich fraction of fox semen is approximately o.62 ml (averager of 35 ejaculates) and the number of sperm 647 mill in average. By digital manipulation

the collection of semen can be done only twice a week. On the other hand the activity of males can be extended to 6-12 weeks for blue fox and over the normal also for silver fox and its mutations.

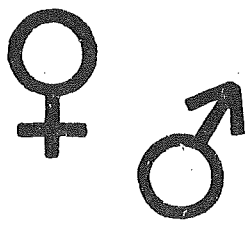
For freezing of semen (in o.5 ml paillettes in N_2 vapour). Thrisextender has been used in dulutions from 1:3 to 1:4 and equilibration time of 3 hours.

In natural mating c. 5o-1oo mill. sperm were found in uterus 2 hours after mating. The ovulation seems to occure between third and fourth days of oestrus and the ova pass trough the oviducts during 6 days after ovulation. Examinations at 13o-14o hours after ovulation have shown that normally c. 9o% of the ova are fertilized.

An intrauterine insemination technique is described. One insemination seems not to be enough but two artificial inseminations using 15o mill. frozen semen per time has given as good results as natural mating, 9o% fertilized ova.

As the total number of sperms per ejaculation is c. 6oo mill. it is enough for 4 inseminations if used frozen and for 5-7 inseminations if used fresh. Thus one male fox can produce semen for 3o-5o females per breeding season.

3 Tables, 8 References. Ref.:O. Lohi.



QUALITATIVE EVALUATION OF DEHYDRATED PROTEIN FEEDSTUFFS FOR MINK.

William L. Leoschke, Valparaiso University, Valparaiso, Indiana 46383, USA.

A simple experimental feeding regimen with about 6.o grams of digestible protein per loo kilocalories of digestible energy provides a practical program for a preliminary assessment of the protein quality of dehydrated protein feedstuffs for the mink. Mink kits (2o males, 6-7 weeks old) placed on special experimental feeding programs for a period of two weeks exhibit weight gains which provide a measure of the protein quality of the dehydrated protein feedstuff for the mink.

Based on this experimental technique the author is calculating the Growth Promotion Rating (GP-Rating) as shown in Table 5 and 6.

Tabel 5.

Calculations: GP Rating-% - Multiple Protein Resources.

Quality Fishmeal-loo = 36o grams GAIN

Quality Fishmeal-5o
Ocean Fishmeal-5o = 345 grams GAIN

36o x o.5o = 18o grams GAIN via QUALITY FISHMEAL PROTEIN

345 - 18o = 165 grams GAIN via OCEAN FISHMEAL PROTEIN

$$\frac{165}{18o} \times 1oo = 92\% \text{ GP RATING.}$$

Table 6.

Growth promotion rating data.

Protein Resource	Weight gains	GP Rating-%
Quality Fishmeal-1oo	36o ± 39	1oo
Quality Fishmeal-7o Whole egg powder-3o	42o ± 42	156
Quality Fishmeal-8o Quality Bloodmeal-2o	383 ± 56	132
Quality Fishmeal-8o Commercial Bloodmeal-2o	337 ± 75	68
Quality Fishmeal-5o Poultry Meal 2-5o	3o2 ± 42	68
Quality Fishmeal-8o Feathermeal-2o	327 ± 92	54
Quality Fishmeal-5o Meat & Bonemeal-5o	217 ± 71	21

The experimental data supports the conclusion that growth performance of the mink kits on the experimental diets is related to the amino acid pattern and/or the availability of these amino acids to the digestive processes of the young male kits.

6 Tables.

REPLACEMENT VALUE OF SOYBEAN MEAL FOR RAW MEAT IN MINK DIETS.

R.J. Belzile, Department de zootechnie, Pavillon Comtois, Université Laval, Québec G1K 7p4, Canada.

Two trials were conducted in 1974 and 1975 for testing the replacement value of soybean meal (SBM) for raw meat in mink diets. The total number of Pastel mink used was 336 growing-furring kits and 56 breeding females. They were fed diets containing o, 5, 7.5, 1o and 15% dehullet SBM on a wet matter basis. Diets containing 5 and 1o% SBM

EFFECTS OF DIFFERENT FEEDING INTENSITY ON REPRODUCTION, GROWTH AND FUR QUALITY OF MINK.
A preliminary report 1972-76.

Eva Aldén and Anne Helene Johansson, Department of Animal Husbandry, Agricultural College of Sweden, Funbo-Lövsta, S-755 9o Uppsala, Sweden.

The aim of this study, which has already run for 4 years, is to clarify the effect of feeding intensity on production. Three intensity levels have been used, high intensity (ad libitum), moderate intensity (-1o%) and low intensity (-2o%), the latter two being in relation to "ad lib.". The material is divided up according to the weight of the animals at various times.

Results of introductory trials with males indicated, that it is a very bad thing for the males to be too fat if you want a good reproduction performance. The very fat males can hardly bear a drastic reduction to a normal mating condition. Males in moderate condition seem to improve their reproduction results after slimming. Experiments during 1974 and 1975 showed that the feeding levels influenced the frequency of mating males, copulation length, number of barren females and the litter size, but the results were not repeated from year to year.

Reproduction results of the breeding females were not the same in 1974 as in 1975. The whelping performance was very good in 1974 and bad in 1975. The reasons for this difference were different weights and different slimming results in the crucial periods, but much important information is available in the material.

Regarding the kits, experiments during 1973, 1974 and 1975 gave no clear differences between feeding intensity

were unsupplemented and supplemented with tallow whereas all the other diets contained added tallow. The 1o% SBM diet was unsupplemented or supplemented with DL methionine. All diets were isonitrogenous and most were isocaloric with respect to the control diets (o% SBM). In most respects, the 15% SBM diet was unsatisfactory. As for the other diets, body weight gain was highest (P>.o5) for the groups fed the control diets and within the range 5 to 1o% SBM, body gains were unrelated with the SBM dietary level. Supplementation of the SBM diets with tallow or methionine had little effect on weight gain. It seemed that most of the differences between the control diets and the SBM diets with respect to weight gain occured early in the trials and might be due to initial lack of palatability of SBM diets. At pelting, males and females weighed approximately 2oo grams less when they were fed SBM diets rather than the control diets. Pelts from both sexes were somewhat longer when the mink had been fed the control diet but the quality of the fur was essentially the same among all dietary groups. However, both male and female pelts arising from the methionine supplemented SBM diets achieved better prices on the market, thus suggesting that this amino acid had in fact improved the quality of the pelts. There was a slight reduction in apparent digestibilities of dry matter and Nitrogen when the animals were fed SBM diets but remained quite the same within the range 5 to 1o% SBM level in the diet. Nitrogen retention was the same among all dietary groups. The economic advantage of feeding diets containing SBM to mink was not clear. Only in Experiment 2 was there a clear-cut advantage of feeding SBM to female mink. As mentioned earlier, methionine supplementation provided better net return over feed costs as compared to the unsupplemented SBM diet. A short term trial with breeding females showed that 5 or 1o% SBM diets had no effect on breeding per se or lactation performances.

6 Tables.

levels minktypes and sexes. It is planned to increase the difference in energy between intensity levels.

22 Tables, 11 Figs. Ref.: G. Jørgensen

INFLUENCE OF DIETS CONTAINING FISH, MEAT BY-PRODUCTS AND VARIOUS QUALITY FAT ON THE GROWTH RATE, FUR QUALITY AND FERTILITY IN MINK.

S. Jarosz and J. Berteczko, Instytut Zywienia Zwierzat i Gospodarki Paszowej, Akademii Rolniczej w Krakowie, 3o-o59 Kraków, Al. Mickiewicza 24/28, Poland.

Experiments were conducted for 2 seasons under field conditions on 36o young standard mink from weaning to pelting (1973) and females from January to July (1974).

Throughout the growing period the animals' were divided into 6 groups:

		g prot./ loo kcal
Group I	diet containing 4o% of fatty fish/ mackerel	lo.6
Group II	- - 4o% of lean fish/ cod fish	13.4
Group III	- - 4o% of cod fish + 3% fresh animal fat	lo.4
Group IV	- - 4o% of cod fish + 3% rancid animal fat	lo.4
Group V	- - 4o% of cod fish + 6% fresh animal fat	8.6
Group VI	- - 4o% of cod fish + 6% rancid animal fat	8.6

During the reproduction phase the diets for 6 groups were as follows:

Group I	diet containing 4o% of cow and sow reproductive organs	lo.9
Group II	- - 4o% of slaughterhouse meat by-products	lo.5

Group III	diet	containing	4o% of fatty fish/ mackerel	1o.8
Group IV	-	-	4o% of lean fish/ cod fish	12.o
Group V	-	-	4o% of cod fish + 6% fresh animal fat	8.6
Group VI	-	-	4o% of cod fish + 6% rancid animal fat	8.6

The average body weights at the pelting time were significantly higher in Group I fed diet of moderate protein and energy level, supplemented with fatty fish/mackerel/ males 2o44 g, females 1121 g/and in Group V fed diet with low protein and high energy level supplemented with 6% of fresh animal fat/males 1999 g, females 1o71 g/than in Group II fed high protein by low energy diet containing 4o% of lean fish/males 1779 g, females 984 g.

The highest percentage of the best quality pelts was in Group V/9o% and also in Group III/86.6% in which the animals were fed diet supplemented with 4o% cod fish + 3% fresh animal fat/moderate protein and energy diet/. The high incidence of imperfect pelts was in Group VI fed low protein and high energy diet supplemented with 6% animal rancid fat, in Group I fed diet containing 4o% mackerel and also in Group II/42%, fed low energy diet.

Clinical and histopathological analyses of animals belonging to particular groups revealed about 96% of liver lesions in Groups V and VI fed high caloric diet and only 48% in remaining groups fed moderate protein and moderate energy diet.

Urinary incontinece was the highest in Group VI/16.7%/fed diet with rancid animal fat, while no cases of these diseases were recorded in groups fed low or moderate energy diets supplemented with fresh animal fat.

Reproduction.

While analizing indices of female reproduction better results were found in percentage of mated females in Group III/93.3%, IV/89.1%/ and lower in Group I but no statistically significant differences were found between these results.

Significant differences and more important from the point of view of the reproductive utilization were found in the percentage of fertilized females which in Group IV fed low-caloric diet supplemented with cod fish, reached the highest level - 83.9%. In Group V fed high-caloric diet supplemented with cod fish and 6% fresh animal fat this result was moderate/74%/. The lowest percentage of fertile females was found in Group VI/55%/fed high-caloric diet but supplemented with rancid fat and in Group I/58.7%, fed diet supplemented with meat by-products of cow and sow reproductive organs. According to the performed analyses the diet used for animals in Group I contained in one dose approximately 75o µg of progesterone and 1.5 µg of estrogenic substances.

Litter size was approximate in all groups of females with tendency to be higher in Group V where the average number of kits per female was 6.39.

Kit mortality during the period from parturition to weaning was significantly lower in Groups V/16.4%/ and IV/19.5%/than in the remaining groups, especially in Group I where it was 3o.3%. The results concerning the number of kits per female at the weaning time, this being the most important index of reproduction processes, were the best/5.34/ in Group V fed high caloric diet supplemented with fresh animal fat and it was satisfactory in Group IV/4.29/ but only in the females which were fed this diet

throughout the reproductive period. In the remaining groups these indices were approximately in the range between 3.44 - 3.85 kits per female.

3 Tables, 9 References.

EXPERIMENTS IN FEEDING DIFFERENT LEVELS OF PROTEIN, FAT AND CARBOHYDRATES TO BLUE FOXES.

Hans Rimeslåtten, The Agricultural University of Norway, NLH, 1432 Ås, Norway.

Experiments with different levels of protein, fat and carbohydrates in the diets have been carried out at a large scale at The Department of Poultry and Fur Animal Science. The present paper reports results from experiments carried out during the last 2o years. In ordinary practical breeding in Norway, the blue fox has been fed diets particularly high in protein, and still 4o-45% of ME is fairly common. These experiments have been conducted primarily to compare this traditional feeding with diets lower in protein. The protein concentration in experiments with puppies has varied between 22 and 45% of ME, and in experiments with breeding females between 25 and 4o%. In the actual protein experiments the reduction of the protein concentration has been compensated for by increased fat and carbohydrate levels. In the experiments with increasing carbohydrate levels, both the fat and the protein levels have been reduced. An adequate supply of vitamins and minerals has been included in all experiments. The protein has been required from different sources. The amino acid contents have not been determined, but calculations based on mean values available in the literature show the ratio between the amino acids to be favourable, and only small variations occured between the various diets.

The feed rations given to puppies in the protein experiments were generally adapted to ensure equal growth in all groups and providing optimal weight and size according to genetical capacity. In experiments with increasing carbohydrate levels the daily feed rations were adapted according to the content of metabolizable energy.

The puppies were restictively fed, i.e. given less feed than required by their actual appetite. The fur characteristics were graded on a given scale.

The experiments gave these main results:

A. The protein experiments.

1. Body weight at pelting was not affected by protein levels between 22 and 45%, and remained at a complete satisfactory level.
2. Body length was significantly reduced by protein levels below 28-38%, with no effect on observed skin length, however. Mean value of the experiments gave the regression $Y = 57.85 + 0.193\ x - 0.0023\ x^2$ where Y = body length in cm and x = percent protein of ME. The effect of protein levels beyond 28-30% was very slight and unreliable.
3. Fur development and fur quality and subsequently the skin prices were not affected by the protein concentration of the feed.
4. Heat, mating and pregnancy was not significantly affected by protein levels between 25 and 40%. A trend towards fewer puppies born per litter appeared when protein levels were below 30, while on the other hand the mortality of the puppies was less, which resulted in the same number of weaned puppies per breeding female on all protein levels.

5. The growth of the puppies until the age of 8 weeks was reduced with protein levels below 3o% of ME.

B. The carbohydrate experiments.

1. Increasing carbohydrate level and decreasing protein and fat levels during the growth period reduced the body weight when a calculated isocaloric feeding was applied. It is difficult to obtain maximum fat deposit when carbohydrates represent more than 4o% of the ME.

2. Body length was not influenced by the carbohydrate level. The protein level was, however, kept at a high level in these experiments.

3. The fur quality increased in some experiments with increasing carbohydrate level in the feed.

C. The productive value of protein, fat and carbohydrates.

Metabolizable energy from fat has a higher productive value than that from carbohydrates and protein. Combined digestion studies and production experiments have to be done in order to quantity the differences more accurately.

D. Standards recommended for protein, carbohydrate and fat in the feed.

Certain lower limits for the protein level of the feed throughout the year are suggested in the discussion and conclusion section. The fat and carbohydrate levels are only discussed to the extent where they are of interest for the evaluation of minimum protein levels.

16 Tables, 4 References.

THE REQUIREMENT FOR SULPHUR CONTAINING AMINO ACIDS FOR MINK IN THE GROWTH PERIOD.

N. Glem Hansen, National Institute of Animal Science, Dept. of Fur Bearing Animals, Trollesminde, Roskildevej 48 H, DK-3400 Hilleroed, Denmark.

Previous investigations indicate that the sulphur containing amino acids, methionine and cystine, most often are the first limiting factor for utilization of protein in feed for mink.

Therefore, the requirement for sulphur containing amino acids was investigated with 10 groups of 5 standard males fed different amounts of methionine at two levels of protein in the diets. The feed consumption was recorded and the faeces and urine were collected individually for a 6 days period from 2nd to 9th october. The effect of consumption of sulphur containing amino acids was related to N-retention.

This relationship was found to be described satisfactorily by a second degree regression equation.

The maximal protein utilization was found in diet with 5.5 g sulphur containing amino acids per 16 g N at both levels of protein.

The reason for this comparatively high requirement for sulphur containing amino acids is probably that a much higher proportion of the requirement is used for hair production in mink than in other domestic animal species, especially during the last part of the growth period.

6 Tables, 6 Figs., 18 References.

MINERALS IN MINK FEED AND FACTORS AFFECTING THE MINERAL BALANCE.

J. Kangas, State Veterinary Medical Institut, Hämeentie 57, oo55o Helsinki 55, Finland.

This article contains both a review of the literature concerning the mineral requirement of mink and fox, and a review of a Finnish investigation of the mineral content of mink feed at different seasons of the year.

The topic of the anæmia (iron deficiency anaemia) problem when anaemiogenic fish and acid preserved fish is used, is thoroughly dealt with. Experiments carried out at Helves Research Farm showed, as can be seen in the table, that the use of acid preserved fish silage together with anaemiogenic fish increased the incidence of anaemia even when Fe-glutamate of Fe-sulphate was added. However the positive effect of using blood cells in the feed was not diminished by the presence of anaemiogenic fish or anaemiogenic fish and acid preserved fish silage in the diet.

Effect of silage and various Fe-preparates[x)] on hæmoglobin value and fur colour in mink (Dark ♂).

Group	pH in feed	No of mink	Hb % Nov.	Weight g	Fur colour
(Experiment 1975, table 6)					
o Control	-	3o	18.7	1978	5.76
2 Anaemiogenic fish, 4o% + Fe	-	29	12.7	1749	3.59
3 As 2 but + 1o% silage	-	3o	14.4	1764	3.19
4 Anaemiogenic fish, 4o% + bloodcells	-	27	16.9	1877	4.88
5 As 4 but + 1o% silage	-	23	16.5	1841	3.95

Group	pH in feed	No of mink	Hb % Nov.	Weight g	Fur colour
(Experiment 1974, Table 5).					
6 Mintaj 4o% + Fe-glutamate	6.2	3o	17.3	1949	6.8
8 As 6 but + 1o% silage	5.4	27	15.2	1718	4.7
7 Mintaj 4o% + $FeSO_4$ - $CuSO_4$	6.3	3o	17.7	1865	5.6
9 As 7 but + 1o% silage	5.o	24	14.7	14o1	2.6

x) 1o mg Fe/animal daily.

Finnish investigations have shown significant differences in mineral content of both liver and hair between normal and cottonfurred mink.

8 Tables, 52 References. Ref. G. Jørgensen

EXPERIMENTS ON PAYZONE GROWTH PROMOTER.

Tuomo Kiiskinen, Agricultural Research Centre, Institute of Animal Husbandry, o13oo Vantaa 3o, Finland.
Jaakko Mäkelä, Finnish Fur Breeders' Association, Kutomontie 6, oo38o Helsinki 38, Finland.

In two experiments with dawn mink kits, 12 mg of Payzone-nitrovin per kg dry matter in feed improved the growth of male kits C 11% and female kits 12-14%. In regard of females the difference from control group was significant in both experiments ($P<o.o1$). The growth of male kits differed significantly ($P<o.o5$) in experiment 2. The size of male skins improves by Payzone C o.5 cm. The difference was not significant. The coverage of guard hair and thickness of underfur were significantly better in control group than in Payzone group, but the colour was better in Payzone group.

4 Tables, 24 References.

ACID-BASE DISORDERS IN MINK FED ON FISHSILAGE.

J.S.D. Poulsen, Institute of Surgery, Royal Veterinary & Agricultural University, Bülowsvej 13, DK-1870 Copenhagen V, Denmark.

G. Jørgensen, National Institute of Animal Science, Dept. of Fur Bearing Animals, Trollesminde, Roskildevej 48 H, DK-3400 Hilleroed, Denmark.

It has been shown, partly in an investigation in which female mink were subjected to feed to which increasing quantities of different acids was added, and partly from examination of the acid-base condition of blood taken from mink which were fed on feed containing various quantities of acid preserved fish silage, that there is a marked risk for acidosis when pH in the feed is lowered to 5 or less.

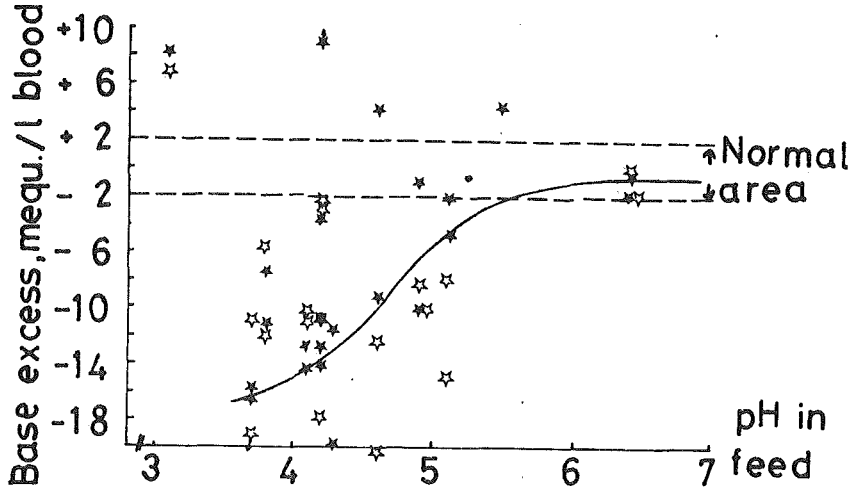


Fig.3. Base excess of mink in relation to pH of the feed.

These investigation however can not show what effect a longer or shorter period of metabolic acidose has on the minks' health and productivity. It is considered possible to avoid acidosis by neutralizing the silage or the feed.

7 Tables, 5 Figs., 5 References.

PCB's : ACUTE AND CHRONIC TOXICITY, INCLUDING REPRODUCTION, TO MINK.

Richard J. Aulerich and Robert K. Ringer, Fur Animal Project, Poultry Science Dept., Michigan State University, E. Lansing, Michigan 48824, USA.

Experiments were conducted from 1968-1974 to investigate reproductive complications and mortality in mink fed Great Lakes coho salmon and to ascertain the effects of polychlorinated biphenyls (PCB's) on this furbearer.

The results of mink feeding trials indicated that coho salmon, as such, were not responsible for the loss of reproduction in the adult, and for kit mortality. Mink diets that contained other species of Great Lakes fish caused similar reproductive complications, but to a lesser degree.

Rancidity, mercury poisoning and chlorinated hydrocarbon pesticide contamination of the fish were all discounted as being responsible for the problem. The clinical signs and lesions noted in mink that died while receiving diets that contained Lake Michigan coho salmon were very similar to those observed in mink fed on rations that contained supplemental PCB's. These included anorexia, bloody stools, fatty liver and kidney degeneration and hemorrhagic gastric ulcers. Analyses of tissues from mink that died while fed 3o% Lake Michigan coho salmon or 3o ppm supplemental PCB diets showed similar PCB residues.

PCB toxicity experiments revealed that mink are very sensitive to these compounds and that the lethal dose varied inversely with the chlorine content of the PCB's although only Aroclor® 1254 exerted a detrimental effect on reproduc-

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Aroclor® is the trade name of polychlorinated biphenyl manufactured by Monsanto Company, St. Louis, Missouri, USA.

tion when fed at a low level (2 ppm) for 8 months. The reproductive failure encountered in feeding mink Lake Michigan coho salmon and Aroclor 1254 were shown to be of a non-permanent nature.

Five ppm dietary Aroclor 1254 resulted in a 25-fold concentration of PCB residues in mink adipose tissue in about 8 weeks, at which time the residue accumulation plateaued. Upon withdrawal of the PCB from the diet, residue levels in the fat decreased about 50% in 8 weeks.

lo Tables, 1 Fig.

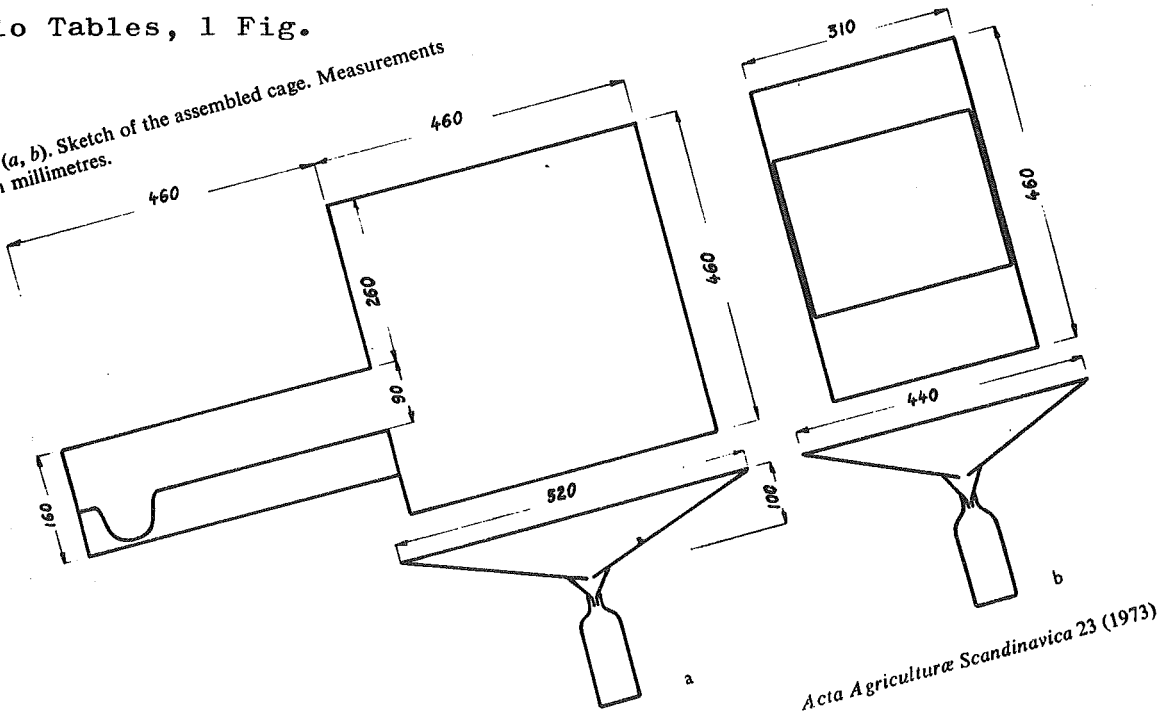

Fig. 1 (a, b). Sketch of the assembled cage. Measurements are in millimetres.

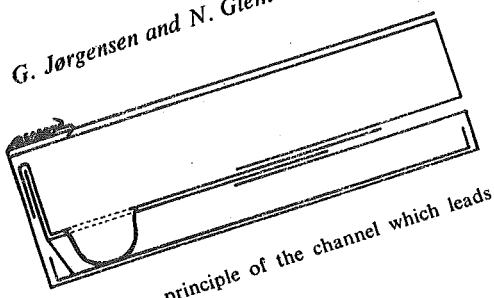

Fig. 2. The principle of the channel which leads to the exercise pen.

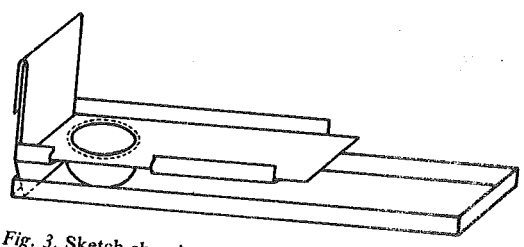

Fig. 3. Sketch showing details of the feeding system.

RECENT ASPECTS OF VITAMIN E DEFICIENCY IN FUR-BEARING ANIMALS.

A. Helgebostad, The Research Station for Fur-bearing Animals, Veterinary College of Norway, Oslo, Norway.

Newer aspects of the vitamin E deficiency syndrome in mink and foxes are reviewed. The author stresses the importance of vitamin E in the metabolism of fur-bearing animals. In order to produce healthy animals and secure a good fur quality, vitamin E is an essential factor.

Polyunsaturated fats increase the vitamin E requirement within the body. Rancid dietary fat and other pro-oxidants in the feed may easily inactivate the vitamin.

Vitamin E deficiency is most evident amongst fast growing mink pups and does occur without dietary polyunsaturated fat stress. Marine products used in fur animal feed are good sources of vitamin E, selenium and sulphur containing amino acids.

Table 1.

Alpha-tocopherol and selenium content of different feedstuffs.

		% fat	mcg α-tocopherol pr.g fresh weight	mcg α-tocopherol pr.g fat	Selenium mcg/g dry matter
Herring (Clupea harengus)	muscle	14.0	16.0	114	1.43
	liver	1.8	115.0	700	
Herring meal					3.60
Cod (Gadus morrhua)	muscle	0.3	1.5	430	1.24
	liver	66.7	224.0	340	
Coal fish (Gadus virens)	muscle	0.7	3.6	507	
	liver	78.3	41.0	52	
Catfish (Anarrhichas lupus)	muscle	4.3	21.0	495	
	liver	18.8	300.0	1540	
Oxe	muscle				0.22
	kidney				4.00

	% fat	mcg α-tocopherol pr.g fresh weight	pr.g fat	Selenium mcg/g dry matter
Pig	muscle			o.38
	kidney			4.oo
Wheat		11.1		o.1o-1.5o
Barley		36.o		
Oats		2o.o		
Soya oil		175.o		
Average content:				
Vegetable food				o.o7-1.o1
Animal foodstuffs				o.27-4.86
Fish of sea and fresh water				1.54-1.48
Water of the North sea				o.oo38

EARLY CHANGES OF YELLOW FAT DISEASE IN MINK; THE INVOLVMENT OF THE RETICULOENDOTHELIAL SYSTEM.

L.H.J.C. Danse, Institute of Veterinary Pathology, Department of General Pathology, University of Utrecht, Biltstraat 172, Utrecht, The Netherlands.

In order to study the pathogenesis of yellow fat disease in mink, the disorder was induced after feeding a vitamin E deficient diet supplemented with 5% fish oil.

As in other species (horse, pig) which develop yellow fat in natural conditions, in mink the first change in adipose tissue was the appearance of interstitial lipofuscin-laden macrophages. The distinction between these macrophages and young fat cells was made by electron-microscope.

Fat cells seemed undamaged in this early stage of yellow fat disease, since no microscopical, enzyme-histochemical or electronmicroscopical differences with fat cells of control animals were seen. In enzym-histochemical studies of yellow fat in pig and rat, however, degenerating fat cells had an increased activity of non-specific esterase, 5-nucleotidase and acid phosphatase.

The macrophage reaction in adipose tissue of mink was part of a general accumulation of lipofuscin pigment throughout the reticuloendothelial system of animals with early yellow fat disease. Since accumulation of lipofuscin in macrophages is coupled with overloading and a decreased digestive function of these cells the activity of the reticulo-endothelial system may be depressed during the early stages of yellow fat disease. The low acid phosphatase activity of macrophages in mink adipose tissue supports this suggestion. Purpose of future investigation is to study the consequences of this pigment accumulation for the function of the reticuloendothelial system and the relation with the changes in adipose tissue.

4 References.

CURRENT ALEUTIAN DISEASE RESEARCH IN THE UNITED STATES.

John R. Gorham, Pioneering Research Laboratory, U.S. Department of Agriculture, Washington State University
Pullman, ARS 2o2, Wegner Hall, Washington 99163, USA.

The results of previous investigation concerning the epizootiology, pathology and pathogenesis of Aleutian disease were reported.

In epizootiology the questions of different host animals, the relation of the disease to the Chediak-Higashi syndrome, its virus character and ways of transmission were discussed.

The current research for developing diagnosis and control systems including IAT and counterimmunoelectrophoresis, the possibility of vaccination etc. were reviewed.

The publications referred to:

J.B. Henson, J.R. Gorham: Animal model: Aleutian Disease of mink. American Journal of Pathology, Vol. 71, 2, 1973.

J. Gorham, J.B. Henson, T.B. Crawford and G.A. Padgett: The epizootiology of Aleutian disease. Slow virus diseases of animals and man.R.H. Kimberlin, North-Holland Publishing Company 1976.

J.B. Henson, J.R. Gorham, T.C. Mc Guire and T.B. Crawford: Pathology and pathogenesis of Aleutian disease. Slow virus diseases of animals and man. R.H. Kimberlin, North Holland Publishing, 1976.

APPLICATION OF SEROLOGICAL DIAGNOSIS TO ERADICATION OF ALEUTIAN MINK DISEASE IN CANADA.

S.E. Magwood, Animal Pathology Division, Health of Animal Branch, Animal Diseases Research Institute, (Western), P.O. Box 64o, Lethbridge, Alberta, Canada R1J 3Z4.

H.J. Cho, Animal Pathology Division, Health of Animals Branch, Agriculture Canada, Animal Diseases Research Institute (W), P.O. Box 64o, Lethbridge, Alberta.

J. Greenfield, Provincial Veterinary Laboratory, Abbotsford, British Columbia.

The pathogenic mechanisms of Aleutian disease (AD) are believed to be immunological and effective therapeutic and prophylactic measures against AD have not been developed. Therefore the control of AD has to be based on accurate diagnosis of the disease and slaughter of infected mink during the pelting season.

To determine whether the counterimmunoelectrophoresis test provides a basis for an effektive culling procedure for the elimination of AD from infected mink ranches, three mink ranches were selected and all the animals tested during the pelting season and before the breeding season in two consecutive years. All of the reactors were pelted and only negative animals were kept as breeding stock. In the initial test on November 1974, Ranch A had 849 reactors among 995 mink tested in a shed, on retest of the herd on February 1976 only one of 1533 mink tested was a reactor. In Ranch B, initial test on November 1974 on old breeding stock showed 592 reactors from 1576 mink, on retest of the herd on February 1976, no infected animals were detected.

We surveyed the incidence of AD in several provinces in Canada. Only 19 of 41 ranches tested had reactors among the minimum of 2o animals tested on each ranch, suggesting that some mink ranches are free of AD.

Twenty-four mink which were positive by the counterimmunoelectrophoresis test were sacrificed to study the relationship among antibody titers, gammaglobulin percent, histopathology and demonstration of AD virus by mink inoculation. Among these four procedures the serological test was the most efficient way to identify infected mink.

In Canada, large quantities of AD viral antigen for the counterimmunoelectrophoresis test have been produced and are

available for this test.

3 Tables.

ALEUTIAN DISEASE IN MINK.

Occurence and significanse of the infection studied by counterimmunoelectrophoresis.

Bjørn Christian Hassel Gierløff, The Royal Veterinary and Agricultural University, Bülowsvej 13, 1870 Copenhagen V, Denmark.

The occurrence of Aleutian disease in 5 Danish mink farms was studied by counterimmunoelectrophoresis (CIEP) for demonstrating specific antibodies. Some of the mink were studied by the unspecific Mallen test. For part of mink studied by the CIEP-test, the result of the test was compared with the breeding result during the preceding breeding season.

A high incidence of infection with Aleutian disease was found in 4 of the 5 farms. - By the Mallen test it was possible to demonstrate only 65% of the reactors in the CIEP-test. - In the Mallen test a considerable number of mink proved to give positive reaction not due to infection with Aleutian disease ("false positives"). - As compared with the CIEP-test, then, the Mallen test must be considered of little value in picking out mink with Aleutian disease infection.

It was apparent that, the breeding result in 1974 was - at birth of the litters as well as at weaning - better in the group of dams which reacted to the CIEP-test, but the mean kit mortality was higher in this group of reactors.

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It was apparent that, the breeding result in 1974 was - at birth of the litters as well as at weaning - better in the group of dams which reacted to the CIEP-test, but the mean kit mortality was higher in this group of reactors.

However, there was not a question of a real, comparison of the result of the CIEP-test and the breeding results, as a long time (about 6 months) elapsed between the preceding season and the blood study.

A new examination in 1975 concerning the breeding result showed again that at birth as well as at weaning the mean litter size was higher in the group of dams which reacted CIEP-positive and that mean kit mortality still was higher in this group of reactors.

The CIEP-negative group of breeders had 8.5% empty dams. All the dams in the CIEP-positive group gave birth to kits.

When weighing a number of the kits on May 2oth the mean weight of the kits from the group of CIEP-negative dams was 124 g. The mean weight in the control group was 11o g and in the CIEP-positive group 1o5 g.

The sickness rate of CIEP-negative kits in the CIEP-negative and in the control group was - as expected - highest in the control group.

Apparently the fertility of the mink with Aleutian disease infection was not affected by the infection, but their kits were not quite capable of living.

6 Tables.

AN INVESTIGATION BY MEANS OF COUNTERIMMUNOELECTROPHORESIS (CIEP) FOR PLASMACYTOSIS IN MINK IN SOME DANISH FARMS.

Mogens Hansen, Danish Fur Breeders Association, 6o Langagervej, DK 26oo Glostrup, Denmark.

In the beginning the author demonstrates that there is a clear correlation between breeding result and percentage of mink positive in the IAT-test. On mink farms where less than 1o% of females were IAT-positive the breeding result in 1974 was 3.8 kits per female as it on the farms with more than 4o% reactors was only 3.o kits per female.

Both with text and illustations the CIEP-test method is described.

In 1975 altogether 29 farms have been tested by this method. The detailed number of animals and results compared to breeding result as follows:

The condition of females:	good	average	poor
Number of farms:	8	9	12
Number of CIEP-tested females:	5362	4744	976o
% CIEP-positive:	4o	58	8o
Number of kits per female:	4.1	3.8	3.6

The effect of the size of the farm, types of mink etc. is not taken in consideration.

From all examined mink there were 11.4% IAT-positive but 72.4% CIEP-positive. From the IAT-positive mink 91.5% were CIEP-positive too, but also from the IAT-negative mink 7o% were CIEP-positive.

Based on the required information the author has worked out a plan for eliminating the disease.

Ref. G. Jørgensen

PREPARATION OF PLASMACYTOSIS ANTIGEN FOR COUNTERIMMUNO-ELECTROPHORESIS.

E. Brummerstedt, The Royal Veterinary and Agricultural University of Copenhagen. Department of Veterinary Virology and Immunology, Bülowsvej 13, 1870 Copenhagen V, Denmark.

Counterimmunoelectrophoresis as a test method for making the diagnosis of plasmacytosis in mink demands the specific virus antigen. The separation method according to Cho & Ingram with minor modifications is described in details, and results obtained at 62 antigen preparations are presented. In addition an ultrafiltration method is outlined which may be useful as a replacement for the ultracentrifugation procedures.

2 Tables, 6 References.

A NEW MINK ENTERITIS IN WESTERN UNITED STATES.

John R. Gorham, Agricultural Research Service, U.S. Department of Agriculture and College of Veterinary Medicine, Washington State University, USA.
Austin E. Larsen, Utah Fur Breeders Cooperative.

During last five years several cases of enteritis in mink have been reported where the clinical signs resemble those of mink virus enteritis (MVE) but the mortality is low. Most cases have been from Utah and mainly the colour types of standard and pastel even though other colour phases also can be affected. The rate of occurence is higher at stress periods like for old females at weaning and for kits during September, October and on into pelting time. The death rate

for older kits has been o.5%-2%.

MVE vaccination does not protect mink against this type of enteritis. A variety of bacteria including Salmonella sp. have been isolated from infected, but at the same time also from normal healthy mink. Transmission of the disease by intraperitoneal or per os administration has succeeded only in few cases. The incubation time has then been 5-6 days.

The clinical signs are mainly going off feed and faeces similar to MVE, only more yellowish and less hemorrhagic. Lesions in organs are slight, only mink concurently infected with Aleutian disease virus are likely to show enteric signs and lesions.

The rate of occurence has increased during last years but mink once recovered from the disease seems to have aquired immunity.

The treatments recommended are mainly those of bacterial enteritis. A tissue vaccine has also been tried experimentally.

The complete report published in Veterinary Medicine, Small Animal Clinician, March 1975.

Ref.: O. Lohi.

PROPHYLATIC, POSTINFECTIOUS AND NEONATAL VACCINATION AGAINST CANINE DISTEMPER IN MINK.

Mogens Hansen, Danish Fur Breeders Association, Langagervej 6o, DK-26oo Glostrup, Denmark,
Ebba Lund, The Royal Veterinary and Agricultural University of Copenhagen, Dept. of Veterinary Virology and Immunology,

13, Bülowsvej, DK-187o Copenhagen V, Denmark.

Mink were vaccinated against canine distemper and challenged with the Snyder Hill strain of canine distemper virus. Protection was acquired if vaccination took place more than a few days before challenge. If vaccination took place even early during incubation mortality was higher than in the unvaccinated controls. Full protection of kits may be achieved even at an age of 16 to 2o days provided the kits had not passively acquired immunity from their mothers. Kits surviving distemper because of passively acquired immunity may not actively acquire immunity during infection and may die a later exposure.

3 Tables, 1 Fig. and 7 References.

SPREADING OF VIRULENT AND AVIRULENT CANINE DISTEMPER VIRUS IN MINK.

Vivi Dall, The Royal Veterinary and Agricultural University of Copenhagen, Dept. of Veterinary Virology and Immunologi, 13, Bülowsvej, DK-187o Copenhagen V, Denmark.

In experiments designed to avoid passive transfer of virus it was found, that virulent virus could pass a barriere of 5 vaccinated animals. This was demonstrated through isolation of distemper virus and rise in titers of neutralizing antibodies. All animals infected through contact remained clinically healthy during the observation period of 5 weeks.

No spread of vaccine virus could be demonstrated, when a group of vaccinated animals was placed among unvaccinated mink in a commercial farm.

As distemper virus at several occasions has been isolated both from vaccinated and not vaccinated, healthy dogs, it seems desirable to avoid contact between mink and even vaccinated dogs, especially during periods of distemper epizootics.

3 Figs., 4 References.

MENINGO-ENCEPHALITIS IN MINK CAUSED BY THE VIRUS OF NEW CASTLE DISEASE.

J. Haagsma, Central Veterinary Institute, Prof. Poelslaan 35, Rotterdam, Netherlands.

Among the reasons causing meningo-encephalitis symptoms in mink certain virus infections (distemper, Aujeszky's disease, mink encephalopathy), listeriosis, toxoplasmosis, lead and mercury intoxications and deficiency of vitamin B_1 have been mentioned.

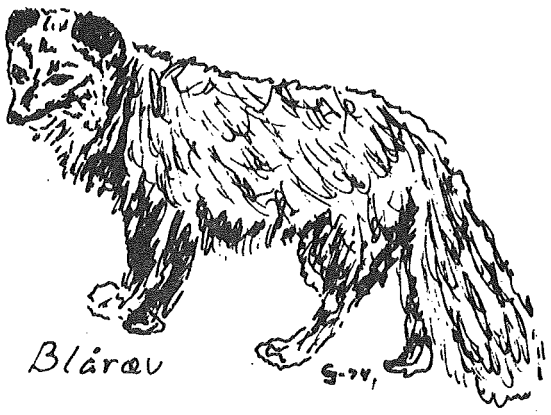
In the Netherlands in 197o, 1971 and 1972 death of mink with symptoms of a meningo-encephalitis were observed. In these cases, however, none of the above mentioned reasons proved to be the cause. As on all these farms fresh chicken offal had been fed to the minkthe possibility of a poultry virus was examined.

After being isolated from mink the virus seemed to have only incomplete haemagglutinating properties. The normal haemagglutinating properties of a New Castle Disease (NCD) virus were, however, displayed after passage through chickens. The size of the virus was more than 15o and less than 27o nm and it possessed some typical properties of NCD virus: susceptibility to chloroform and ether, inactivation

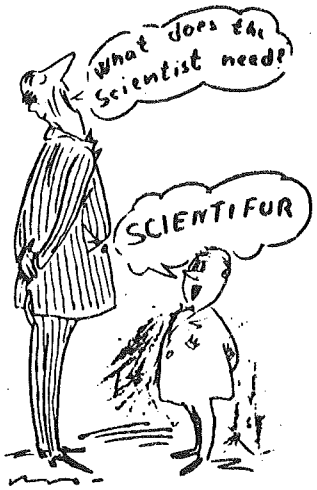
by heating at 56° C, insusceptibility to trypsin and JUDR and relative insusceptibility to an environment of pH 3. Hens vaccinated against NCD were not affected by the isolated virus. As young mink were intracerebrally infected by the isolate death occured, NCD virus was isolated from the brain and symptoms of meningo-encephalitis were discovered.

In the cases described the meningo-encephalitis obviously was caused by NCD virus, the infection being brought about orally by chicken offal.

1 Table, 2 References. Ref.: O. Lohi.



COMMUNICATION.



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
U. S. Sheep and Fur Animal Experiment Station
321 Morrison Hall, Cornell University
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June 4, 1976

Dear Gunnar:

I don't know your exact role in the scientific congress just completed other than that of the "big bad wolf", but anyway my congratulations to those who organized it and made it run. It was an enjoyable and rewarding experience, which I hope can be repeated at periodic intervals.

I am sending you a copy of the Russian book Feeding Fur Bearing Animals, by N. Penelaik. You are the only one that has a copy in Scandinavia, so you might want to see that it is dispersed to your colleagues over there. Someone in the sauna said he had a Russian book on genetics that he would like to see translated into English. He didn't have his name tag on, so I am not sure who it was. If you could find out who it was and get a copy, I can have it translated into English.

Has any progress been made concerning "Communications"? I hope, at least, that the abstract service could be expanded and translated into English.

Sincerely,

/Hugh

Hugh F. Travis
Research Leader, Sheep and Fur Animals

THE FIRST INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION

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