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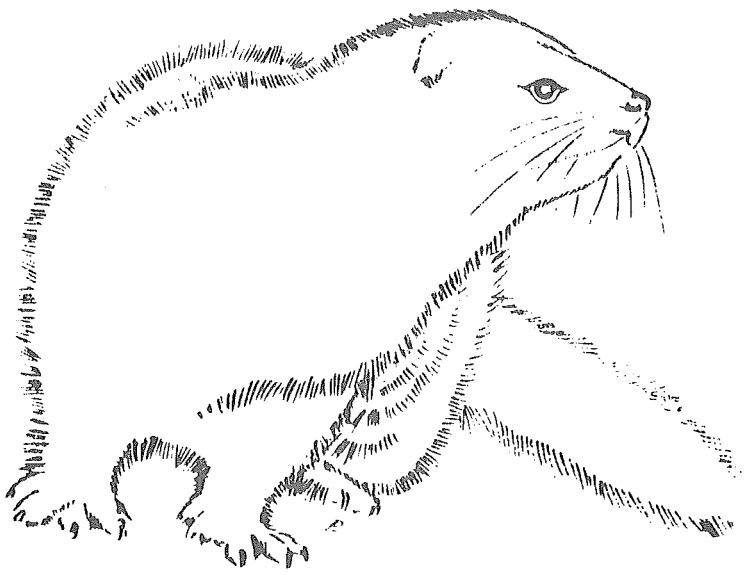

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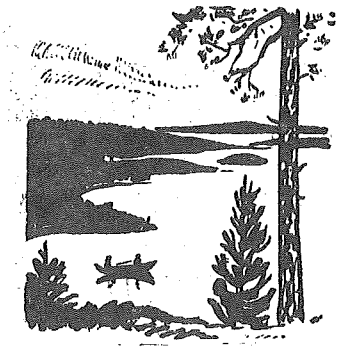


N O T E S

SCIENTIFUR, VOL. 6, NO. 4, 1982.

As readers of SCIENTIFUR during 1982 you have received more than 250 abstracts from scientific reports. Unfortunately, this is not the case for the Index as premised a year ago, but as we are still working on the problem, it will show up!

From the 29th of September to 1st of October the Annual Scandinavian Scientific Meeting took place in Ålesund, Norway. More than 100 scientists and advisers attended. 21 reports dealing with genetics, reproduction, nutrition, and veterinary problems were presented. In the next issue of SCIENTIFUR we hope to be able to bring abstracts and reports from the meeting.

The revision of NRC's Nutrient Requirements of Mink and Foxes, which began in spring 1978, is now finished, and you can see the result presented under Communication.

Furthermore a book dealing with health of fur bearing animals written by our friend Dr. Ulf Dieter Wenzel, DDR, is reviewed.

Regarding the 3rd International Scientific Congress in Fur Animal Production, France 1984, a letter from Professor J. Rougeot announce the time to be on 25, 26 and 27 April 1984 in Versailles, France.

Mr. Tony Rietveld suggest that the congress should be held earlier because of the whelping season which starts during the last 10 days of April.

I know how difficult it can be to find days for such an arrangement which fits everybody. I also know that Professor Rougeot has been in contact with the Fur Breeders Association of the U.K. for coordinating

the York Conference and the International Congress, and in consideration of the fact that the Easter also is in April I think there will be difficulties for some people.

In this issue of SCIENTIFUR you will find 4 original reports all coming from countries from which most of us are not able to read the native language. We thanks for these contributions and are very pleased to bring them.

It is very stimulating for the future to look back on 1982, which has been a good year for the fur animal production nearly all over the world and also for SCIENTIFUR. We wish to thank contributors and subscribers to SCIENTIFUR for your help during the year and for all the kind remarks about SCIENTIFUR we have received.

With great optimism we therefore wish all a Merry Christmas and a Happy New Year.

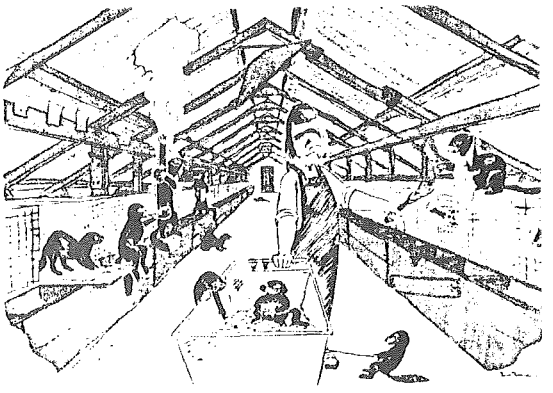
With all good wishes

Yours sincerely

Gunnar Jørgensen

Editor

"I work for a government laboratory, but with all these cuts I have to moonlight for a drug company."



MULTIDISCIPLINARY

Original Report.

CONTENT OF MINERAL ELEMENTS IN THE HAIR OF BLACK-SILVER FOXES.

Leon Saba, Zbigniew Bialkowski, Stanislaw Wójcik, Tomasz Janecki,
Institute of Food And Animal Hygiene, Agricultural Academy in Lublin, ul. Akademicka 13, 20-934 Lublin, Poland.

Summary.

Accessibili ty of intravital sampling and a commom view that that the level om mineral elements in the hair reflects the state of mineral supply was the basis for the investigations on the content of mineral elements in the hair of foxes.

The investigations were carried out on 8 foxes, 4 males and 4 females of full somatic and sexual maturity. The hair was taken from the dorsal part at the height of the scapula according to the recommendations given by Brochart.

Cations were determined with the method of atomic absorption spectrophotometry, and P level colorimetrically. This was the sequence of the quantitative occurrence of mineral elements in the hair:

Na > Ca > Mg > P > Zn > Fe > Cu > Mn > Co

The levels of elements ranges: Na, 900-1150 ppm, Ca, 760-1170 ppm, K, 320-680 ppm, Mg, 200-300 ppm, P, 200-300 ppm,
Zn, 49-64 ppm, Fe, 38-58 ppm, Cu, 10.0-13.9 ppm, Mn, 1-4 ppm, Co, 0.5-0.6 ppm.

Accessibility of intravital sampling and a common view /1, 3, 4, 5/ that the level of mineral elements in the hair reflects the state of mineral supply was the basis for investigations on the content of mineral elements in the hair of foxes.

Material and methods.

The investigations were carried out on a fur-bearing animals farm in the Siedlce province. They covered 8 black-silver foxes, 4 males and 4 females of full somatic and sexual maturity. The animals were kept in separate cages, were fed ad lib. and had permanent access to water. They were fed traditionally i.e. with fresh fodder. A portion consisted of 32% fresh meat products, 36% of fresh fish, 15% corn products, 12% of green forage, 3,5% of fodder yeast and 1,5% of potatoes. Addition of vitamin premixes was used.

The hair was taken three times a year, in spring, summer and winter, from the dorsal part at the height of the scapula according to the recommendations given by Brochart /3/ i.e. having previously carefully shaved the place and taking into analysis the hair that has grown again. The content of mineral elements Ca, Mg, Na, K, Fe, Cu, Zn, Co and Mn was determined with the method of atomic absorption spectrophotometry /2/. The content of P was estimated colorimetrically with the method of Fiske-Subbarov /6/. The results obtained were put to statistical analysis. The relevance of differences of the examined elements in the different seasons of the year was marked by Student's test T

at $p \leqslant 0.05$.

Results.

The data concerning the level of the examined elements in the hair of foxes is given in table 1 and 2. The quantitative sequence of occurrence of mineral elements was the following:

$$Na > Ca > Mg > P > Zn > Fe > Cu > Mn > Co$$

The sequence is not consistent with the data given by other authors /1, 4, 3, 5/ in relation to other species of animals. This concerns in particular the microelements. It should be noted that concentration of examined elements in the hair was practically on the same level. The only relevant differences was in the level of Calcium, which was lower in autumn.

Table 1. The content of mineral elements in foxes hair.

Element	Spring		Summer		Autumn	
ppm	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s
Ca	891^{ab}	135	911^{b}	137	851^{a}	60
P	216^{a}	37	200^{a}	0,0	216^{a}	37
Mg	250^{a}	41	275^{a}	36	245^{a}	31
Na	998^{a}	54	1048^{a}	77	970^{a}	50
K	508^{a}	98	530^{a}	83	436^{a}	82

Explanation: a b-significant differences at $p < 0.05$.

Table 2. The content of mineral elements in foxes hair.

Element	Spring		Summer		Autumn	
ppm	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s
Fe	48.0^{a}	7.0	48.0^{a}	7.0	48.1^{a}	6.9
Cu	13.0^{a}	0.6	11.8^{a}	1.0	13.2^{a}	1.0
Zn	53.0^{a}	2.0	55.8^{a}	4.3	51.5^{a}	2.9
Co	0.5^{a}	0.05	0.5^{a}	0.0	0.5^{a}	0.05
Mn	2.1^{a}	1.0	2.3^{a}	0.9	2.1^{a}	1.0

According to us it reveals high level of stability in supplying the foxes with mineral elements. It is bovious, though, that the mineral elements in the hair come only from capillaries of the blood circulation system which supply the elements to the hair follicles, at the same time blood reflects directions and tendencies in mineral supply of the animals.

Comparison of the obtained results with the examinations of other authors is difficult because of lack of proper data in attainable literature. Observation of the health condition and sick rate of foxes as well as of their feeding allows us to take the described values of mineral elements level as physiological values for this type of environmental conditions/feeding and care/ with regard to the animal race.

Conclusions.

1. Sequence of quantitative occurrence of the examined mineral elements in the hair of black-silver foxes was the following:

   Na > Ca > Mg > P > Zn > Fe > Cu > Mn > Co

2. The stated levels of mineral elements in the hair of black-silver foxes may be taken as referrential values.

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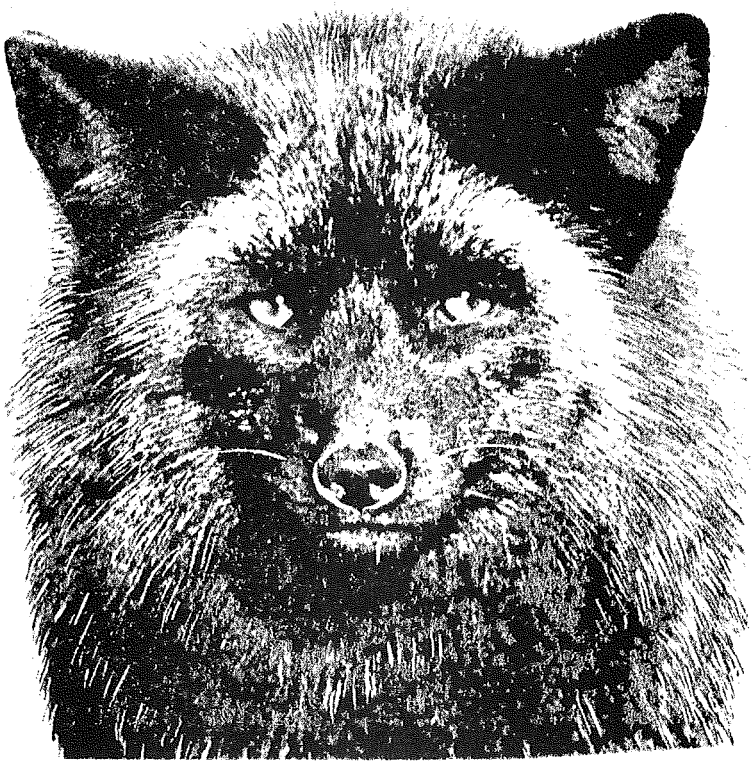

Original Report.

THE CONTENT OF MINERAL ELEMENTS IN THE BLOOD OF RACCOON DOGS /NYCTEREUTES PROCYONOIDES/.

Leon Saba, Zbigniew Bialkowski, Stanislaw Wójcik, Institute of Food and Animal Hygiene, Agricultural Academy in Lublin, ul. Akademicka 13, 20-934 Lublin, Poland.

Summary.

The level of mineral elements was determined in the blood serum of mature Raccoon dogs. 14 animals with the equal number of both sexes were used in the experiments. The blood was taken three times in the year: in spring, summer and winter. The concentration of cationic mineral elements was determined with the method of atomic absorption spectrometry, and the level of P according to Fiske-Subbarow. The sequence of the quantitative occurrence of the investigated mineral elements in the blood serum was the following:

Na > K > Ca > Pn > Mg > Zn > Fe > Cu

The content of the individual elements in the blood serum ranged: Na, 88-248 mg%, K, 6.4-26.8 mg%, Ca, 7.2-14.4 mg%, Pn, 5.0-11.2 mg%, Mg, 0.6-2.5 mg%, Fe, 112-380 mg%, Zn, 92-297 mcg%, Cu, 52-156 mcg%.

An essential factor of the estimation of physiological condition of animals is among others estimating the level of mineral elements in their blood.

In such a way the physiological norms helpful at estimating the health condition of animals and their potential production capabilities /1, 3, 4, 5, 6/ are determined. Attempts at defining the norms in relation to Raccoon dogs seemed justified since in the attainable literature proper data could not be found, and at the same time the animals started being raised in the animals/fur-bearing animals/ farms lately.

Material and methods.

Research were carried out on 14 Raccoon dogs of both sexes selected from production farm W. in the Siedlce province. The animals under analysis were clinically healthy and free of any infectious and parasitical disease. Raccoon dogs were fed with fodder consisting in 79% of animal origin food, 11% of ccoked bruised grain, 8% of green forage and 2% of dry yeasts. The fodder was supplemented with vitamine-mineral premix. The animals were fed ad lib. and had permanent access to water. The blood was taken to analysis from the foot vein three times a year i.e. in spring, summer and winter. Berfore taking blood to analysis the animals were kept hyngry for 12 hours. The content of mineral elements i.e. Ca, Mg, Na, K, Fe, Zn and Cu was estimated with the method of atomic absorption spectrophotometry and the level of P was estimated colometrically with the method of Fiske-Subbarov /2/. The obtained results were further submitted to the basic statistical analysis.

Results.

The results of estimation of the contents of mineral elements in the blood serum of Raccoon dogs is given in table 1 and 2.

Table 1. The contents of mineral elements in blood serum of Raccoon dogs.

Indices	Ca mg%		Pn mg%		Mg mg%		Na mg%		K mg%	
Periods of observations /season/	male $\bar{x}$ $\pm s$	fem. $\bar{x}$ $\pm s$	male $\bar{x}$ $\pm s$	fem. $\bar{x}$ $\pm s$	male $\bar{x}$ $\pm s$	fem. $\bar{x}$ $\pm s$	male $\bar{x}$ $\pm s$	fem. $\bar{x}$ $\pm s$	male $\bar{x}$ $\pm s$	fem. $\bar{x}$ $\pm s$
Spring	A b 10.3 0.8	A a 8.0 0.4	B 7.8 1.1	B 8.0 0.5	A 1.4 0.2	A 1.1 0.1	Ba 198 9.1	Ba 200 5.8	B 23.6 4.0	B 24.2 1.2
Summer	B a 13.5 5.2	C a 13.4 3.3	A 5.6 0.3	A 5.7 0.9	B 1.9 0.4	B 2.0 0.3	Aa 144 40.9	Bb 198 26.2	A 11.8 1.6	A 13.5 1.7
Winter	B b 14.1 2.6	B a 10.1 2.7	B 7.7 0.5	B 7.7 1.1	AB 1.3 0.1	AB 1.3 0.3	Bb 180 9.7	Aa 153 46.0	A 12.5 3.3	A 13.7 1.4

Explanation: ABC. abc - significant differences at $p \leq 0.05$.

Table 2. The contents of mineral elements in blood serum of Raccoon dogs.

Indices Periods of observations /season/	Fe mcg%				Cu mcg%				Zn mcg%			
	male		female		male		female		male		female	
	$\bar{x}$	$\pm s$	$\bar{x}$	$\pm s$	$\bar{x}$	$\pm s$	$\bar{x}$	$\pm s$	$\bar{x}$	$\pm s$	$\bar{x}$	$\pm s$
Spring	252	87.0	217	27.8	62.0	14.0	52.0	12.8	225	14.3	193	18.4
Summer	204	44.1	215	40.2	96.8	10.5	106.0	28.0	202	8.1	197	12.1
Winter	157	10.2	146	14.1	69.0	8.3	63.0	10.2	184	12.6	192	10.3

From the data given in the tables it follows that the sequence of quantitative occurrence of elements in the blood serum is the following:

Na K Ca Pn Mg Zn Fe Cu

The sequence is only partially similar to the data given by Saba and collaboratores /3/ and Wójcik and collaborators /6/ in relation to minks and polar blue foxes. Bigger standard deviation for microelements as compared to macroelements, is noted, which may suggest greater stability of the macroelements economy. Similar observations were made in relation to minks and polar blue foxes /3,6/. As a rule differences in the level of mineral elements depending on sex were not shown, however the presence of such differences depending on the season of the year was stated. On one hand this points out to the change in mineral economy of Raccoon dogs depending on the season of the year, on the other hand narrowness of material does not allow defining regularity of the changes.

Observations of the health condition of the animals did not point out to deficiency in mineral elements. The obtained values of mineral elements may be considered as physiological norms in relation to the environmental conditions in which the animals are kept.

The results shown may thus have some significance for comparative physiology and may be utilized by veterinary service for estimating health condition of Raccoon dogs kept in the farms, and in particular to preliminary estimation of supplying their organisms in mineral elements.

Conclusions.

1. The estimated contents of mineral elements in the blood serum of Raccoon dogs kept in farm conditions may be regarded as physiological norms.
2. Oscillations in the level of mineral elements in the blood serum depending on the season of the year were not regular.

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Original Report.

METABOLIC PROFILE OF BLOOD OF POLAR BLUE FOXES.

Leon Saba, Zbigniew Bialkowski, Stanislaw Wójcik, Juliusz Tyczkowski,
Institute of Food And Animal Hygiene, Agricultural Academy in Lublin, ul. Akademicka 13, 20-934 Lublin, Poland.

Summary.

The control of metabolic processes as a method of diagnosis and prophylactic procedure with regard to mass breeding is a subject of increasing interest among researchers. So, attempts are necessary to determine the metabolic profile of foxes taking into consideration the living conditions in many years' cycles.

Investigations were carried out to determine the metabolic profile of polar blue foxes. The observations were made on one of the farms during the three year period with 10 foxes of both sexes at a time. The blood was taken from the animals when they reached the slaughter age. The blood indicators were determined with routine laboratory methods. In the whole blood basic haematological indicators were determined whose average values were: haematocrit 0.518 l/l, haemoglobin 8.86 mmol/l, erythrocytes 9.6 T/l, leukocytes 8.9 G/l.

The level of biochemical indicators was: total protein 62.0 g/l, urea 5.60 mmol/l, glucose 7.90 mmol/l, cholesterol 4.15 mmol/l, creatinine 327.4 mmol/l.

The activity of the chosen enzymes was: LDH 1434 µkat, AspAT 1730 µkat, AlAT 221 µkat, AP 646 µkat.

The content of mineral elements was: Ca 4.6 mmol/l, Pn 2.7 mmol/l, Mg 1.1 mmol/l, Fe 40 µmol/l, Zn 16.1 µmol/l, Cu 21.6 µmol/l.

The control of metabolic processes as a method of diagnosis for metaphilactic and prophylactic procedure is a subject of increasing interest among researchers /6,10/.

Controlling these processes is necessary in mass breeding. The researches conducted in this field so far regard only big farm animals. In practice there is a lack of uniform data of metabolic profile of fur-bearing animals in the conditions of feeding and care available in our country. Hence there was a need for conduction researchers aiming at defining the metabolic profile of polar blue foxes.

Material and methods.

The researches were carried out during the three year period in Demonstration Centre of Breeding the Fur-bearing and Warrantable Animals in Skolimów.

Out of the population of several hundred foxes each year 10 animal, half males and half females, of full somatic and sexual maturity were selected. The animals were kept in separate cages and fed ad lib. and they had permanent access to water. The feeding portion consisted in 32% of fresh meat products, 36% of fresh fish, 15% of corn products, 12% of green forage, 3.5% of fodder yeasts and 1.5% of potatoes.

Blood was taken from the foot vein. Each time the blood was taken in late autumn after previously keeping the animals hungry for 18 hours.

In the total blood the content of haematocrit, haemoglobin and the content of erythrocytes and leucocytes was stated. In the blood serum glucose was estimated with the method of Nelson-Somogyi modified by King-Garner /7/, concentration of cholesterol with the method of Ilca /9/, content of urea nitrogen with Conway's method /7/, creatinine level with the method of Folin and Wu /4/, and total protein was estimated refractometrically /7/.

The activity of alanine transaminase ALAT and aspartatic transaminase AspAT was estimated with the method of Reitman and Frankel /8/, the

level of Alkaline phosphatase AP with the method of Bodansky /4/ and lactate dehydrogenase LDH by the spectrometric method of Bergmeyer /5/.

The level of mineral elements i.e. Ca, Mg, Fe, Zn, Cu in blood serum was estimated with ASA method and the level of inorganic phosphorus was estimated with the method of Fiske-Subbarov /7/.

The obtained results were described statistically. The relevance of the differences was counted by the Student's test T. Results are given in the table according to the SI system.

Results.

The obtained results of the designations of indices under examination are given in tables 1 and 2. The researches were treated as preliminary, hence the large range of indices, which gives basis for selection of metabolites appropriate for metabolic profile of foxes. With large animals less indices are needed for stating the profile. Special attention should be paid to the acitivity of transaminases, the level of glucose, cholesterol and urea as well as the content of Ca, P and Mg /6, 10/.

The results given here are in the large range of physiological changeability noted by a number og authors /1, 2, 3, 11, 12/. They are particularly close to the results achieved by Bialkowski and collaborators /1/ as well as by Wójcik and collaborators /12/. This points out that the metabolic profile of foxes is dependent on the environmental conditions. This, at the same time, suggest that one unchangeable value may not be taken as a universal physiological norm. When defining the metabolic profile a separate control group should be formed and the obtained results should be later referred to that group.

It should be noted that the level of the examined indices in individual years was relatively stable.

The common view is that changes of values of the indices reflect supply of the elements in the system and the direction of changes. According to Payne and collaborators /6/ such character of the indices allows for their full inclusion to the metabolic profile. At the same time each of

Table 1. Haematological parameters and biochemical values.

Indices \ Period of observations /season/	I		II		III	
	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s
Haematocrit l/l	0.513	0.02	0.518	0.01	0.520	0.16
Haemoglobin mmol/l	8.86	0.08	8.80	0.9	8.90	0.1
Erythrocytes T/L	9.6	1.9	10.0	2.3	10.4	0.4
Leucocytes G/L	8.9	2.6	9.8	2.1	9.6	2.6
Total protein g/l	62.0	7.4	60.0	11.8	64.0	12.0
Urea mmol/l	5.60	0.13	5.57	0.10	5.02	0.6
Glucose mmol/l	7.90^{b}	0.11	8.57^{ab}	0.11	7.40^{a}	0.09
Cholesterol mmol/l	4.15	0.12	4.11	0.15	4.20	0.13
Creatinine mmol/l	327.4^{a}	17.2	353.6^{b}	21.2	344.2^{ab}	16.8

Explanation: ab - significant differences at $p \leqslant 0.05$.

Table 2. Activity of enzymes and contents of mineral elements in blood serum.

Indices \ Period of observations /season/	I		II		III	
	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s	$\bar{x}$	$\pm$ s
LDH μkat	1434^{ab}	83	1520^{b}	68	1394^{a}	70
AspAT μkat	1730^{ab}	79	1620^{a}	38	1673^{ab}	52
AlAT	221^{a}	18	216^{a}	12	238^{ab}	17
AP μkat	646^{ab}	47	623^{a}	32	674^{ab}	36
Ca mmol/l	4.6	0.9	3.9	0.3	4.2	0.7
P mmol/l	2.7	0.4	2.8	0.3	3.0	0.3
Mg mmol/l	1.1	0.3	1.4	0.2	1.2	0.2
Fe μmol/l	40.1^{b}	3.2	32.2^{a}	7.1	38.4^{ab}	4.6
Zn μmol/l	16.1	3.7	14.2	2.8	15.0	3.9
Cu μmol/l	14.6^{b}	2.9	10.9^{a}	1.7	12.0^{ab}	3.2

the examined indices shown in the present work, fulfils these requirements and may be used in the estimation of the metabolic profile of foxes.

Conclusions.

1. The noted stability of physiological indications of polar blue foxes, makes it possible to take them as referrential values.

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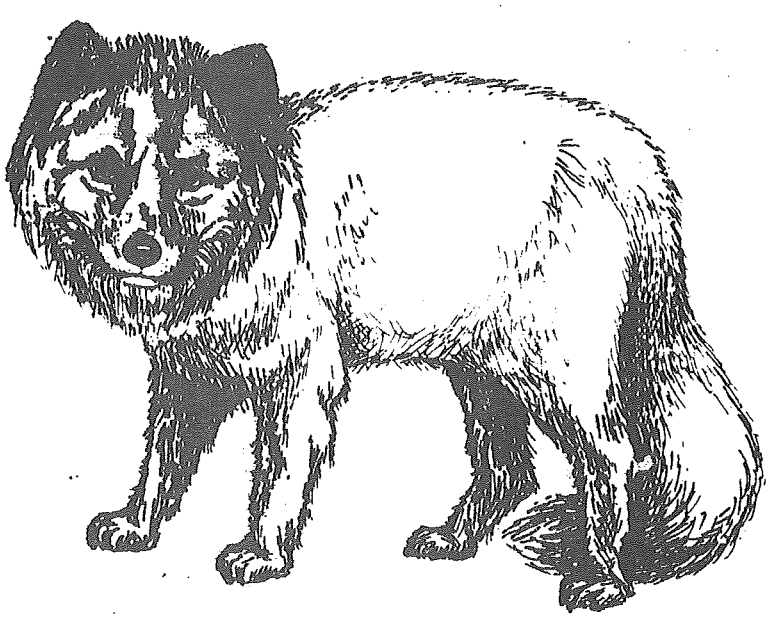


ARCTIC FOX HOME RANGE CHARACTERISTICS IN AN OIL-DEVELOPMENT AREA.

Lester E. Eberhardt, Wayne C. Hanson, John L. Bengtson, Robert A. Garrott, Eric E. Hanson, Terrestrial Ecology Section, Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 99352.

Spring and summer home ranges and local movements of arctic foxes (Alopex lagopus) were studied from 1975 to 1977 at the Prudhoe Bay oil-development area in northern Alaska. Twenty-seven adult and 62 juvenile foxes were captured, marked, and released. Nine adults and 5 juveniles were equipped with radio collars and monitores during 1976 and 1977. Home range size was 20.8 $\pm$ 12.5 (SD) km^2 for 4 adult foxes and 3.7 $\pm$ 1.7 km^2 for 5 juveniles. Home range configuration was similar for all marked members of individual families. Adult foxes were nocturnal and territorial. Foxes used oil-development sites for feeding, resting, and denning. Use of these sites became more common late in the rearing season, as juveniles became more mobile. A major fluctuation in the availability of natural foods did not appear to alter use of developed areas by foxes. The number of juvenile foxes observed at Prudhoe Bay decreased from 1976 to 1977, but the decrease was less pronounced than in a nearby indisturbed area.

SCIENTIFUR code: 1-F.
J. Wildl. Manage, 46, 1, 1982, 183-190.
1 table, 1 fig., 32 references. Authors' abstract.

FOOD PREFERENCE, OPTIMAL DIET AND REPRODUCTIVE OUTPUT IN STOATS MUSTELA ERMINEA IN SWEDEN.

Sam Erlinge, Dept. of Animal Ecology, Univ. of Lund, Ecology Building, S-223 62 Lund, Sweden.

Field data on the diet of stoats in relation to different prey density were used to examine food preference and selective feeding and to test predictions from optimal foraging theory. The relationship between diet

and reproductive output was also examined in three food environments. Stoats concentrated on voles (their basic food) when vole density was high or moderately high. Male stoats showed a high preference for the larger water voles. Selective hunting for them increased with their relative abundance but the males specialized less on water voles at overall high density of rodents. This was probably due to high relative density of the prey second in preference (field vole). The data are in agreement with the theory predicting relative density of prey to be important in determining optimal diet. Females did not show any clear preference for water vole relative to field vole and no long term change occurred in selective hunting relative to changes in vole density. The difference between males and females was ascribed to different fitness set functions, implying a combination of large and small voles to be the optimal diet for females and large prey as water vole as optimal diet for males. No consistent difference in reproductive success was found in the different food environments, but the highest reproductive output occurred in areas with relatively high water vole density.

SCIENTIFUR code: 1-0.
OIKOS, 36, 303-315, Copenhagen 1981.
9 tables, 5 figs., 50 references. Author's summary.
In English with summaries in English and Russian.

SEASONAL AND AGE CHANGES IN THE THYMUS GLAND OF THE RED FOX, VULPES VULPES.

G.I. Twigg, Stephen Harris, Dept. of Zoology, royal Holloway College, Englefield Green, Egham, Surrey.

Seasonal and age changes in thymus weight and histological structure were examined in the Red fox (Vulpes vulpes). Growth in the fox thymus slowed down after birth compared with the last third of foetal existence, but the gland still grew rapidly to reach a peak first year weight when the cubs were 20 weeks of age. From this point the thymus in both sexes decreased markedly in weight to reach a low point by the beginning of the first breeding season. During this involution lobule structure broke down and adipose tissue and connective tissue was laid down in the gland. Recovery of the thymus towards the second year weight

maximum was accompanied by the regaining of lobule structure and the gland resembled that of the juvenile again. The male thymus increased in weight from the middle of the mating season, but recovery in the female thymus was delayed until the end of lactation. Involution occurred prior to the second breeding season. Thereafter, the gland never attained the high weights seen in the first two years of life, but histological changes still occurred even in old animals. The thymus gland of animals infected with sarcoptic mange is described.

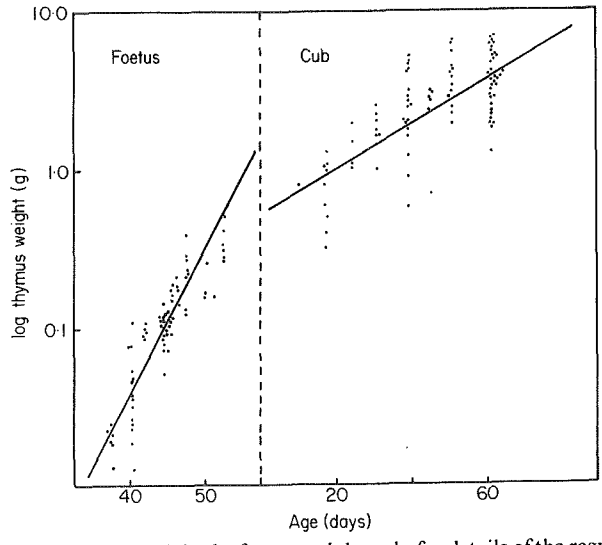


FIG. 3. Comparison of thymus growth in the foetus and the cub; for details of the regression lines see text.

SCIENTIFUR code: 2-F.
J. Zool., Lond. 1982, 196, 355-370.
7 figs., 29 references. Authors' summary.

HISTOLOGICAL PATTERN AND HISTOCHEMISTRY OF THE PREPUTIAL GLAND IN THE WEASELS (MUSTELA SIBIRICA).

イタチの包皮腺の構造と組織化学

E. Sato, N. Manabe, T. Ishibashi, S. Watanabe, Dept. of Animal Science, College of Agriculture, Kyoto University, Kyoto 606, Japan.

Histochemical investigation was carried out for the preputial gland of the adult weasels (Mustela sibirica coreana). The preputial gland may be classified as a compound alveolar gland (sebaceous gland). The gland was moderately stained with oil red O and sudan black B, and

strongly with nile blue and victoria blue 4R. The gland showed very strong activities of reduced nicotinamide adenine dinucleotide tetrazolium reductase, lactate dehydrogenase and aldolase, slight or moderate activities of 17 β-hydroxysteroid dehydrogenase, 20 α-hydroxysteroid dehydrogenase and alkaline phosphatase, slight activities of α-glyceophosphate dehydrogenase, acid phosphatase, 11 β-hydroxysteroid dehydrogenase and 20 β-hydroxysteroid dehydrogenase, slight or negative activities of malated dehydrogenase and steroid 3β -ol-dehydrogenase, and negative activites of succinate dehydrogenase, β-hydroxybutyrate dehydrogenase and acetylcholine esterase.

Histochemical characteristics of the preputial gland was similar to the alveolar gland (sebaceous gland) found in the anal gland and the sebaceous gland of the skin.

SCIENTIFUR code: 2-0.
Japan. J. Anim. Reprod., 27, 1, 1981, 36-39.
8 figs., 24 references.
In Japanese with English summary. Authors' summary.

LIMB BONE MORPHOLOGY IN CANADIAN MINK (MUSTELA VISON).

(Morfoloske karakteristike kostiju ekstremiteta kanadske lasice (Mustela vison).

O. Jablan-Pantic, Z. Miladinovic, A. Zagorcic, V. Knasiecka, Veterinarski fakultet, 11000 Beograd, Bulevar JNA 18, Yugoslavia.

The bones of the extremities of the Canadian mink have specific morphological properties which characterize the species Mustela vison, in addition to characteristics which distinguish carnivora, the order to which they belong

These characteristics are manifested on the scapula by a marked tuberositas spinae scapulae, a large procesus suprahamatus and a triangular fossa supraspinate, by a large convexity of the margo cranialis scapulae and a deep incisura scapulae. On the shoulder bone the distal epiphysis is characterized by a crista lateralis shaped like a plate.

The forelimb bones have a spacious spatium interoseum antebrachii which is developed over the whole length of the limb, besides a marked convexity of the radius and ulna. On the pelvic bones spina iliaca dorsalis caudalis is well expressed and passes at rightangles into a deep incisura ischiadica major. The body of the pelvic arch is flattened dorso-ventrally and directed diagonally caudoventrally and medially. The foramen obturatum is triangular and the arcus ischiadicus is wiede and swallow. The thing bones are characterized by the trochanter tertius and crista intertrochanterica, while the shin bones have a wide spatium interosseum cruris, which stretches over the whole length of the shin. The number, ratio and appearance of the carpal, metacarpal, tarsal and metatarsal bones, toe bones and sesamoid bones of Mustela vison show no differences from those of domestic carnivores.

SCIENTIFUR code: 2-M.
Veterinarski Glasnik, 35, 4, 321-329, 1981.
7 figs., 10 references. Authors' summary.
In Yugoslav with summaries in English and Russian.

METHODS AND ANALYSES IN DETERMINATION OF MINK CARCASS COMPOSITION BY SLAUGHTER TECHNIQUE.

N. Enggaard Hansen, Dept. of Animal Nutrition, Royal Veterinary and Agricultural University, 13 Bülowsvej, DK 1870 Copenhagen.

The present investigation describes methods and analyses applicable in disentegrating and analysing mink carcasses concerning N, fat, ash and minerals.

An examination of reproducibility was based upon 10 samples (crude fat: 6 samples) from one carcass.

N and mineral content in ether extract expressed as per cent of the total amount in the carcass was estimated in a group of animals comprising 31 kits of either sex killed from July to pelting.

It was concluded that ether extraction as part of a fractionation had to be done in order to obtain homogeneity of the residual matter related to maximum sample size. The amount of N and, more pronounced, minerals in the extracted fat was too high to be neglected.

SCIENTIFUR code: 3-14-M.
Acta Agric. Scand., 32, 1982, 305-307.
2 tables, 13 references. Author's summary.

LYMPHOCYTE SUBPOPULATIONS IN THE FERRET.

Carol A. Kauffman, Alice G. Bergman, Veterans Administration Medical Center and the University of Michigan Medical School, Ann Arbor, MI 48105, USA.

Several different surface markers were sought on ferret lymphocytes. Using a technique which attaches complement to zymosan particles, 16.7% of peripheral blood lymphocytes and 15% of splenic lymphocytes exhibited receptors for complement. Receptors for the Fc portion of IgG, measured by an assay using antibody coated sheep erythrocytes, were found on 11.7% of peripheral blood lymphocytes and 34.8% of splenic lymphocytes. Using an indirect fluorescent antibody technique, surface immunoglobulin was detected on 13.4% of peripheral blood lymphocytes and 10.3% of splenic lymphocytes. Spontaneous "T" lymphocyte rosettes were sought unsuccessfully using erythrocytes from 16 different animals. These studies increase our understanding of the ferret immune system and provide methods for the in vitro separation of lymphocyte subpopulation in ferrets.

SCIENTIFUR code: 3-0.
Developmental and Comparative Immunology, Vol.5, 671-678, 1981.
3 tables, 26 references. Authors' abstract.

CONCENTRATION OF PLASMATIC THYROXINE (T4) IN NUTRIA MALES FROM BIRTH TO BREEDING AGE OF THE ANIMALS.

(Koncentrace plazmatickeho tyroxinu (T4) u samcu nitrii od narozeni do obdobi chovne dospelosti).

P. Jelinik, J. Picha, D. Pichova, Vysoká skola zemedelská, Zemedelská 1 662 65 Brno, CSSR.

The dynamics of plasmatic thyroxine (T4) levels was observed in 90 nutria males of the Standard breed, the interval under study covering the first 300 days of the animals' postnatal life. The whole interval was divided into 10 age categories related to following days: 1, 15, 30, 60, 90, 100-105, 115-130, 150, 180-210 and 240-300. The concentration of thyroxine (T4) was determined using the radioimmunological method, and the blood was obtained by puncture of the heart. Over the above interval of postnatal development the thyroxine levels were found varying within af range from 15.83 ng.ml-^{1} when 15 days of life) to 45.33 ng.ml-^{1} (when 150 days of life) of the blood plasma.

SCIENTIFUR code:3-0.

Acta Universitatis Agriculture, Ser. A, Facultas Agronomica, Brno, V. 29, 1/2, 289-295, 1981.

1 fig., 3 tab., 31 references. Authors' summary.

In Czechoslovakian with summaries in German , English and Russian.

EFFECT OF ENVIRONMENT AND FEEDING ON CHINCHILLAS.

(Einfluss von umwelt und futterung auf chinchillas).

Irvin Graham, biologe, Graham's Chinchilla Laboratories,GDR.

Pseudomonas aeruginosa is commonly found in the gastrointestinal tract of chinchillas. About 85 per cent of all cases of conjunctivitis are caused by this bacterium. Two groups of chinchillas with pseudomonas aeruginosa were fed on pressed maize pellets, timothy grass (pheleum pratense) and water. The ambient temperature was 20 to 22 deg. C. The growth of these animals was similar to that in uninfected controls. When the chinchillas were exposed to high humidity and a variable air temperature (-7 to 31 deg. C), one died after 7 days due to diarrhoea and lung inflammation. P. aeruginosa was detected in the faeces.

A second animal died after 9 days, and again the bacterium was detected. When chinchillas were fed on the pellets, P. pratense, and water and with a daily teaspoonful of rancid wheat germ, one died after 14 days (severe diarrhoea), while a control died after 7 days showing similar signs. P. aeruginosa could not be detected in either group. When the animals were given maize and water, one chinchilla died after 14 days. The animal had an eye infection, middle-ear inflammation, and P. aeruginosa was detected in the faeces.

SCIENTIFUR code: 6-10-0.
Deutsche Pelztierzuchter, 54, 7, 113-114, 1980.
In German. CAB-abstract.

ENTEROTOXIN PRODUCTION BY STAPHYLOCOCCUS AUREUS RELATED TO THE ORIGIN OF THE STRAINS.

Ørjan Olsvik, Bjorn P. Berdal, Kåre Fossum, Tov Omland, Norwegian Defence Microbiological Laboratory, Natl. Inst. of Public Health, Geitmyrsveien 75, Oslo 4, Norway.

The production of enterotoxins by strains of Staphylococcus aureus of human and animal origin seems to be common. 104 out of 170 strains (61%) produced one or more of the A, B, and C enterotoxins. Strains from cow and milk often produced enterotoxin C, and enterotoxin A producing strains were mainly isolated from dogs. Human food poisoning seemed in our meterial to be induced by enterotoxin A producing strains.

SCIENTIFUR code: 8-0.
Acta path. microbiol. scand., Sect. B. 89, 423-426. 1981.
2 tables, 23 references. Authors' abstract.

SOCIAL BEHAVIOUR IN A FAMILY OF BEAVER, CASTOR CANADENSIS.

Charles A. Brady, Gerald E. Svendsen, Dept. of Zoology, Ohio University, Athens, Ohio 45701, USA.

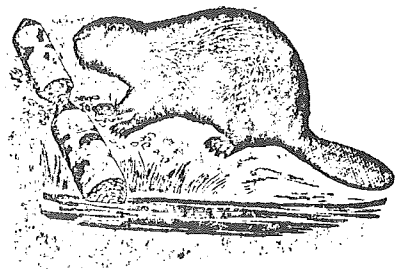
The beaver family studied had frequent close-range interactions outside

and rarely foraged in groups along the shoreline. In addition, adults, especially the adult male actively avoided group feeding bouts by leaving an area when another colony member approached. The social interactions observed most often involved at kit and an older family member and appeared to be supervisory in nature. Both parents, as well as the older juveniles, transported kits into and out of the lodge, carried food into the lodge for them, and later relinquished food to the kits when they begged. Social contacts between older family members most often occurred when two animals came together at a food source in the waterway. The animals would greet one another with a nasal-nasal contact, secure a piece of the food and move off before consuming it.

Aggressive interactions were rare among family members as they would disrupt the cohensiveness of the family. All of the observed aggressive interactions were threats rather than actual fights. These interactions were most often observed in the spring when yearlings continued to beg food from a parent. The parent snapped its head towards the yearling which generally caused retreat. Two-year old dispersed in their second spring and prior to their departure no aggressive interaction were directed towards them.

It is hypothesized that the dispersed spatial arrangement and lack of close-range interactions outside the lodge is due in part to predation pressure. Grouping on shore would make several family members susceptible to predation at once. Family members return to water when disturbed and alert other family members to the danger by slapping the tail against the water. The adult male and, to a lesser extent, the adult female inspected the entire impoundment each night at the beginning of the activity period. The function of this inspection could be to guard against territorial intruders or potential predators of both.

SCIENTIFUR code: 11-0.
Biology and Behaviour, 1981, 6, 99-114.
5 tables, 29 references. Authors' summary.
In English with subtitles and summary in French.



SOME SPECIFIC FEATURES OF COMMERCIAL MUSKRAT FARMING ON THE FOREST-STEPPE LAKES OF WESTERN SIBERIA.

ОСОБЕННОСТИ ОНДАТРОВОГО ХОЗЯЙСТВА НА ОЗЕРАХ ЛЕСОСТЕПИ ЗАПАДНОЙ СИБИРИ

N.I. Chesnokov, USSR.

Observations carried out during 1968-1970 lead to the conclusion on the existence of a constant factor, epizooties, controlling the abundance of muskrats (Ondatra zibethicus L.). Recommendations are given for the management of muskrat farms in regions suffering from epizooties, which differ from the traditional approach.

SCIENTIFUR code: 12-0.

Biulleten' Moskovskogo Obshchestva Ispytalelei Prirody. Otdel Biologischeskii (Moskva, Moskovskii Universitet) Mar/Apr. 1981. V. 86 (2), 24-30.

17 references. Author's summary.

In Russian with summary in English.

COMPARISON OF VARIOUS METHODS OF AGE DETERMINATION IN INDIVIDUAL MINK.

(Comparaison de différentes méthodes de détermination de l'âge individuel chéz le vison (Mustela vison Schreiber).

M. Pascal, P. Delattre, Laboratorire de la Faune Sauvage et Cynégétique, Centre National de la Recherche Zootechnique, 78350 Jouy en Josas, France.

The relationship between lens weights and age was determined using 322 farm minks of known age. Twenty-seven of these animals were used in the histological study of the mandibular bone, the femoral diaphysis, the cementum and dentine of M1 and the canine tooth. The weight of the lenses represents a good age indicator until 1.5 years. In older animals counting the resting or adhesive line (L.A.C.,

ligne d'arrêt de croissance) of the acellular cementum in the region of the M1 constitutes the best criterion for determining the individual age. The period of L.A.C. deposition is indicated more accurately.

SCIENTIFUR code: 14-M.
2 tables, 6 figs., 46 references. Authors' summary.
In French with summaries in English and French.

A NEW SKIN BIOPSY TECHNIQUE IN DOMESTIC ANIMALS.

Mukhtar Taha Abu-Samra, Dept. of Vet. Clin.Studies, Fac. of Vet.Sci.,
P.O. Box 2278, Khartoun, Sudan.

A simple bloodless technique for the collection of skin biopsy specimens from domestic animals is described. Desensitization of the biopsy site as well as haemostasis are produced mechanically by crushing a fold of skin with an artery forceps. The technique is rapid and was found to be especially useful under tropical conditions of animal husbandry.

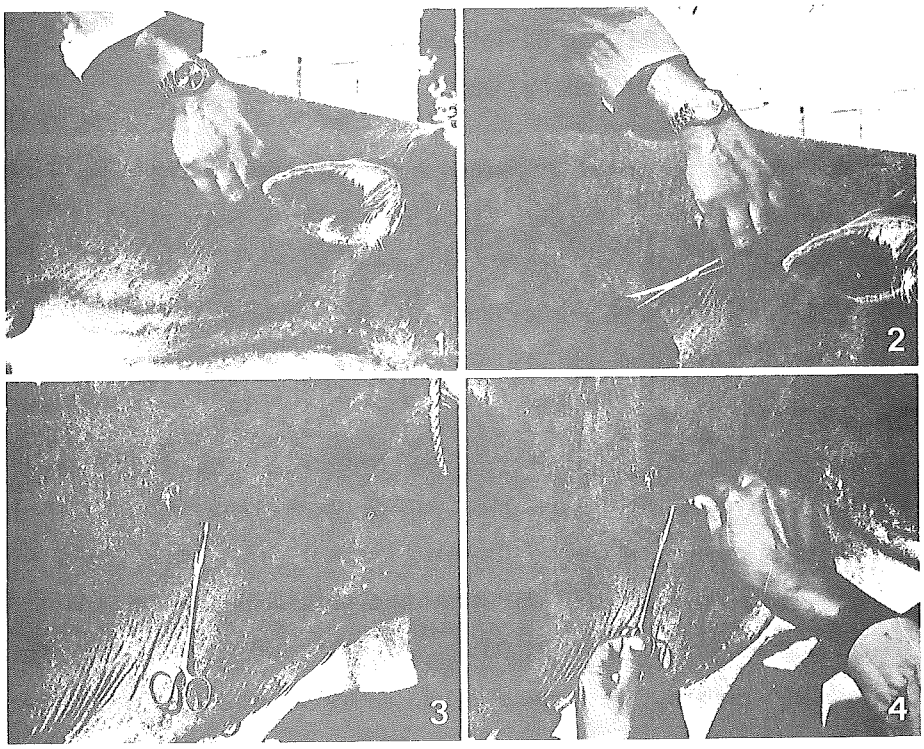


Fig. 1—4. The artery forceps is unlocked and removed and antibiotic powder is sprinkled on the closely associated lips of the wound. The skin biopsy specimen is fixed, processed, sectioned and routinely stained

SCIENTIFUR code: 14-O.
Zbl.Vet.Med. A, 27, 600-603, 1980.
4 figs., 6 references. Author's summary.
In English with summaries in English, German, French and Spanish.

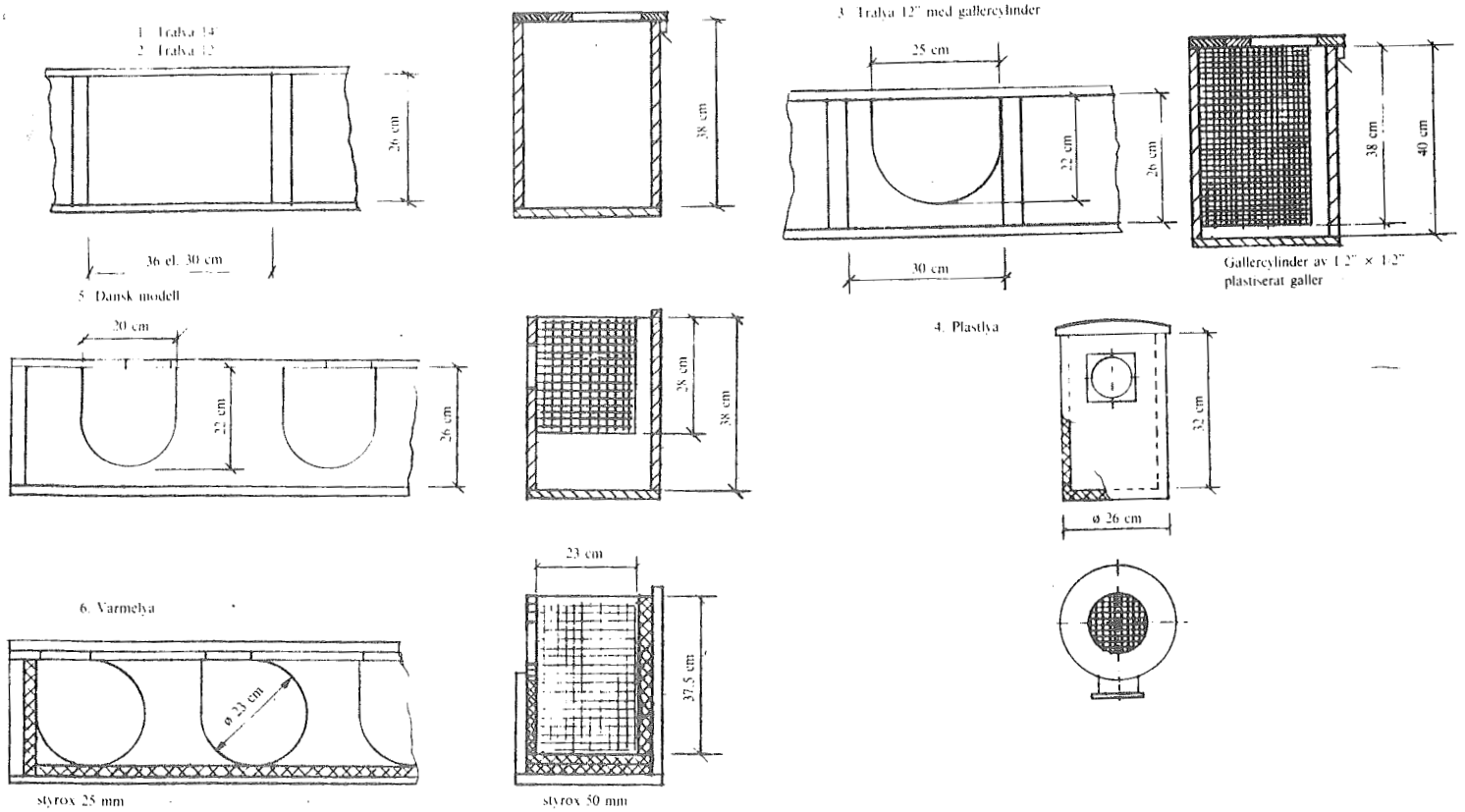
EXPERIMENTS WITH MINK CAGES.

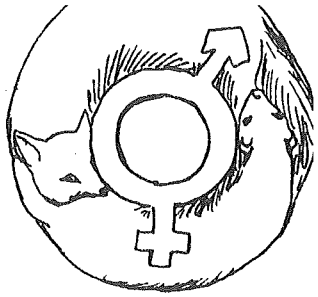
(Försök med minklyor).

B. Sjögård, S. Moss, SF 66640 Maxmo, Finland.

For mink female housed in a 14-in wooden cage, a 12-in wooden cage, a wooden cage with an internal, insulated cylinder, a plastic cage, an unspecified type of Danish cage, and a wooden cage with a specially insulated internal cylinder (58-60 female per group) from 21. April until 24 days after parturition, the percentage of infertile female averaged 23.7, 30.0, 31.0, 23.3, 13.3 and 17.2 resp. In the 6 types of cage, the number of kits born per mated female averaged 3.79, 3.59, 2.86, 3.85, 4.13 and 4.27 resp., and the number of kits per mated female at 24 days post partum averaged 3.38, 3.03, 2.74, 3.40, 3.71 and 3.87. The number of kits born per female whelping averaged 4.97, 5.04, 4.15, 5.02, 4.86 and 5.39 in the 6 groups, and that of kits surviving to 24 days 4.44, 4.33, 3.97, 4.43, 4.37 and 4.89.

SCIENTIFUR code: 12-M.
Finsk Pälstidskrift, 15, 9, 422-427, 1981.
2 figs. CAB-abstract.
In Swedish.





GENETICS

BANDING TECHNIQUES IN CHROMOSOME ANALYSIS OF DOMESTIC ANIMALS.

Ingemar Gustavsson, Dept. of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, Uppsala, Sweden.

Recent technical advances in cytogenetics have brought a new degree to accuracy to the identification of chromosomes and chromosome regions. In the present article the new banding techniques and the most well-founded explanations for the patterns are briefly reviewed. Uses of the techniques together with some considerations as to their application on the chromosomes of domestic animals, are described. Banding techniques make possible identification of individual chromosomes and improve the possibilities of diagnosing chromosome variations. With extended utilization of the new techniques in the future, our knowledge of chromosome morphology, behaviour, function, and evolution will increase. Possible future fields of applications are briefly reviewed.

SCIENTIFUR code: 4-3-M-O.
Advances in Vet. Sci. and Comp. Med., Vol. 24, 245-289, 1980.
1 table, 13 figs., 237 references. Author's summary.

THE HERITABILITY OF THE HAIR LENGTH IN THE STANDARD MINK.

Janusz Maciejowski, Grażyna Jeżewka, Jerzy Slawon, Lublin Agricultural University, Inst. of Biological Basis for Animal Production, 20-603 Lublin, ul. Wileńska 8 m. 47, Poland.

1. The investigations on the length of various types of hairs in a manure fur of the standard mink confirmed the full usefulness of the device applied for an objective evaluation of the height of the fur coats examined.

2. Marked differences were observed in the length of hair between males and females. The differences in the length of the guiding hairs were most pronounced.

3. The heritability of the length of various types of hair was similar within one sex, but it differed considerably between the sexes. The twice as high heritability of this trait in males may be connected with genes transmitted by sex chromosomes.

SCIENTIFUR code: 4-3-M.
Prace i Materialy Zootechniczne, 21, 1980, 67-75.
1 fig., 2 tables, 11 references. Authors' summary.
In English with summaries in Polish and Russian.

MORPHOLOGICAL AND BIOCHEMICAL INDICES OF ADRENAL CORTICAL STATE IN SILVER FOX WITH DIFFERENT TYPES OF HEREDITORY-DETERMINED BEHAVIOR.

N.M. Bazhan, P.M. Krass, S.G. Kolaeva, M.G. Kolpakov, L.N. Trut, D.K. Belayev, Inst. of Cytology and Genetics, USSR Academy of Sciences, Siberian Branch, Novosibirsk, USSR.

The following tests were used as morphological indices: The zone width, dark to clear cells ratio, the intensity of histochemical reaction on the enzyme 3 β-steroiddehydrogenase. The in vitro secretory activity of main adrenal cortical steroids was used as biochemical index. It was shown that in z. fasciculata of tame female fox dark celles (the least active in steroidogenesis) were preponderent in comparison with clear cells. As for wild females, the picture was opposite. The activity of 3 β-steroiddehydrogenase in adrenal cortical z. fasciculata was decreased in comparison with that of wild females. Biochemical analyseis of main corticosteroids showed that adrenals of tame animals secrete in vitro significantly low quantity of glucocorticoids in comparison with that of wild animals. Thus, the hydrocortisone secretion in tame fox 0.45 ± 0.02 μg/100 mg/hour, in wild animals. 0.71 ± 0.11 μg/100 mg in an hour; the corticosterone secretion was 0.42 ± 0.04 in tame and 0.63 ±0.14 μg/100 mg in an hour in wild animals.

The result suggest a correlation between morphological and biochemical indices of the adrenal z. fasciculata activity in two type of silver fox with hereditory determined behavior.

Main theoretical aspects of the problems have been stated in publications of D.K. Belayev et al.(1972).

SCIENTIFUR code: 3-4-F.

Seventh Conference of European Comparative Endocrinologists, Budapest, 26-31 August 1973.

Authors' abstract.

GENETICS AND PHENOGENETICS OF HORMONAL CHARACTERISTICS OF ANIMALS. VII. THE INFLUENCE OF FEMALE SILVER-FOX DOMESTICATION ON ADRENAL SENSITIVITY TO ESTRADIOL.

ГЕНЕТИКА И ФЕНОГЕНЕТИКА ГОРМОНАЛЬНЫХ ХАРАКТЕРИСТИК ЖИВОТНЫХ

N.M. Bazhan, Institute of Cytology and Genetics, Academy of Sciences of the USSR, Siberian Divison, Novosibirsk 90, USSR.

Estradiol was shown to inhibit the in vitro glucocorticoid production by adrenals of female silver-foxes. Inhibiting effect of exogenous estradiol on glucocorticoid production was expressed much weaker in domesticated females in comparison with wild females. It has been supposed that the decreased adrenal reaction to the exogenous estradiol in domesticated females was obviously due to a stronger inhibition of this function by endogenous estradiol in domesticated females i vivo. The inhibiting effect of endogenous estradiol was one of the causes of the decreased glococorticoid production in domesticated females. The decrease in the adrenal glucocorticoid production in the process of female silver-fox domestication was the result of changes in the adrenal reaction to regulatory stimuli.

SCIENTIFUR code: 4-F.

Genetica, XVIII, no.5. 1982.
1 table, 1 fig., 13 references. Author's summary.
In Russian with summary in English.

BLACK MUTATIONS IN THE CHINCHILLA.

(Schwarze Mutationen beim Chinchilla).

Anonymous.

An account is given of the dominant mutations Gunning Black Velvet, Tasco Black, French Black and Twilight, and the recessive mutations Midway Black and Charcoal.

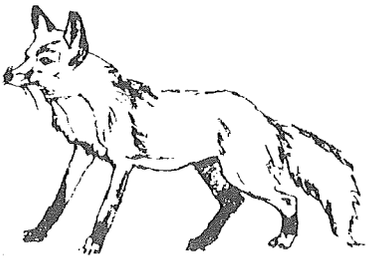
SCIENTIFUR code: 4-O.
Deutsche Pelztierzuchter, 55, 12, 205. 1981. CAB-abstract.

SOME MINK AND FOX TYPES AND THEIR MATING COMBINATIONS.

(Några mink- og rävtyper samt deres parningskombinationer).

Outi Lohi, Finlands Pälsdjuruppfödares Förbund r.f., PB 5, 01601 Vanda 60, Finland.

An account is given of the Scan Brown and Wild Glo (Reddish Brown) mink mutations, the Shadow, Jotun, Haugen Platinum, Blue Star, Lapponia, Bothnia Pearl and Tundra Blue Fox Mutations, and the Platinum, Gold Platinum, Arctic Marble and Sun Glow Silver Fox mutations; the crosses used to produce these types are described. Details are also given of crossing of Blue foxes with Silver or Red foxes, resulting in the Shadow Silver, Platinum Shadow, Shadow Cross, Shadow Red and Golden Island types.
SCIENTIFUR code: 4-M-F.
Finsk Pälstidskrift, 16,2, 64-67, 1982.
In Swedish. CAB-abstract.



SELECTION OF POLECATS.

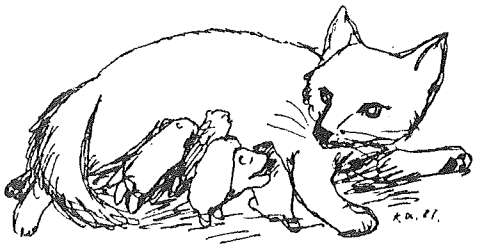
(Inför avelsurvalet av iller).

Gabrielle Lagerkvist, Sveriges Lantbruksuniversitet, Funbo-Lövsta, S-755 90 Uppsala, Sweden.

In 1980-1981, the production of polecat pelts in Finland, Denmark, Norway and Sweden totalled 81,615 and 73,434 for male and female respectively. Most of the pelts were produced in Finland, where there has been a rapid expansion in polecat breeding in recent years, with 710 farms producing 133,853 pelts in 1980-81 vs. 130 farms producing 1559 pelts in 1977-78. Details are given of desirable pelt characters and of pelt defects. In view of the excellent fertility of the polecat, selection should be based mainly on pelt quality and colour. Economic aspects are considered.

SCIENTIFUR code: 4-0.
5 tables. CAB-abstract.
In Swedish.

Feliz Navidad
Season's Greetings
Meilleurs Voeux
Glückliche Feiertage
Buon Natale



REPRODUCTION

FERRET MATING.

(Iller parning).

Gabrielle Lagerkvist, Sveriges Lantbruksuniversitet, Inst. för husdjursförädling och sjukdomsgenetik, Funbo-Lövsta, S-755 90 Uppsala 1, Sweden.

The breeding season of the ferret lasts from March to August. The oestrous of the female is characterised by a well marked swelling of the vulva. The ovulation is induced by the mating - ovulation can occur at any time during heat, but only after mating. Heat is prolonged in the absence of coitus and may extend for 4-5 months. The ovulation usually occurs 30-40 hrs after mating. The viability of the ova is markedly decreased ca 18 hrs after ovulation. Therefore, if mating twice is practised, the second mating should take place the day after the first. After a proper mating followed by ovulation, the vulva softens and diminishes in size in 4-5 days.

The pregnancy lasts for $42^{+}_{-}3$ days. The average litter size is 8-9 kits. The female can give birth to two litters in one breeding season. A second oestrous is induced if the kits are taken to foster-mothers, if the kits die or if the kits are early weaned (5 1/2 to 6 weeks of age).

In the ferret, the doncition known as pseudo-pregnancy can be induced by a sterile mating. The stimulus of sexual intercourse results in ovulation and the subsequent formation of corpura lutea. During pseudo-pregnancy the female undergoes changes similar to those taking place during true pregnancy. The vulva subsides, the mammary glands and the uterine mucose develop. The pseudo-pregnancy lasts for approximately the same time as the true pregnancy. The female then comes in heat again and can be remated.

Studies indicate that the male ferret can be ejaculated once per day for short periods of time without any apparent adverse effects on semen quality. The reproductive potential may decline at about five years of age.

SCIENTIFUR code: 5-O.
Våra Pälsdjur, 52, 3, 79-81, 1981.
3 figs., 5 references. Author's summary.

REPEATABILITY AND HERITABILITY OF THE PARTURITION TERMS IN MINK.

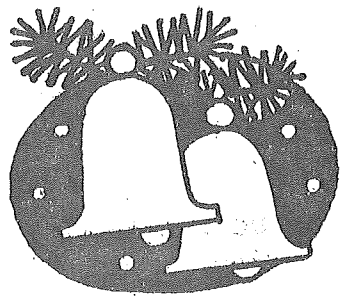
(Powtarzalność i odziedziczalność terminów porodów u norek).

I. Narucka, P. Blaźczak, J. Hauke, Poland.

The authors attempted to estimate the repeatability and heritability of the term of parturition in Standard mink. In the calculations they used data from 239 females and their 323 daughters, all kept in the same farm.

The repeatability coefficient was found to be 0.2876 and the heritability coefficient 0.2504.

SCIENTIFUR code: 4-5-M.
Roczniki Akademii Rolniczej w Poznaniu, 111 (Zootechnika 26), 123-127, 1979.
1 table, 9 references. Authors' summary.



POSSIBILITIES OF OBTAINING SEMEN FROM BLUE FOX MALES.

(Moznosti získáváni ejakulátu od pescu (Alopes lagopus L.).

Josef Sabrnák, Miloslav Novák, Katedra veterinární prevence, reprodukce a technologie zivocisných výrobkú Vysoké skoly zemedelské v Brno, Zemedelská 1, 662 65 Brno, CSSR.

Over 1976-1979, testing was underway of the methods for obtaining ejaculates from blue-fox males (Alopex lagopus L.), the objective being to find out such techniques that would prove applicable under conditions of farm rearing.

In view of the results obtained may be stated that two of the methods under testing, viz., semen collection by artificial vagina and ejaculate collection by masturbation must be characterized as hardly applicable.

A third method used for obtaining semen by electrical ejaculation was tested in a total of 1152 trials of which 1070, i.e. 92.88 per cent, were successful. In the course of testing a single death case was registered due to application of the electrical ejaculation method.

Moreover, evidence was provided that the action of electrical shocks left no longterm effects on sexual activity of tested males. The individuals subjects to semen collection by electrical ejaculation were capable, following an interval of 4-5 hours, of mating actively under conditions of natural breeding.

The electrical ejaculation methods as tested in this paper are applicable for the examination of blue-fox males prior to onset of the breeding season; for the experimental results furnished sufficient evidence that an appreciable number of males introduced into breeding were suffering from disorders in spermiogenesis. For this reason it is considered advisable to examine, prior to every breeding season, all newly introduced males for the quality of their ejaculates.

SCIENTIFUR code: 5-R.

Acta Universitatis Agriculturae, Ser. A, Facultas Agronomica, Brno, V. 29 (1/2) 283-288. 1981.

4 tables, 14 references. Authors' summary.

In Czechoslovakian with summaries in German, English and Russian.

CONTRIBUTION TO THE STUDY ON BROWN FOX (VULPES VULPES). NOTE 1. EXPERIMENTAL BREEDING IN LIMITED CAPTIVITY.

(Contribution a l'Étude de la Biologie de Renard Roux (Vulpes vulpes) Note 1. Elevage experimental en captivite restreinte).

M. Artois, L. Andral, Michèle Dubreuil, Jacqueline George,
Ministère de l'Agriculture, Direction de la Qualitè, Services Vèt.,
Centre National d'Etudes sur la Rage, B.P. no. 9, F-54220
Malzeville, France.

The authors describe the experimental breeding conditions of brown fox in limited captivity: breeding premises - nutrition - manipulation technics - reproduction.

SCIENTIFUR code: 4-F.
Revue Méd. vét., 133, 4, 249-262, 1982.
3 tables, 2 photos, 2 figs., 13 references. Authors' abstract.
In French. Abstracts in English, German and Spanish.

SPERMIOGENESIS OF THE OPOSSUM (DIDELPHIS AZARE).

Antonio Marcos Orsi, Affonso Luiz Ferreira, Maria do Corma de Oliveira,
Biology of Botucatu and School of Medicine of Ribeirao, Preto,
S.P. - Brasil.

The light microscopic characteristics of the spermiogenesis of the opossum were studied. The morphological aspects of the younger and older generations of spermatids as show by the ferric hematoxylin staining technique were described. Also were described some peculiarities of the morphology of the immature and mature spermatozoa.

SCIENTIFUR code: 5-O.
Archivos de Anatomia y Embriologia, 14, 147-153, 1979.
In English. Summaries in English, Spanish, and Frence.
Authors summary.

A HISTOMORPHOLOGICAL ANALYSIS OF DEVELOPING NUTRIA TESTICLES.

(Histomorfologická analýza vyvíjejících se varlat nitrií).

Pavel Jelínek, Katedra chovu ovcí, kozesinových zvirat a vcelarství Vysoké skoly zemedelské v Brne, Zemedelská 1, 662 65 Brno, CSSR.

The parenchyma of nutria testicles was studied during the postnatal development of males (covering the period from birth to 300th day of life) with the object of making its basic morphological characteristic. The analytical results produced a dynamical pattern on the basis of which it will be possible to trace and thus differentiate the developmental anomalies, if any, that affect sexual glands. At the same time, the histological analysis provided for determining morphological anticipation for the commencement of sexual maturity, at the age of 115-130 days. Accordingly, under the conditions of breeding nutria in this country, the above age interval is to be taken as the period at which the males attain sexual maturity.

Using the method developed by Chalkley, the quantitative histological analysis of individual structures in the testicle parenchyma revealed that the portion of germinative component was rapidly increasing from birth to 90th day of life and reached its maximum values, 88.41%, subsequently, slight variations were observed in the values with the medium-aged groups of animals, and stabilization occured in the last age class at a value of 82.08%. This trend to increasing the proportion of gonadal component was due mainly to germinal epithelium.

The total proportion of interstitial tissue was showing the opposite trend from the very birth, when compared with structures representing the germinative share of the parenchyma in developing testicles; the major part being played by changes in the representation of interstitial tissue.

The highest percentage of Leydig's cells was recorded for the first day of life in nutria males, 20.36%, followed by a trend to decreasing steeply until 60th day of life, when the share was but 2.94%. In contrast, Leydig's cells did not start increasing their relative volume until after 90th day of life and this trend continued until termination of the observation.

The results of analysis indicated that, at breeding maturity, the proportions of individual structural components in the parenchyma of nutria testicles were as follows: germinal epithelium 75.07%, centre of coiled seminiferous ducts 5.95%, basal membrane 1.06%, connective tissue 12.43, Leydig's cells 5.05%, and vesels 0.14%.

SCIENTIFUR code: 2-0.

Acta Universitatis Agriculturae, Facultas Agronomica (Brno, Vysoka Skola Zemedelska) 1980, 28, 2, 213-226.

15 figs., 1 table, 19 references. Author's summary.

In Czechoslovakian with summaries in English, German and Russian.

A QUANTITATIVE STUDY ON THE SEMINIFEROUS EPITHELIUM OF THE ADULT MINK IN THE POST-BREEDING SEASON.

Yutaka Sakai, Dept. of Vet. Obstetrics, Fac. of Vet. Med., Hokkaido University, Sapporo 060, Japan.

Cellular association of the seminiferous epithelium was quantitatively analyzed histologically and kinetically in the testes of five 11-month-old and five 23-month-old Pastel mink immediately after the breeding season. Special attention was paid to the seasonal and aging variation of the spermatogenesis.

1) The cycle of the seminiferous epithelium was classified into 8 stages using the criteria described by TIBA et al. (1968). Discriminant analysis did not show any significant differences between the relative frequencies of each stage in 3 different sites of the testis (the capital pole, equatorial zone and caudal pole). In addition with the exception of one case, there were no significant differences between the left and right testes and 6 different loci in the 11- and 23-month-old cases.

2) The mean vector of stage frequency indicated a significant difference ($P < 0.01$) among 9 mink; however, there were no significant differences between the 2 groups of 11- and 23-months-old mink. The results suggested the importance of great individual variation rather than the aging factor in the seminiferous cycle. Nine mink were classified into 2 groups of more and less than 6.4 of the germinal cell index.

Discriminant analysis revealed a significant difference between 2 groups of the index ($P < 0.01$).

3) The mean vector of stage frequency among the 3 groups of 10- (previous data by TIBA et al., 1968), 11- and 23-month-old mink differed greatly.

The findings obtained in this study pointed to the existence of a different arrangement in the kinetics of spermatogenesis between the breeding season and the postbreeding season. In addition, it was also observed that individual variation played a greater role than the aging variation of stage frequency in the cycle of the seminiferous epithelium.

SCIENTIFUR code: 2-3-M.
Japanese Journal of Veterinary Research, 29, 1/2, 30, 1981.
Summary of thesis.

Author's summary.

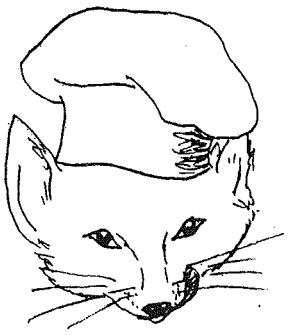
CHANGES IN FSH AND LH SECRETION IN THE FERRET ASSOCIATED WITH THE INDUCTION OF OVULATION BY COPPER ACETATE.

B.T. Donovan, B. Gledhill, Dept. of Physiology, Inst. of Psychiatry, De Crespigny Park, London SE5 8AF, England, U.K.

The changes i FSH and LH secretion associated with the induction of ovulation by i.v. injection of 5 mg copper acetate were followed in the ferret and found to be influenced by barbiturate anesthesia. In anesthetized estrous animals, the metal ion produced a small initial increase in plasma LH concentration which was followed by a gradual but sustrained rise. Anestrous animals responded with a large initial surge of LH release which declined to a plateau some 4 times higher than the basal level and was maintained for at least 6 h. Compared with the anesthetized animals, treatment of conscious estrous ferret with copper acetate caused an abrupt and much greater initial increase in plasma LH concentration, while in conscious anestrous ferrets the initial surge in plasma LH content was significantly greater than seen

under anesthesia, but was followed by a steady decline toward control values. The changes in plasma FSH concentration produced by copper acetate were somewhat similar to those for LH, but were less pronounced.

SCIENTIFUR code: 3-5-0.
Biology of Reproduction, 25, 72-76, 1981.
2 figs. 17 references. Authors' abstract.



NUTRITION

SWINE SLAUGHTER BY-PRODUCTS IN RATIONS FOR MINK

Anne-Helene Tauson, Dept. of Animal Husbandry, Swedish University of Agricultural Sciences, Funbo-Lövsta, S-755 90 Uppsala, Sweden.

The applicability of by-products from swine slaughter in rations for mink was evaluated in a series of trials. The main scope of the investigations and major results achieved are summarized below:

1. Effect of increasing levels of swine skulls in the ration on feed passage rate through the tract

A comparison was made between feed passage rate through the digestive tract of mink at a normal level of ashes in the ration and at a high level of ashes (high level of swine skulls in the ration). A wide variation in passage time between individual animals was found. The average feed passage time found was longer than earlier reported. There was a tendency towards more rapid feed passage in rations containing swine skulls.

2. Digestibility trials with swine skulls and complete rations containing swine skulls

The protein digestibility of untrimmed (complete) swine skulls was 70 %. In rations containing swine skulls (untrimmed or partially trimmed) the protein digestibility was decreased by increasing the level of swine skulls in the ration. There was a significant negative relationship between level of ashes in the ration and protein digestibility. A comparison between normally ground or finely ground swine skulls in rations for adult animals and growing kits respectively showed that there was no effect of fineness of grinding on the protein digestibility. Neither were there any effects of age on the ability to digest the rations. Adult animals, however, sorted out bone-rich material from the normally ground rations.

3. Growth trials with mink kits given swine skulls

In three growth trials, untrimmed or partially trimmed swine skulls were used in rations for growing mink kits from the age of 7 weeks. The level of swine skulls in the rations was up to 17 %. The palatability of the experimental feedstuff was considered good. At the highest level of swine skulls, growth of the kits was somewhat lower than expected from the view of the energy content of the ration. When the ash content of a ration without swine skulls was adjusted to a level close to that of the swine skull containing ration, the feed had low palatability and the growth rate of the experimental animals was low. The pelt quality of skins from animals fed swine skulls was on an average good.

4. Mixed soft offal from swine in rations for growing mink kits

In a growth trial with standard and pastel mink kits, the effects of use of mixed slaughter-house offal from cattle and mixed soft offal from swine were compared. Use of swine offal did not deteriorate the hygienic quality of the rations in spite of enzyme production being possible in some products. Periodically there were some weight differencies between the experimental groups, but they could be explained by variation in fat content in the products and by more feed wastes in the control group. There was a tendency towards better pelt quality in skins from the swine offal groups.

5. General conclusion

The results from these experiments have shown that the tested products may be used in rations for mink with good results provided moderate levels (swine skulls) are used and that the products are thoroughly washed and immediately cooled after slaughter (mixed soft offal from swine). By the end of the experimental period, however, there were some outbreaks of Aujeszky's disease among mink and foxes in Sweden and slaughter offal from swine was deduced to be the source of infection. Therefore, use of uncooked by-products from pigs in rations for fur bearing animals cannot be recommended for the time being.

The Scandinavian Association of Agricultural Scientists' meeting in Ålesund, Norway, 1982.

13 tables, 16 references. Author's summary.

SCIENTIFUR code: 7-6-M.

In Swedish.

LACTIC ACID BACTERIA IN RATIONS FOR MINK IN THE LACTATION PERIOD

Anne-Helene Tauson, Department of Animal Husbandry, Swedish University of Agricultural Sciences, Funbo-Lövsta, S-755 90 Uppsala, Sweden.

In an experiment in the lactation and early kit growth period 1982, the effects of addition of three different lactic acid bacteria preparations to the ration were evaluated. The three lactic acid bacteria preparations were all commercially available but had so far not been tested on mink. Control groups were the standard ration of the farm and the standard ration added "Tylan" (tylosinphosphate). The addition of lactic acid bacteria aimed at giving 10^9 bacteria per animal and day. For "Tylan" the recommended level of 10 mg active substance per kg body weight and day was used.

In laboratory tests, the effects of addition of the three lactic acid bacteria preparations on pH of the rations at different storing temperatures were studied. The decrease in pH amounted some 0.5 pH-units at storage at room temperature. The preparation of a starter culture seemed to cause a more rapid decrease in pH. Only in one of the tested preparations there was a slight decrease in pH when stored in a refrigerator. Also in the standard ration there was a decrease in pH at room temperature, thus indicating growth of lactic acid producing bacteria. Bacteria count in rations stored for 24h at $+10^{o}C$ and $+20^{o}C$ respectively showed that there was a multiplication of the lactic acid bacterial flora added the rations. This, however, could not suppress growth of the decomposition flora of the rations. The standard ration had a natural flora of lactic acid bacteria.

The experimental feeding started the first week of May. The average whelping result was good in all experimental groups. The number of stillborn kits was low in all groups and the kit losses from birth to weaning were also low.

There was a tendency towards fewer kits lost in two of the groups fed lactic acid bacteria preparations. The weight development of the lactating females showed that the first three weeks of lactation put little strength on the females, but the following three weeks the milk production craved for more energy than supplied with the feed. There were, however, no differencies between groups.

The kit growth performance was adjusted to equal number of kits per litter in all groups. By this procedure it was shown that there was a tendency towards heavier kits in the Tylan and lactic acid bacteria groups when kits were three weeks of age. At weaning, when the kits were six weeks old, the Tylan group kits were the heaviest (statistically significant). Also kits in one of the three lactic acid bacteria groups were heavier than the kits in the control group. In the two other lactic acid bacteria groups the kit weights were not significantly different from that of the control group. The experiment was terminated by the turn of the months of June and July and the kits were then weighed. Still the kits (weight adjusted to equal age of the kits) in the Tylan group were the heaviest. The kits in one of the lactic acid bacteria groups were heavier than the kits in the control group. In the two other lactic acid bacteria groups, there was a tendency that the kits were heavier than the control animals at the termination of the experiment.

The results from this experiment indicate that there may be some possibilities to improve kit survival and growth performance in the lactation and early growth period by addition of lactic acid bacteria to the feed. By a closer knowledge of the properties of bacterial strains present in the preparations used, the dosage levels could be adjusted to the level most benificient for the purposes. It also appears that the addition of lactic acid bacteria to the ration should start already in the gestation period instead of in early May.

10 tables, 11 references, 22 pp.
In English. Author's summary.
Stenciled report from Dept. of Animal Husbandry, Swedish University of Agricultural Sciences, 1982.
SCIENTIFUR code 7-8-M.

PELLETS: THE MINK FEED OF THE FUTURE.

(Pellets - da Nerzfutter der Zukunft).

William Leoschke, Ph.D. Director of Research & Nutrition, National Mink Feeds Division, Milk Specialties Co., P.O. Box 278, Dundee, Illinois 60118, USA.

The increasing use of pellets as feed for mink is discussed with the prediction that pellets will improve pelt production. Eventually, special pellets for males and females should be available, since the sexes have different protein requirements with females apparently requiring less protein than males. Different types of pellets should be available for use at different times of the year. The use of pellets may also prevent some diseases such as infections of the ureter.

SCIENTIFUR code: 6-7-M.
Deutsche Pelztierzuchter, 55, 3, 37-39, 1981.
4 tables. CAB-abstract.
In German.

DRY PELLETS AS THE ONLY FEED FOR NUTRIA.

(Trockenpellets als Alleinfutter für Sumpfbiber).

Anonymous.

Nutria were fed on pellets (5 to 6 mm diameter) containing fibre 6.9 or 11.5 g/100 g feed and with 250 IU vitamin A. During the first half of pregnancy, the daily intake of the pellets was 246 and 269 g, respectively. Over the complete study the liveweights of the animals were similar. Initial weight of the animals was 6.3 kg, and 7.1 to 7.4 kg af parturition, 7.1 to 7.5 kg on day 20 of lactation, and 7.2 to 7.5 kg on day 45. The weights of the young were satisfactory, stillbirths plus mortality of young was 18 and 21 percent in the 2 groups. Bodyweight of female young from nutria given fibre 6.9 g/100 g feed was 1194 g at the age of 45 days, and 1226 g in the other

group. Corresponding weights for males were 1257 and 1273 g. During the first 2 months, 77 percent of the animals were mated, and 95 percent of those produced young.

SCIENTIFUR code: 6-O.
Deutsche Pelztierzuchter, 54, 11, 169-170, 1980.
In German. CAB-abstract.

EFFECTS OF SUPPLEMENTAL DIETARY COPPER ON GROWTH, REPRODUCTIVE PERFORMANCE AND KIT SURVIVAL OF STANDARD DARK MINK AND THE ACUTE TOXICITY OF COPPER TO MINK.

R.J. Aulerich, R.K. Ringer, M.R. Bleavins, A. Napolitano, Michigan State University, Dept. of Anim. Sci., East Lansing 48824, USA.

Natural dark mink kits were fed a diet supplemented with 0, 25, 50, 100 or 200 ppm Cu from $CuSO_4$-$5H_2O$ for 153 or 357 d. The shorter term Cu supplementation had no significant beneficial or adverse effects on mink body weight gains or hemoglobin or hematocrit concentrations, although plasma Cu concentrations were slightly elevated in the mink fed added Cu. Liver Cu concentrations were significantly increased only in the mink fed 200 ppm Cu. Liver Zn and Fe concentrations were not affected by the added Cu. Darker fur was observed in pelted males fed the higher levels of Cu. The reproductive performance of mink on the longer term Cu supplementation was not adversely affected although greater kit mortality and reduced "litter mass" were a result of thehigher Cu concentrations. The acute (21-d) ip LD_{50} concentrations of Cu sulfate and Cu acetate in adult mink were 7.5 and 5.0 mg/kg, respectively.

SCIENTIFUR code: 6-M.
Journ. of Animal Science, Vol. 55, 2, 1982, 337-343.
6 tables, 20 references. Authors' summary.

POLYCHLORINATED BIPHENYLS (AROCLORS[R] 1016 AND 1242): EFFECT ON HEPATIC MICROSOMAL MIXES FUNCTION OXIDASES IN MINK AND FERRETS.

Lee R. Shull, Michael R. Bleavins, Barbara A. Olson, Richard J. Aulerich, Dept. of Animal Science and Center for Environmental Toxicology, Michigan State University, East Lansing, Michigan 48824, USA.

A comparison was made of the induction responses of two PCBs (Aroclors 1016 adn 1242) on the hepatic microsomal mixed function oxidase (MFO) system in two genetically similar species, mink and European ferrets, previously shown to differ significantly in sensitivity to these same Aroclors. Feeding Aroclors for 28 days at a subtoxic level (20 ppm) resulted in weak induction of the MFO system. Aroclor 1242 was a more potent inducer than Aroclor 1016. Using a dosing regime which resulted in toxic effects in mink but not in ferrets, greater induction was noted in ferrets compared to mink. Furthermore, only 3-methylcholanthrene (MC)-type induction was observed. Phenobarital (PB) inducible enzymes were either not affected or were inhibited by Aroclor treatment. The results suggest an inverse relationship between extent of MC-type induction and toxicity in these species.

SCIENTIFUR code: 3-8-M.
Arch. Environm. Contam. Toxicol. 11, 313-321, 1982.
5 tables, 54 references. Authors' abstract.

EXCESSIVE NAIL GROWTH IN THE EUROPEAN FERRET INDUCED BY AROCLOR 1242.

Michael R. Bleavins, Richard J. Aulerich, Robert K. Ringer, Thomas G. Bell, Dept. of Animal Science, Michigan State University, East Lansing, Michigan 48824, USA.

European ferret fed a diet that contained 20 ppm Aroclor 1242 for several months developed elongated, thickened, and deformed toenails. The excessive nail growth was more conspicuous in the male than in

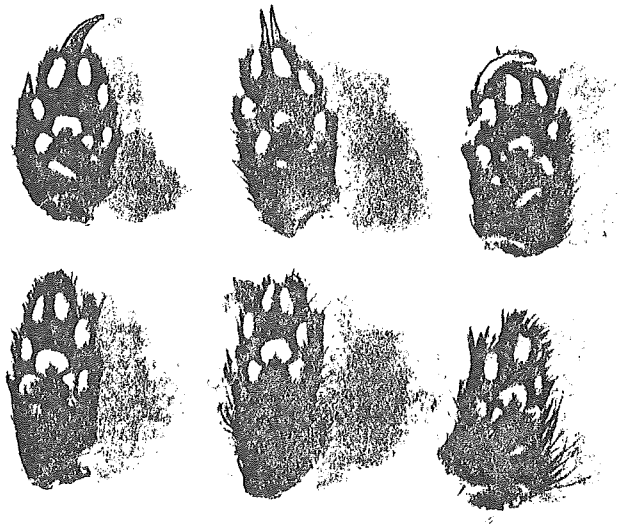


Fig. 1. Nail growth of Aroclor 1242 treated (upper row) and control (lower row) female ferrets (ventral view)

the females and was especially pronounced in the hind feet. Histopathologic examination of the affected ferret toes revealed a hyperkeratosis at the junction of the skin and eponychium, and dysplasia at the root of the nail and matrix. Accumuations of keratinized debris as well as nuclear and cytoplasmic degeneration of many cells were noted and acanthosis and parakeratosis were present. It is speculated that the abnormal toenail development may be attributed to certain contaminants in Aroclor 1242.

SCIENTIFUR code: 3-8-M.
Arch. Environm. Contam. Toxicol. 11, 305-312, 1982.
1 table, 6 figs., 11 references. Authors' abstract.

SHOULD GRAIN (FOR MINK) BE GROUND FINELY?

(Bør kornet finformales?).

Niels Glem-Hansen, Paul B. Sørensen, Natl. Inst. of Animal Science, Dept. of Fur Bearing Animals, DK 3400 Hillerød.

The carbohydrate digestibility of 30 samples of maize was related linearly to particle size with digestibility about 68, 65, 60, 58, 55, 50 and 48 percent for particle size 0.1, 0.2, 0.3, 0.4, 0.5, 0.6 and 0.7 mm, respectively. It was considered economic to grind maize finely and that at least 93 percent of milled maize in the diet of mink should pass through a 0.5 mm sieve.

SCIENTIFUR code: 7-14-M.
Dansk Pelsdyravl, 44, 7, 295-297, 1981.
3 figs. CAB-abstract.
In Danish.

EFFECT OF SOME ELECTROLYTES ON LACTATING MINK.

(Undersøgelse over nogle elektrolytters effekt på lakterende tæver).

Asbjørn Brandt, Natl. Inst. of Animal Science, Dept. of Fur Bearing Animals, DK 3400 Hillerød.

Pregnant mink (Pastel and Standard) were given a basic feed without electrolytes (control) or containing various electrolytes (0.3 or 0.6 percent NaCl , 0.3 Na2CO3, 0.2 percent KCl, 0.2 percent K2CO3, 0.3 or 0.4 percent NaH2PO4, 0.3 or 0.6 percent NH4H2PO4). There was no difference in body weight gain between pups from controls and from the electrolyte-fed mink at 12, 24 and 42 days after birth. At 42 days, Pastel, but not Standard, pups from NH4H2PO4-supplemented females had a greater body weight than had controls. Daily feed and water intakes were similar in all groups, about 420 kcal/mink and 250 ml/mink, respectively. Haematocrit was increased with all treatments except for 0.3 and 0.6 percent NaCl and for 0.3 percent Na2CO3;

at 24 days after birth values of sodium and potassium in blood were less, and calcium, phosphorus and magnesium were similar to values for controls.

SCIENTIFUR code: 3-5-6-M.
Dansk Pelsdyravl, 44, 5, 214-216, 1981.
5 tables, 6 references. CAB-abstract.
In Danish.

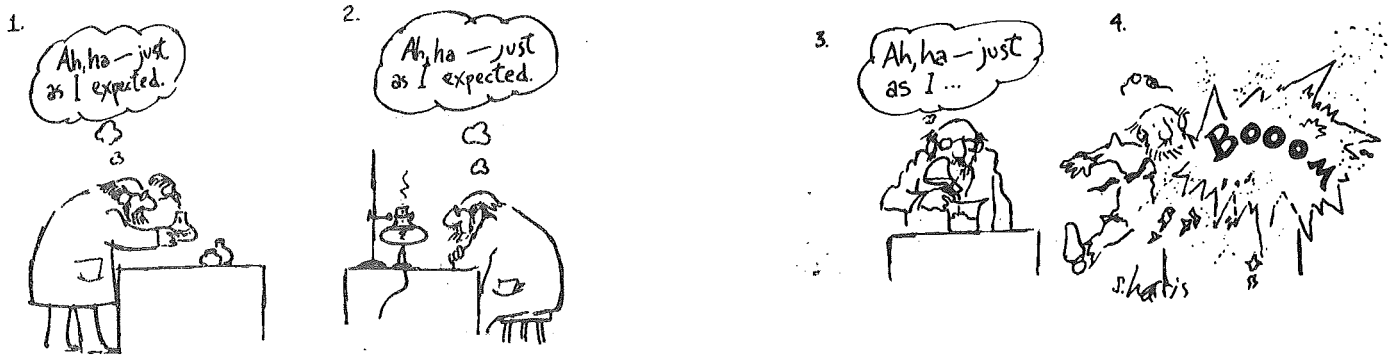
DIGESTIBILITY TRIALS WITH COMMERCIAL FEEDS FOR FUR-BEARING ANIMALS.

(Smältbarhetsförsök med kommersiella pälsdjursfoderblandningar).

Anne-Helene Tauson, Eva Aldén, Sveriges Lantbruksuniversitet, Uppsala, Sverige.

For mink, soya bean meal has been shown to have an extremely low digestibility of carbohydrate (about 20 percent). Commercial cereal mixtures are regarding as being most suitable for mink, including the Swedish mjolmix and blandkost. The preparation, Alltorr 23, had a lower digestibility of carbohydrate and this decreased with increased dietary protein.

SCIENTIFUR code: 6-7-M.
Våra Pälsdjur, 51, 8, 209-213. 1980.
4 tables, 13 references. CAB-abstract.
In Swedish.



POTATO PROTEIN FOR GROWING MINK.

(Potatisprotein till växande minkvalpar).

Anne-Helene Tauson, Eva Aldén, Sveriges Lantbruksuniversitet, Uppsala, Sweden.

Ninety-six mink were given a potato protein (Protamyl PF) at up to 8 percent of the diet. Half the total protein was derived from potato protein in some cases. The mink showed normal growth with the exception of those given the greatest amounts of potato protein. These mink had retarded growth initially; up to the end of August, these mink had been given material of poor hygienic quality, resulting in the poor growth. When the feed quality was improved, the growth of the mink also improved. The pelt quality and the price at auction were increased by giving the Protamyl PF diet, compared to fish meal. The quality of pelts from males was particularly improved. It was considered that the potato protein should comprise 2 to 3 percent of the diet between the period 15 July until pelting (22 November).

SCIENTIFUR code: 7-6-M.
Våra Pälsdjur, 51, 7, 176-185, 1980.
12 tables, 1 reference. CAB-abstract.
In Swedish.

REPORT FROM THE VEST EXPERIMENTAL FARM.

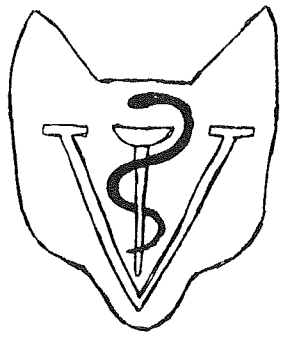
(Rapport fra forsøgsfarmen "Vest").

R. Sandø Lund, Forsøgsfarmen "Vest", 112 Herningsvej, Tvis, DK-7500 Holstebro.

In trials with 479 pregnant and lactating mink (Standard or Pastel), the diets contained fish scraps without or with 10 percent industrial fish. The loss of young per female for the Standard control and test mink was 0.40 and 0.30; the respective values for the Pastel mink were 0.68 and 0.28. Eighty other mink were given a control diet and 0.5 percent NaH2PO04, or a control feed only; others were given the control feed with 10 percent of the fish scrap replaced by industrial

fish, and further mink were given the control feed with 20 percent of the fish scrap replaces by industrial fish. Weight of young in each of these groups, order as above, after 42 days was Standard males, 363, 350, 366 and 386 g; Standard females, 311, 293, 312 and 322 g; Pastel males, 352, 322, 362 and 364 g; Pastel females, 299, 286, 309 and 315 g. Blood meal given to females increased the growth of the young during lactation; potato protein decreased weight of young. Solanin ha no effect. With 2 percent cooked oats in the diet, weight of females was greatest, 970 g, and weight of young was 381 g at 42 days. The corresponding weights with raw oats were 935 and 355 g, which were still greater than control values of about 890 and 340 g, respectively.

SCIENTIFUR code: 6-7-M.
Dansk Pelsdyravl, 44, 4, 169, 1981.
3 tables. CAB-abstract.
In Danish.



VETERINARY

NATURALLY OCCURRING RADIAL APLASIA IN MINK.

Norman W. Rantanen, Gerald A. Hegreberg, Dept. of Vet. Clin. Med. and Sugery, Washington State University, Pullman, WA 99164, USA.

Naturally occurring radial aplasia was found in 14 of 26 closely related mink examined for forelimb abnormalities. The condition resembles human radial aplasia. Attempts to determine genetic or other causes were unsuccessful.

SCIENTIFUR code: 2-4-M.
Veterinary Radiology, Jan./Feb. 1982, 23, 1, 27-29.
1 table, 2 figs., 12 references. Authors' abstract.

SUITABILITY OF FERRETS FOR THE EVALUATION OF THE EFFICACY OF IBR-IPV VACCINES.

(Über die Eignung von Frettchen für die Impfstoffprüfung von IBR-IPV-Vakzinen).

A. Abraham, O.C. Straub, Kimron Veterinary Institute, P.O. Box 12, Beit-Dagan, Israel.

The efficacy of IBR-IPV vaccines is routinely checked in cattle. After innoculation with IBR-IPV virus, ferrets are reported to develop the same symptoms as cattle. It seems reasonable to assume therefore that ferrets could replace cattle in vaccine testing. Based on the results obtained, it had to be concluded that, at least with local strains of virus, ferrets proved to be unsuitable for this purpose.

SCIENTIFUR code: 9-0.
Berl. Münch. Tierärztl. Wschr. 94, 431-432, 1981.
2 tables, 10 references. Authors' summary.
In German with English summary.

CANINE PARVOVIRUS INFECTION IN HOUSED RACCOON DOGS AND FOXES IN FINLAND.

E. Neuvonen, P. Veijalainen, J. Kangas, State Vet. Medical Institute, P.O. Box 368, SF-00101 Helsinki 10, Finland.

An outbreak of severe enteritis occurred amoung young raccoon dogs on fur farms in eastern Finland. Post mortem examinations revealed gross and microscopic lesions which were typical of parvovirus infections described in cats, mink and dogs. The intestine was dilatated, oedematous and the normal villi were significantly reduced. A parvovirus was isolated from faeces and found to resemble canine parvovirus by its ability to haemagglutinate pig erythrocytes at pH 7.2 and its antigenic properties. Experimental inoculations showed that both housed raccoon dogs and foxes are susceptible.

SCIENTIFUR code: 9-0.
The Veterinary Record, May 8, 1982.
2 tables, 7 references. Authors' abstract.

DETECTION OF ANTIBODY IN ALEUTIAN DISEASE OF MINK: COMPARISON OF ENZYME-LINKED IMMUNOSORBENT ASSAY AND COUNTERIMMUNOELECTROPHORESIS.

P.F. Wright, B.N. Wilkie, Dept. of Veterinary Microbiology and Immunology, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada N1G 2W1.

Experiments were undertaken to investigate the potential of the enzyme-linked immunosorbent assay (ELISA) as a screening test for the diagnosis of the 2 known naturally occurring forms of Aleutian disease of mink. Anti-Aleutian disease virus (ADV) antibody activity was not detectable in the sera of mink with nonprogressive Aleutian disease despite the domonstration of antibody by counterimmunoelectrophoresis (CIEP) in the same sera. Anti-ADV antibody was detectable in 93% of sera from mink at various stages of experimentally induced progres-

sive Aleutian disease. False-negative reactions occurred in sera which demonstrated high anti-ADV antibody titers by CIEP. As a consequence of the high prevalence of false-negative reactions, the ELISA was not considered to be an effective screening test. However, using CIEP as an indicator of ADV infection, the ELISA may be useful in differentiating mink with nonprogressive Aleutian disease from mink with progressive Aleutian disease.

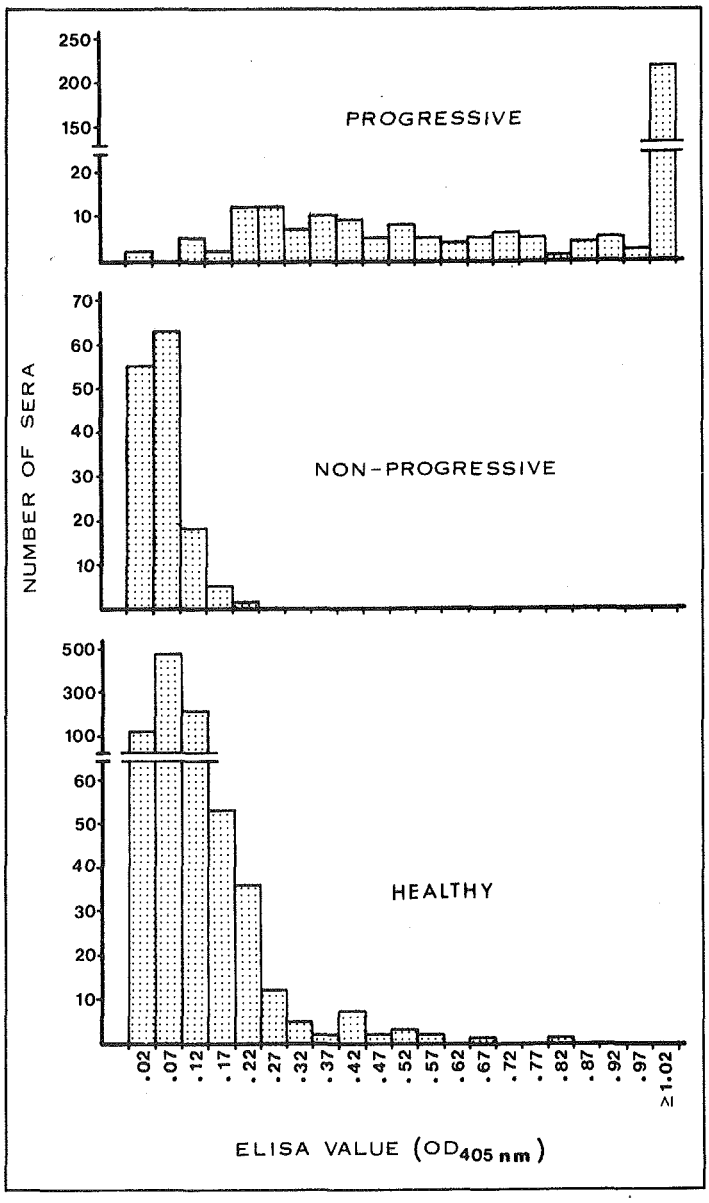


Fig 1—Distribution of anti-ADV antibody activities detected by ELISA in the sera of healthy mink and mink with AD (progressive and nonprogressive forms). $OD_{405\,nm}$ = optical density readings at 405 nm.

SCIENTIFUR code: 9-M.

American Journal of Vet. Research, Vol. 43, no.5, 865-868.1982.

2 tables, 1 fig., 15 references. Authors' summary.

USE OF COUNTERIMMUNO-ELECTROPHORESIS FOR DIAGNOSIS OF PLASMACYTOSIS IN MINK.

(Zur Diagnostik der Aleutenkrankheit (Plasmazytose) der Nerze mit Hilfe der Überwanderungs-elektrophorese).

A. Tohtz, H. Allisat, A. Neubert, K.Krieg, B. Klingberg, A. Strey,
VEB Industrielle Nerzproduktion, Appelburg, 2864 Plau, Kreis Lübz. GDR.

Described in this paper is the use of counterimmuno-electrophoresis for diagnosis of plasmacytosis in mink. Serum antibodies are identified by means of accelerated agar-gel precipitation in electrophoresis. The method has proved to be of good economy, in that it provides nodelay diagnostic information. Its first large-scale field application to more than 30,000 minks in the GDR has been successful and enabled more action for stepwise stock sanitation.

SCIENTIFUR code: 9-M.
Mh. Vet.-Med. 36, 1981, 937-940.
1 table, 1 fig., 18 references. Authors' summary.
In German with summaries in English and Russian.

INTRAPULMONARY LYMPHOID TISSUE IN MINK INFECTED WITH ALEUTIAN DISEASE VIRUS.

K.W.F. Jericho, Agriculture Canada, Animal Diseases Research Institute,
P.O. Box 640, Lethbridge, Alberta, Canada T1J 3Z4.

Pulmonary lymphoid tissue was studied histologically in mink infected experimentally and naturally with Aleutian disease virus, an infection characterised by systemic lymphoid tissue hyperplasia. Lymphoid tissue hyperplasia was observed in the lamina propria of the bronchial tree, in perivascular tissue, in interlobular septae and subpleurally by day 42 after experimental aerosol infection. Four forms of pulmonary lymphoid tissue were recognised: lymphoepithelial nodules or bronchus-associated lymphoid tissue; lymphoid clusters; lymph nodes and diffuse lymphoid tissue. The cell components of these pulmonary reactions were indistinguishable from those seen in the kidney and the liver

of the same experimental animals, except for lymphoepithelial nodules which have a specialised association with respiratory epithelium. Pulmonary lymphoid tissue hyperplasia was a significant feature of experimental aerosol infection with Aleutian disease virus but not of natural infections with this virus.

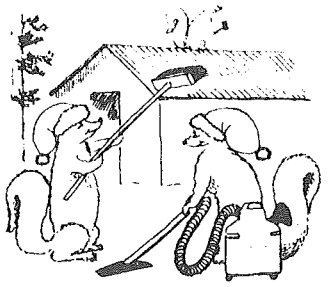
SCIENTIFUR code: 2-9-M.
Research in Veterinary Science, 1982, 32, 206-212.
1 table, 8 figs., 16 references. Author's summary.

DISEASE PROBLEMS IN MINK (MUSTELA VISON) AND BLUE FOX (ALOPEX LAGOPUS) IN THE NETHERLANDS.

J. Haagsma, Central Veterinary Institute, Rotterdam Section, Prof. Poelslaan 35, 3028 EP Rotterdam.

A survey is given of the incidence of the most important infectious disease and non-infectious diseases in mink and foxes in theNetherlands. The data are based on a centralized examination of 1,000 post mortems of mink and 75 of foxes yearly. The actual situation concerning Botulism, Pseudomoniasis, Aleutian Disease, Morbus Aujeszkyi, Distemper, mink Virus Enteritis, fatty degeneration of the liver, nonspecific gastro-enteritis, disorders from the urinary tract and reproduction problems is shortly discussed.

SCIENTIFUR code: 9-13-M-F-O.
Bull. Off. int. Epiz., 1980, 92 (9-10) 1081-1088.
7 tables. Author's summary.
In English with summaries in English and French.



Sanitation level and health are correlated matters.

AN EPIDEMIOLOGICAL SURVEY ON THE PREVALENCE OF MINK VIRUS ENTERITIS IN HOKKAIDO.

Tomoko Higashihara, Dept. of Epizootiology, Fac. of Vet. Med., Hokkaido University, Sapporo 060, Japan.

An infectious diarrhea in mink occurred on a mink ranch in the northen part of Hokkaido in 1978. In the same area in 1979, a disease with similar symptoms occurred on other mink ranches. The purpose of the present study was to isolate and characterize the causative agent of this disease and to conduct an epidemiological survey of the disease. The results are summarized as follows.

1). A virus was isolated from the kidneys of the affected mink. According to morphological, physicochemical, and serological tests, the virus was identified as mink enteritis virus (MEV). The survey on antibodies to MEV was performed by using sera from minks on the ranch where the disease was first recognized in 1978. The percentage of positive minks for antibody was much higher in those reared in houses with severe outbreak than in those with mild incidence. One to two weeks after the vaccination against mink virus enteritis, the number of deaths decreased significantly. From these results, the isolated virus was deducted to be the causative agent of this infectious diarrhea.

2). Minks and specific pathogen-free cats were inoculated with MEV. Total leucocyte counts decreased significantly in the cats. Anorexia and slight diarrhea developed 11-16 days after inoculation, and antibodies to MEV were detected on the 7th or 14th day after inoculation. In the case of minks, no clinical symptoms were observed, but antibodies to MEV were detected in all of the minks 2 weeks after inoculation.

3). An attempt to isolate MEV from a crow and 6 rats on the mink ranches where the disease had occurred resulted in failure. However, the virus was successfully isolated from the spleen and the intestine

of a kitten from the mink ranch. Antibodies to MEV were detected in the sera of 4 kittens but not in that of the 2 crows and 6 rats. These results suggested the possible role of cats as a carrier of the disease.

SCIENTIFUR code: 9-M.

Jap. Journ. of Vet. Research, 29, 1/2, 20, 1981.

Author's abstract.

PARASITOLOGICAL AND HISTOPATHOLOGICAL STUDIES ON TOXOPLASMA INFECTIONS OF THE STONE MARTEN (MARTES FIONA).

(Parasitologische und histopathologische Untersuchungen zur Toxoplasma-Infektion des Steinmarders (Martes fiona).

G. Wieland, O. Geisel, Institut für Vergleichende Tropenmedizin und Parasitologie, Leopolstr. 5, D-8000 München 40.

Tissue-samples of spinal cord, heart and lungs of stone martens (Martes fiona) were examined for the presence of Toxoplasma gondii by means of intraperitoneal inoculation of tissue suspensions into white mice followed by serological testing for Toxoplasma antibodies.

T. gondii was found in 40 (62.5%) out of the 64 stone martens examined. Cysts could be demonstrated histopathologically in sections of brain, heart, tongue, skeletal musculature and lungs in 19 of these 40 animals. Further 4 stone martens which were parasitologically negative harboured cysts morphologically identical to those of T. gondii. In these cases an infection with cyst-forming coccidia not belonging to the genus Toxoplasma has to be taken into consideration.

SCIENTIFUR code: 9-O.

Berliner und Münchener Tierarztliche Wochenschrift, 94, 11/12, 246-248, 1981.

1 table, 3 figs., 9 references. Authors' summary.

In German with summary in English.

INFECTIOUS CANINE HEPATITIS.

Victor J. Cabasso,

Infectious canine hepatitis (ICH) virus causes infectious diseases characterized by encephalitis in foxes and by hepatitis in dogs and in skunks. In all species, the virus has an affinity for endothelial cells. ICH virus is reviewed in Cabasso and Wilner (1969).

SCIENTIFUR code: 9-F-0.
Infectious Diseases of Wild Mammals. 1981, 191-195.
46 references. Author's abstract.

MORPHOPATHOLOGICAL RESEARCHES IN SPONTANEOUS ANAEROBIOSIS IN THE MINK DUE TO CL. PERFRINGENS TYPE A.

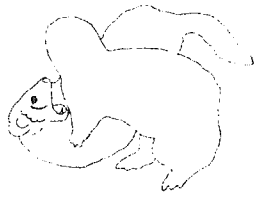
(Cercetari morfopatologice in anaerobioza spontana la nurci produsa de Cl. Perfringens tip A).

E. Macarie, C. Cure, Al. Pop, S. Bittner, Rumania.

The authors describe an endemic enterotoxaemia in the mink, produced by Cl. perfringens type A, in which most animals showed nervous symptoms.

Histopathological examination of the brain showed characteristic cerebrocortical necrosis in miliary disseminated foci or laminated forms, localised especially in the deeper layers of the cerebral cortex.

SCIENTIFUR code: 9-M.
Lucrari Stiintifice, Seria C, Medicina Veterinara. (Bucuresti, Institutul Agronomic "Nicolae Balescu") 1980 (Publ. 1981) V. 23, 23-27.
5 figs., 5 ref. Authors' summary.
In Rumanian with summary in English.



EXPERIMENTAL CONTACT INFECTION OF MINK WITH INFLUENZA A VIRUSES AND DISTRIBUTION OF ANTIBODIES AGAINST INFLUENZA VIRUSES IN MINK , SWINE AND HUMANS.

Kazuhiro Yagyu, Dept. of Hygiene and Microbiology, Fac. of Vet. Med., Hokkaido University, Sapporo 060, Japan.

Experimental contact infection of mink with influenza A viruses of avian and mammalian origin was conducted because mink have been known to be susceptible to various influenza A viruses by intranasal inoculation. An avian influenza A virus was found to be transmitted to mink by contact. This is the first evidence of contact infection of avian influenza virus in mammals. Further, in the present study, distribution of antibodies against influenza viruses in mink and virus isolation from the turbinate of mink, whether mink become naturally infected with influenza virus from humans, experimental intranasal infection of mink with influenza B and C viruses and distribution of antibodies against influenza A viruses in swine and humans were also performed. The results are summarised as follows.

1) The avian influenza A virusHav7N2 was transmitted to mink by contact. The other avian influenza A viruses, Hav4Navl and Hav6Nav5, were not transmitted to mink by contact, and mammalian influenza A viruses, human, swine and equine, were transmitted to mink by similar contact.

2) Serological examinations of 421 mink sera for influenza A viruses, collected from November to December 1980 in a mink-breeding farm in the vicinity of Sapporo, showed that 75 sera (about 18%) were positive against A/Hokkaido/45/80 (H3N2). Antibody response in the HI titers more than 1:1024 was found in many of the mink. Virus isolation from the turbinate of some of these mink was negative.

3) Two mink were exposed to crowds during the epidemical seasons of influenza butthese mink did not become naturally infected with any influenza viruses.

4) Mink were infected by intranasal inoculation with influenza B and C viruses. Contact infection of mink with influenza B virus was unsuccessful.

5) The sera from swine and humans in Hokkaido, collected from January to December 1980 and from June to September 1978 respectively, were studied for the presence of antibodies against influenza A viruses. The distribution of antibodies in the 19 subtypes of influenza A virus was as follows: of 754 swine, 16, 6.8 and 2.7% were positive against H3, H0 and H1, respectively. Of 142 humans, 47, 45, 35 and 9.2% were positive against H2, H3, H1 and H0, repectively.

SCIENTIFUR code: 9-M-O.

Japanese Journal of Vet. Res., 19, 1/2, 39, 1981.
Summary of thesis.

Author's summary.

IMMUNIZATION OF FUR BEARING ANIMALS (SILVERGREY FOXES AND ARCTIC FOXES) AGAINST RINGWORM.

Специфическая профилактика трихофитии пушных зверей

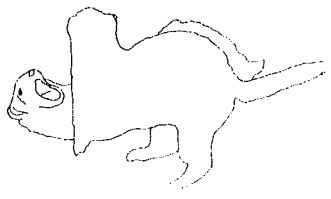
A. Kh. Sarkisov, L.I. Nikiforov, Vsesoyuznyi Institut Eksperimental'noi Veterinarii, Moscow, USSR.

In a survey of dermatomycosis in foxes and mink, of 514 samples 85.5 percent yielded Trichophyton Mentagrophytes, 7.5 percent T. Verrucosum and 7 percent Microsporum Canis. Animals that had recovered from natural infection were immune to re-infection. Lyophilized vaccine against T. Mentagrophytes was prepared; 1-2 ml applied to the scarified skin rendered 99 percent of vaccinated animals immune after 21 days.

SCIENTIFUR code: 9-F.

Veterinariya, Moscow, USSR, No. 7, 37-38, 1981.
In Russian.

CAB-abstract.



COCCIDIOSIS IN FUR BEARING ANIMALS. (COYPU, FOX, MINK IN KAZAKHSTAN AND ALTAI TERRITORY).

Кокцидиозы пушных зверей

K.K. Nukerbaeva, Institut Zoologii, Akademiya Nauk, Alma-Ata, Kazakhskaya, SSR, USSR.

Faecal samples were taken from over 4000 coypu, silver, arctic and blue foxes, mink and sable. Coypu yielded eimeria pellucida, E. nutridae, E. coypi and isospora sp. Silver fox yielded I. buriatica, I. canivelocis, I. vulpina, I. pavlodarica and I. triffitti. The same coccidia species were found in arctic and blue foxes plus E. imantauica. Mink yielded E. vison, E. furonis, E. laidlawi and I. ewersmanni. Sable yielded E. sibirica, E. sablii sp. nov. and I. martesii sp. nov. Generally, poor housing, feeding and hygiene were the prime causes of trouble. The degree and extent of parasitic invasion decreased with increasing age of the animals, but were at a maximum at the age of 2-3 months. Disease occurred in acute, chronic and latent forms. The incubation period was 3-12 days. The most virulent species were E. nutriae in coypu, I. triffitti in all foxes, and E. vison in sable. Prevalence was highest in summer and lowest in winter. The most effective anticoccidials were khimkoktsid (Robenidine analogue), farm-koktsid, and furazolidone for coypu, zoalene for foxes, and Khimkoktsid-6, furazolidone and sulfadimidine for mink.

SCIENTIFUR code: 9-M-F-O.
Veterinariya, Moscow, USSR, no. 12, 42-44, 1981.
CAB-abstract.

MICROCHROMOSOMES OF THE ONTARIO RED FOX (VULPES VULPES): AN ATTEMPT AT CHARACTERIZATION.

J.A. Ellenton, P.K. Basrur, Wildlife Toxicology Division, National Wildlife Research Centre, Dept. of the Environment, Ottawa, Ontario K1A 0E7, Canada.

Characterization of the microchromosomes of the red fox, Vulpes vulpes Linn., was attempted through the examination of mitotic chromosomes using Giemsa banding, quinacrine banding, the silver nitrate-ammoniacal silver technique for straining nucleolar organizers, and autoradiographic procedures. Pachytene cells were examined in air-dried and squash meiotic preparations and in testicular tissue sectioned for light and electron microscopy. The results of banding procedures on mitotic chromosomes and the staining properties of the microchromosomes at pachytene indicated that the microchromosomes likely contain both heterochromatin and euchromatin. Autoradiographic analysis showed that the microchromosomes replicate during mid S phase while the Y chromosome, which is in the size range of the microchromosomes, replicates during late S phase. From these observations, it would appear that the microchromosomes may not be exclusively heterochromatic as hypothesized previously. With the use of the silver nitrate-ammoniacal silver technique, the presence of nucleolar regions were detected on specific macrochromosomes but not on any of the microchromosomes. Examination of pachytene chromosomes in air-dried and squash preparations, and of testicular tissue sectioned for light and electron microscopy, also indicated that the microchromosomes may not be involved in the organization of the nucleolus in the red fox.

SCIENTIFUR code: 9-F.
Can. J. Genet. Cytol., 22, 553-567, 1980.
3 tables, 9 figs., 34 references. Authors' summary.

MESOGYNA HEPATICA (CESTODA) IN KIT FOXES.

George Bjotvedt, Gregory M. Hendricks, Animal Care Program, Arizona State University, Tempe, Arizona 85281, USA.

Information obtained from a study on the migratory behavior of M. hepatica in the kit fox is presented. The materials and methods used in the study are discussed along with the final results and conclusions. Illustrations are included.

SCIENTIFUR code: 9-F.
4 figs., 4 references.
Canine Practice, Vol. 9, no.1, 1982. Authors' abstract.

FAILURE TO DEMONSTRATE THE MAINTENANCE OF LEPTOSPIRES BY FREE-LIVING CARNIVORES.

S.C. Hathaway, D.K. Blackmore, Dept. of Veterinary Pathology and Public Health, Massey University, Palmerston North. (Present addres: Central Veterinary Laboratory, MAFF, Weybridge, Surrey, England).

Free-living members of the Mustelidae and feral cats (Felis catus) inhabiting farmland in the southern half of the North Island of New Zealand were examined for evidence of leptospiral infection. Nine stoats (Mustela erminea), 9 ferrets (Putorious putorious) and 4 weasels (Mustela nivalis) showed no serological or bacteriological evidence of infection. No leitospires were isolated from the kidneys of 11 feral cats but 2 animals had low titres to pomona and ballum respectively. All animals examined were from ecosystems where ballum infection was endemic in rodents; thus predator-chain transmission does not appear to be an important natural route of transmission for this serovar.

SCIENTIFUR code: 9-O.
N.Z. vet.J. 19, 115-6, 1981.
20 references. Authors' abstract.

CONTRIBUTION TO THE KNOWLEDGE OF TAENIA CRASSICEPS (ZEDER, 1800) RUDOLPHI, 1810 (CESTODA, TAENIIDAE).

(Beitrag zur Kenntnis von Taenia crassiceps (Zeder, 1800) (Cestoda, Taeniidae).

Gerhard Reitschel, Inst. für Allgemeine und Spezielle Zoologie der Justus-Liebig-Universität Giessen, Stephanstr. 24, D-6300 Giessen, Bundesrepublik Deutschland.

The occurrence of Taenia crassiceps in naturally infected dogs is mentioned, and a brief description of the gravid proglottids is given. Oral infection of several rodent species with eggs showed that the field vole (Microtus arvalis) isthe most susceptible intermediate host for this tapeworm. The cysticercus often develops in the brain of the rodent and causes disturbances of coordinated movements. Two foxes (Vulpes vulpes) were infected with cysticerci of the strains COLA and GIKS. These strains were originally isolated from two dogs. The foxes passed fertile eggs and proglottids as early as 31 and 32 days respectively after infection.

SCIENTIFUR code: 9-F.
Z. Parasitenkd. 1981, 65, 309-315.
1 table, 1 fig., 15 references. Author's abstract.
In German with abstract in English.

PATHOGENIC DERMATOPHYTES ISOLATED FROM CHINCHILLA, GUINEA PIGS AND CALVES. (PRELIMINARY COMMUNICATION).

(Patogén dermatofiton gombák izolálása csincsilláról, tengerimalacról és borjúról. (Elózetes közlemény).

Andreás Gimesi, Mem. Elelomiszeripari Higieniae Ellenorzo Szolgalata, Budapest, Hungary.

Isolation of trichophyton mentagrophytes from 5 chinchilla and 4 guinea

pigs and of T. verrucosum and T. Mentagrophytes from 4 2-4-month-old calves is briefly reported.

SCIENTIFUR code: 9-O.
Magyar Állatorvosok Lapja 1980, 35, 9, 591.
In Hungarian. CAB-abstract.

OBSERVATIONS ON THE PREVALENCE AND INTENSITY OF CAPILLARIA SPP. (NEMATODA: TRICHUROIDEA) IN WILD CARNIVORA FROM ONTARIO, CANADA.

Eric W. Butterworth, Mary Beverley-Burton, Dept. of Zoology, University of Alberta, Edmonton, Alberta T6G 2E1, Canada.

Four Capillaria spp. were found in eitht species of wild carnivora taken in Ontario, Canada, over a period of 18 months. C. plica was found in raccoons (Procyon lotor), red foxes (Vulpes vulpes), coyotes (Canis latrans), fishers (Martes pennanti), and striped skunks (Mephitis mephitis); C. putorii in short-tailed weasels (Mustela erminea), mink (M. vison), fishers, martens (Martes americana), striped skunks, and raccoons; C. aerophila in red foxes and martens (new host record), and C. procyonis in raccoons and striped skunks.

Data on location within each host species, prevalence, intensity, dispersion, and association are presented. The numerical host-parasite relationhips are examined with regard to host species, season, age, and sex. An attempt was made to relate seasonal data with the biology (including feeding habits) of the hosts.

SCIENTIFUR code: 9-M-F-O.
Proc. Helmithol. Soc., Wash., 48 (1), 1981, 24-37.
4 tables, 3 figs., 43 references. Authors' abstract.

FINE STRUCTURE OF THE OOCYST WALL AND EXCYSTATION OF EIMERIA PROCYONIS FROM THE AMERICAN RACCOON (PROCYON LOTOR).

D.W. Duszynski, C.A. Speer, B. Chobotar, A.A. Marchiondo, Dept. of Microbiology, University of Montana, Missoula, MT 59801, USA.

Oocysts of Eimeria procyonis, from the American raccoon (Procyon lotor),

were broken, added to a cell suspension, fixes in Karnovsky's fluid, and studied with the electron microscope. The oocyst wall has three layers: a thin electron-dense inner layer (8-15 nm), an electron-lucent middle layer (25-35 nm), and a thick outer layer (120-140 nm). The outer layer has an electron-dense inner portion and an electron-lucent outer portion that contains membrane-bound vesicles. When exposed to a trypsin-sodium taurocholate fluid, sporozoites excysted from most sporocysts which were 35-43 months old, but not from sporocysts that looked normal and were 106 months old. Excysted sporozoites measured 13-16x3-4 (mean 14.3x3.2) µm, usually had two refractile bodies, and had a nucleus with a prominent nucleolus.

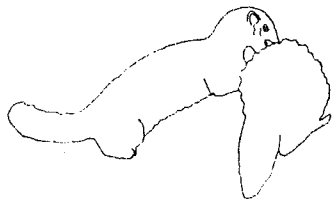
SCIENTIFUR code: 9-O.
Z. Parasitenkd. 1981, 65, 131-136.
10 figs., 12 references. Authors' abstract.

CARRIAGE OF CAMPYLOBACTER JEJUNI IN HEALTHY AND DIARRHEIC ANIMALS.

J.F. Prescott, C.W. Bruin-Mosch, Dept. of Vet. Microbiology and Immunology, Ontario Vet. College, University of Guelph, Guelph, Ontario Canada N1G 2W1.

Feces from normal and diarrheic animals were cultured for Campylobacter jejuni. A clear difference could not be detected in carriage between normal and diarrheic cattle, horses, pigs, and dogs. Too few diarrheic goats, sheep, and rabbits were sampled for conclusions to be made. Carriage rates (%) detected in normal animals were as follows: ducks 88.3, chickens 23.8, sheep 13.6, rabbits 11.3, goats 2.7, cattle 2.5, and dogs 0.5. The organisms was not isolated from horses and mink. Carriage rates varied within a species between animals from different sources.

SCIENTIFUR code: 9-M-O.
Am. J. Vet. REs., Vol. 42, no. 1, 164-165. 1981.
1 table, 20 references. Authors' summary.



EIMERIA AND SARCOCYSTIS IN RACCOONS IN ILLINOIS.

John H. Adams, Norman D. Levine, Kenneth S. Todd, College of Vet. Med. and Agricultural Experiment Station, University of Illinois, Urbana, Illinois 61801.

Eimeria nuttalli oocysts were found in 58% (21/36) and E. procyonis oocysts in 25% (9/36) of raccoons Procyon lotor in Illinois, and sporocysts of Sarcocystis sp. in 17% (2/12) of other raccoons in Illinois. The oocysts of E. nuttalli were ellipsoidal to ovoid, 15-21 x 12-17 µm, with a one-layered, smooth, colorless wall. The oocysts of E. procyonis were 22-28 x 18-22 µm, with a rough, striated, brownish, two-layered wall. The sporulated sporocysts of Sarcocystis sp. were 11-13 x 8-10 µm. Attempts to infect baby pigs by feeding them sporocysts of Sarcosystis sp. from the raccoon failed.

SCIENTIFUR code: 9-0.
J. Protozool. 28 (2), 221-222, 1981.
12 references. Authors' abstract.

SUSCEPTIBILITY OF SABLES TO THE VIRUS OF AUJESZKY'S DISEASE.

ВОСПРИИМЧИВОСТЬ СОБОЛЕЙ К ВИРУСУ БОЛЕЗНИ АУЕСКИ

A.F. Tyulpanov, A.V. Grabovskij, USSR.

By various trials it was established that Aujeszky's disease, generally is transmitted to fur animals via slaughter house offal and blood arising from swine with the injection.

Rodents seem to play a significant role in the communication of the disease, thus it was proved that the injection can be inapparent and rats can transmit and carry virus long time after (130 days) clinical signs of the disease.

It was observed that mink and blue fox were more susceptible to the

disease than the silver fox.

An experiment with 4 pairs of Sables infected with af fixed strain of Aujeszky's virus from mink. The first pair was injected the virus subcutaneously, the second pair intramuscularly, the third were scarified in the palatum dura and like the fourth pair fed infected material from rabbits.

The experiment conclusion was that the Sable, like other animals, is susceptible to Aujeszky's Disease. The incubation time after experimental injection is 4-5 days, and the symptoms are severe with paralysis as the predominant symptoms.

Virus passed from the Sable to rabbits retain their virulence.

It is finally recommended, as a preventive measure, to vaccinate Sable kits with aluminiumhydroxide treated vaccine.

SCIENTIFUR code: 9-M-F-O.
Krolikovod Zverovod, Vol. 7, No. 5, 16-27, 1964.
In Russian
Translated by E. Jørgensen.
Abstract: Asbjørn Brandt

"You'll be glad to know that of the 17 drugs we gave you, and the 43 side effects they caused, we found 6 of the drugs to be effective, and we've cleared up 28 of the side effects."

MICROBIOLOGICAL STUDIES ON ANTHRAX ON A MINK FARM IN ANKARA, TURKEY.

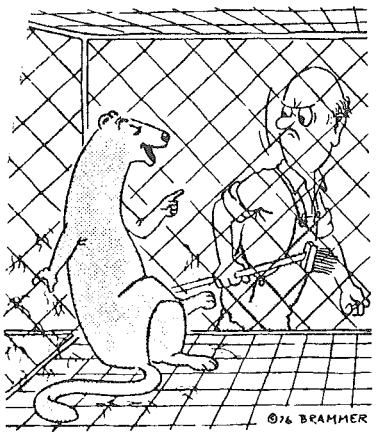
(Ankara'Daki bir mink ciftliginde görülen antraks hastaligi üzerinde mikrobiyolojik calismalar).

Nejat Aydin, M. Kemal Aydintug, A.Ü. Veteriner Fakültesi,
Bakteriyoloji ve Salginlar Kürsüsü.

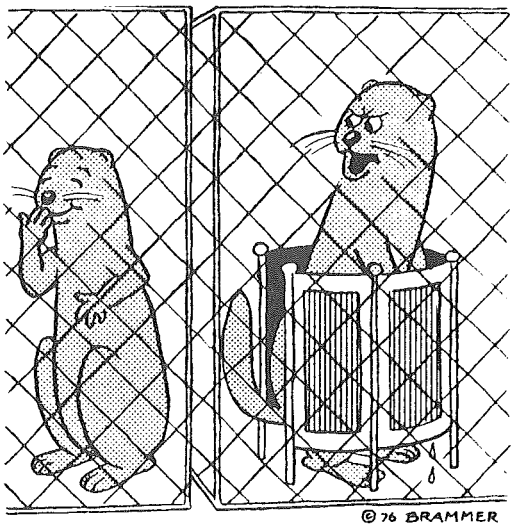
During the prediagnostic investigation of an acute disease developed in minks of a farm in the village of Memlük (Yenimahalle), in the vicinity of Ankara, we have isolated Bacillus anthracis from 8 minks. We have studied their morphological and culture characteristics as well as their biochemistry and phage sensivity. The effect of treatment with antibiotics on the disease was also studied. With that purpose, the following antibiotics were assayed: streptomycin, tetracycline, chlortetracycline, oxytetracycline, chloramphenicol, penicillin and neomycine. Among the 1000 affected minks 70 died and the rest treated with antibiotics were protected against the disease when vaccinated with the Max-Sterne vaccin.

SCIENTIFUR code: 9-M.
Veteriner Fakultesi Dergisi Ankara Universitesi, 27, 3/4, 606-612, 1980.
11 references.
In Turkish with summary in French.
Authors' abstract translated by Nelly Blumenkrantz

SANITATION:



THERAPY



PROPHYLAXIS

COMMUNICATION

3e CONGRES INTERNATIONAL SCIENTIFIQUE
SUR LA PRODUCTION DES ANIMAUX A FOURRURE

3rd INTERNATIONAL SCIENTIFIC CONGRESS
IN FUR ANIMAL PRODUCTION

25, 26, 27 avril 1984, Versailles, France

Dr. Gunnar JØRGENSEN
Stateus Husdyrbrugsforsøg
Forsøg med Pelsdyr
Roskidevej 48 H
3400 HILLERØD
Denmark

Jouy-en-Josas, October 22, 1982

Dear Gunnar,

We are pleased to inform you that our Third International Scientific Congress in Fur Animal Production is fixed to April 25, 26, 27-1984.

It will be held in the Trianon Palace hotel in Versailles. As in the previous congresses we wil have full opportunities to meet each others before and after the sessions in this quiet place.

Versailles is only 20 km from the centre of Paris. Rail connections are fast and frequent between the twon and the capital and its two airports, Roissy-Charles de Gaulle and Orly.

We shall send the first request for papers before long. As usual the programme will include Genetics, Anatomy and Body Composition, Hair and Pelage, Nutrition, Reproduction, Physiology, Pathology and General problems of production concerning reared fur bearers.

Kind regards,

J. ROUGEOT

Secrétariat : Jean Rougeot, Institut National de la Recherche Agronomique,
Laboratoire des Pelages, Toisons et Fourrures, 78350 Jouy en Josas, France.
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October 21, 1982

Gunnar Jorgensen
NJF's Fur Animal Division
Scientifur
48 H Roskildevej
DK-3400 Hillerod, Denmark

Dear Gunnar:

In my last letter I forgot to ask if you have any influence in setting the date for 1984 in France. I know that setting a date for a conference has to be a compromise. Especially as Easter falls, usually in April too, and in 1984 it will be on the 22nd of April. I hope that they will keep in mind that for some of the participants the last week of April is not very desirable as it is to close to whelping.

I know personally I wasn't very comfortable in Helsinki, and Einar Groot Rasmussen could probably have avoided a disaster if he had been on his farm when the conference was in Denmark.

Things on the farm here look very good right now and we had the first frost. That means the pelting season is coming close.

Kind regards,

A. A. Rietveld

AAR/rjl

BOOK REVIEWS

Nutrient Requirements of Mink and Foxes

Second revised edition, 1982

Here it comes! The bible of Fur Bearer Nutrition.

During 72 pages almost all aspects in fur animal nutrition are discussed, underlined by 12 figures and 3 tables.

In 16 tables nutrient requirements, feed formulations and feed compositions are given.

The book have to be taken in consideration wherever serious discussions of fur bearers nutrition are going on.

We address the compliment for the best fur bearer nutrition book up to date to the chairman of the Subcommittee of Fur Bearer Nutrition, Dr. Hugh F. Travis, Cornell University.

Gunnar Jørgensen

Library of Congress Cataloging in Publication Data

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Nutrient requirements of mink and foxes.

(Nutrient requirements of domestic animals; no. 7)
Revision of: 1st rev. ed., 1968.
Bibliography: p.
1. Minks—Feeding and feeds. 2. Foxes—Feeding and feeds. I. National Research Council (U.S.). Subcommittee on Furbearer Nutrition. II. Series.

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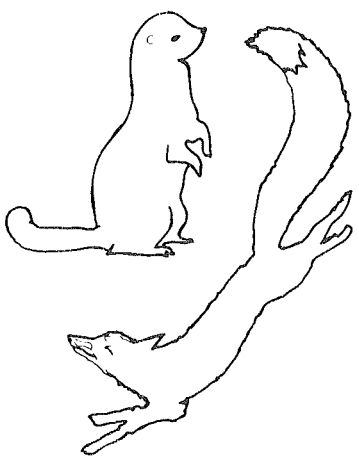

Nutrient Requirements of Mink and Foxes

Second revised edition, 1982

Contents

Acknowledgments

The subcommittee wishes to thank the Scandinavian scientists, Hans Rimeslåtten, Anders Skrede, and Arne Helgebostad from Norway; Eva Aldén and Anne Helene Tauson from Sweden; Jaakko Makela and Tuomo Kiiskinen from Finland; and Niels Glem-Hansen from Denmark for supplying to the subcommittee experimental results and data concerning Scandinavian norms for furbearing animals and nourishment value and utilization of different feedstuffs.

Our thanks also to Hans Rimeslåtten for his very valuable contributions to the part concerning foxes and to Niels Glem-Hansen for supplying basic information concerning energy and protein requirements of mink.

A special thanks to Niels Glem-Hansen for his valuable help in supplying the subcommittee with detailed data about the Scandinavian feedstuffs.

The subcommittee acknowledges the efforts of the International Feedstuffs Institute, Utah State University, in establishing and maintaining the data bank that supplied feed composition data for the subcommittee's consideration. The assistance of the Committee on Animal Nutrition's Subcommittee on Feed Composition is also acknowledged with appreciation.

The subcommittee is indebted to Philip Ross, Executive Secretary, and Selma P. Baron, Staff Officer, of the Board on Agriculture and Renewable Resources

for their assistance in the production of this report; to the members of the Committee on Animal Nutrition; and to John Adair, Robert O. Herrmann, Harold J. Hintz, J. K. Loosli, Howard D. Stowe, and Richard G. Warner, all of whom prepared critical reviews for the advice and guidance of the subcommittee. We are indebted to all of these scientists. Our special thanks to George K. Davis, who served as review coordinator for this report.

Subcommittee on Furbearer Nutrition

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TELEPHONE
(202) 334-3062

October 19, 1982

Dr. Gunnar Joergensen
48-H Rodkildevej
DK-3400 Hilleroed
Denmark

Dear Dr. Joergensen:

I am pleased to transmit to you five copies of *Nutrient Requirements of Mink and Foxes* that was prepared by the CAN Subcommittee on Furbearer Nutrition on which you served.

You and the other members of the Subcommittee are to be congratulated on an excellent report that should be of great value to furbearer nutritionists throughout the world.

So that you can respond to inquiries, the sale price for this report is $9.50 and copies can be ordered from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418. There is a 20% discount for 5-24 copies and a 25% discount on orders for over 25 copies of the same title.

Sincerely yours,

George K. Davis

George K. Davis
Chairman

Pelztiergesundheitsdienst

VR Dr. med. vet. Ulf Dieter Wenzel
Leiter der Abteilung Pelztiere am Bezirksinstitut
für Veterinärwesen Leipzig

BOOK REVIEW

Ulf Dieter Wenzel, dr.med.vet.:
Pelztiergesundheitsdienst.
(The Health of Fur Animals).
V.E.B. Gustav Fischers Verlag, Jena 1982.
254 pages, 42 pictures (some in colour), 14 tables.
Price: 49 GDR Mark, Language: German.

The book is written for veterinarians, veterinary students, zoologists and farmers. The author has collected a great deal of information, of which a large part is of comparatively recent date, combined with his own knowledge as leader of the Fur Animal Institute in Leipzig.

In recent years, the production of fur animals has increased in the GDR, and the author has chosen to write a textbook concerning mink, fox, coypu and chincilla. However, he has made no reference to Finnraccoon, a fur animal of great interest in Northern Europe.

The book is divided into two sections, in which the first section mentions the fur animals in zoological system, determination of age, technique of application, blood samples, aenesthesia, nutrition, disinfection, and painless killing. This section contains useful and interesting information, and the determination of age receives detailed description. The latter is more useful for the zoologist than for the veterinary surgeon in his practice. It would be of great value, if the author had written with the same thoroughness about the hair on the fur animals, since the only reason for production of fur animals is the sale of skin and hair of excellent quality.

Concerning biological data, there are comprehensive tables about temperature, anatomy, reproduction and hemotology in mink, silver fox, blue fox, coypu and chinchilla. It is very important to have these standard values necessary for the clinical chemistry.

The book gives a good overview about cleaning and disinfection of fur farms, but it seems that the concentrations of disinfectants are essentially higher than the Scandinavian usage. It would indicate that the higher concentrations are neccessary for the prevention of the most important fur animals diseases. The nutrition of fur animals receives a short description. All kinds of raw materiale are mentioned, and are evaluated by taste and dietetic value.

CONFERENCE

ON

THE FERRET AS AN ALTERNATIVE SPECIES

IN TERATOLOGY AND TOXICOLOGY

June 25-26, 1981

STANFORD UNIVERSITY

STANFORD, CALIFORNIA

sponsored by

Teratology Society

Behavioral Teratology Society

PROGRAM, ABSTRACTS

PREFACE

The ferret has been used extensively as an animal model in biological research in studies ranging from virology to neuroanatomy; from endocrinology to ethology. As diverse as these research efforts have been, their appearance in the literature is even more divergent in its distribution and our scientific literature departments would have some difficulty locating the variety of journals in which this data has been published. This singular lack of concentration within the journals coupled with the unwarranted attitude concerning the ferret's disposition have combined to create an impression of the ferret as an "exotic species" which we know to be illusory. Thus the participants in this Conference have come from great distances to present a wide variety of data collected from a species they believe to have special value as a research model. As this is the first conference on the ferret in recent times, so its publication will be the first to review the recent literature and place this animal in its proper perspective as an alternative species in toxicologic research.

It is difficult to organize such a gathering without the assistance of many interested parties. Thus we are grateful for the "umbrella" and logistical support provided by the Teratology and Behavioral Teratology Societies, the contributions received from those listed below, and the secretarial assistance provided by Miss Diane Broda.

Raef K. Haddad
Richard M. Hoar

Exxon Corporation
Hoffmann-La Roche Inc.
Mobil Oil Corporation
Monsanto Company
Ralston Purina Company
Shell Oil Company
United States Army Medical Research and Development Command
United States Environmental Protection Agency

PROGRAM

THURSDAY JUNE 25

Afternoon

3:30 WELCOMING REMARKS
Dr. Chester Swinyard, President, Teratology Society
Dr. Richard M. Hoar, President, Behavioral Teratology Society

3:40-6.00 PLATFORM PRESENTATIONS I

Papers from Platform
Chair: Raef K. Haddad

USE OF THE FERRET IN TERATOLOGY. Beck, F., Department of Anatomy, Medical School, University of Leicester, Leicester, England.

THE USE OF THE FERRET IN REPEATED DOSE TOXICITY TESTS. Greenwood, B., S.P. Bleakley, J.E. Beach and B. Clark, Fisons Limited, Pharmaceutical Division, R & D Laboratories, Loughborough, Leicestershire, England.

MANAGEMENT AND BREEDING OF FERRETS IN A LABORATORY SETTING. Hoar, R.M., Department of Toxicology and Pathology, Hoffmann-La Roche Inc., Nutley, New Jersey.

6:30-7:30 DINNER

Evening

8:00-10:00 POSTER PRESENTATIONS

No. **Papers Presented in Poster Session**

1 COMPARATIVE DATA FOR THE FERRET AND OTHER LABORATORY ANIMAL SPECIES. Marshall, G., Marshall Research Animals, North Rose, New York.

2 CYTOGENETICS OF THE FERRET. Jenkins, E., R. Weed, R. Haddad and R. Trowbridge, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

3 COMPARATIVE STUDY ON TAPETUM, RETINA AND SKULL OF FERRET, DOG AND CAT. Wen, G.Y., J.A. Sturman and J.W. Shek, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

4 SPONTANEOUS MALFORMATIONS AND VARIATIONS IN REPRODUCTIVE RESPONSE IN THE FERRET: EFFECTS OF MATERNAL AGE, COLOR AND PARITY. McLain, D.E., S.M. Harper, D.A. Roe and J.G. Babish, Division of Nutritional Sciences and Department of Preventive Medicine, Cornell University, Ithaca, New York.

5 NORMAL AND ABNORMAL CRANIOFACIAL DEVELOPMENT IN THE FERRET. Steffek, A.J. and D.K. Mujwid, American Dental Association Research Institute Health Foundation, Chicago, Illinois.

6 EFFECTS OF METHYL MERCURY ON FERRET DEVELOPMENT. Babish, J.G., Department of Preventive Medicine, D.M. Noden, Department of Anatomy, College of Veterinary Medicine, Cornell University, Ithaca, New York, and T.W. Clarkson, Department of Radiation Biology and Biophysics, University of Rochester School of Medicine and Dentistry, Rochester, New York.

7 TERATOGENICITY OF ETHANOL IN THE FERRET. Dumas, R. and R. Haddad, Neuroteratology Laboratory, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

8 FERRET PULMONARY MECHANICS IN AN ISOPROTERENOL-INDUCED MODEL OF CYSTIC FIBROSIS. Boyd, R.L., H.B. Epstein and J.A. Mangos, Departments of Pediatrics and Physiology, University of Florida College of Medicine, Gainesville, Florida.

9 DIETHYLSTILBESTROL IN THE FERRET: METABOLISM AND COVALENT BINDING. Miller, R.K., R.C. McKenzie and R.B. Baggs, Departments of Obstetrics Gynecology, Pharmacology/Toxicology, Surgery, and Division of Laboratory Animal Medicine, University of Rochester School of Medicine and Dentistry, Rochester, New York.

10 ELECTROPHYSIOLOGY OF THE FERRET RIGHT VENTRICULAR MYOCARDIUM. Kanaya, S., H.S. Karagueuzian, and B. Katzung, Pharmacology Department, University of California, San Francisco, California.

11 THE UTILIZATION OF THE ISOLATED FERRET HEART TO STUDY THE EFFECTS OF TAURINE IN CARDIOPLEGIA SOLUTIONS. Baskin, S.I., J.O. Finnegan, L.C. Garvin, M.J. McBride and R. Mark, Departments of Pharmacology, Surgery, Cardio-Thoracic Division and Pathology, Medical College of Pennsylvania, Philadelphia, Pennsylvania.

12 NEUROTERATOGENICITY OF METHYLAZOXYMETHANOL ACETATE (MAM Ac) IN THE FERRET. Haddad, R., A. Rabe, R. Dumas, and J. Shek, Neuroteratology Laboratory, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

13 ALTERNATION LEARNING DEFICIT IN FERRETS WITH TRANSPLACENTALLY INDUCED LISSENCEPHALY. Lee, M.H., R. Haddad, and A. Rabe, Neuroteratology Laboratory, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

14 EEG ABNORMALITIES IN FERRETS WITH TRANSPLACENTALLY INDUCED LISSENCEPHALY. Lee, M.H., J. Majkowski, and R. Haddad, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

15 NEUROPHYSIOLOGICAL CHARACTERISTICS OF FERRETS WITH LISSENCEPHALY INDUCED BY INJECTION OF METHYLAZOXYMETHANOL ACETATE DURING PREGNANCY. Rose, G., Department of Psychology, Bowdoin College, Brunswick, Maine.

16 NEUROPSYCHOLOGICAL STUDIES WITH THE FERRET: BEHAVIORAL EFFECTS OF FRONTAL LESIONS. Rabe, A., Y. Zatz, R. Haddad, D. Snow and M.H. Lee, Neuropsychology and Neuroteratology Laboratories, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

17 EXPERIMENTAL SUBACUTE SCLEROSING PANENCEPHALITIS IN FERRETS. Brown, H.R., H. Thormar, M. Barshatzky and H.M. Wisniewski, Departments of Virology and Pathological Neurobiology, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

18 MEASLES VIRUS ENCEPHALITIS IN FERRETS AS A MODEL FOR SUBACUTE SCLEROSING PANENCEPHALITIS. Thormar, H., P.D. Mehta, M. Barshatzky, and H.R. Brown, Department of Virology, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

FRIDAY JUNE 26

Morning

7:00-8:00 BREAKFAST

8:30-11:50 PLATFORM PRESENTATIONS II

Papers from Platform
Chair: Richard M. Hoar

8:30 NORMAL EMBRYOLOGY AND SPONTANEOUS MALFORMATIONS IN THE FERRET. Noden, D.M., Department of Anatomy, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York.

9:00 PULMONARY PHYSIOLOGY OF THE FERRET AND ITS POTENTIAL AS A MODEL FOR INHALATION TOXICOLOGY. Vinegar, A., E.E. Sinnett, P.C. Kosch and M.L. Miller, Department of Environmental Health, University of Cincinnati; Division of Lung Diseases, National Heart Lung and Blood Institute; Department of Metabolism, University of Florida, Gainesville, Florida.

9:30 XENOBIOTIC METABOLISM AND RELATED TOXICITIES IN THE FERRET. Babish, J.G., B.E. Johnson, and K.A. Frederick, Department of Preventive Medicine, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York.

10:00-10:20 COFFEE BREAK

10:20 THE FERRET: A USEFUL MODEL FOR STUDYING VISUAL PATHWAY DEVELOPMENT. Linden, D.C., R.W. Guillery, and J. Cucchiaro, Department of Physiology, School of Medicine, The Center for Health Sciences, Los Angeles, California.

10:50 NEUROPHYSIOLOGY OF THE VISUAL AND AUDITORY SYSTEMS IN IMMATURE AND MATURE FERRETS. Rose, G., Department of Psychology, Bowdoin College, Brunswick, Maine.

11:20 BEHAVIOR AND BEHAVIORAL TERATOLOGY USING THE FERRET. Rabe, A., R. Haddad and R. Dumas, Neuropsychology and Neuroteratology Laboratories, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

11:50 CONCLUDING REMARKS

Presentations by Title

CULTIVATION AND CHARACTERIZATION OF FERRET BRAIN CELLS. Trowbridge, R.S., J. Lehmann, H.R. Brown, and P. Brophy (Introduced by R. Haddad), Department of Virology, New York Institute for Basic Research in Mental Retardation, Staten Island, New York.

NEUROTRANSMITTER ALTERATIONS IN LISSENCEPHALIC CORTEX FROM FERRETS TREATED WITH METHYLAZOXYMETHANOL ACETATE DURING THE FETAL PERIOD. Johnston, M.V., Departments of Pediatrics and Neurology, University of Michigan, Ann Arbor, R. Haddad, New York Institute for Basic Research in Mental Retardation, Staten Island, New York, and J.T. Coyle, Departments of Neuroscience, Psychiatry and Pharmacology, Johns Hopkins University School of Medicine, Baltimore, Maryland.

EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS (EAE) IN FERRETS. Madrid, R.E., H. Thormar and H.M. Wisniewski, Departments of Pathological Neurobiology and Virology, New York State Institute for Basic Research in Mental Retardation, Staten Island, New York.

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Kind regards

Ellen

Ellen