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## ABSTRACTS OF COMMUNICATIONS

*The Forty-second\* Meeting of the Nutrition Society (Twentieth Meeting of the Scottish Group) was held in the Strathcona Club, the Rowett Research Institute, Bucksburn, Aberdeenshire, on Saturday, 18 October 1947, at 2.30 p.m., when the following papers were read:*

**The Digestibility of Edible Vegetable Oils.** By J. T. ABRAMS, G. C. ASHTON, M. RITSON and H. WILKINSON, *Research Department B, Lever Brothers and Unilever Ltd.*

The digestibility of the edible vegetable fats and of hydrogenated edible fats prepared from these and used for the manufacture of margarine and cooking fats in this country was studied. All the fats examined had digestibilities over 90%, the digestibility being taken as net absorption and measured by fat intake less fat excretion corrected for endogenous fat.

In a further experiment the digestibility of mixtures of a liquid oil and of its completely hardened counterpart was investigated. The liquid oil had a digestibility of 97%, while the hardened oil which contained 97% tristearin had a digestibility of 24%. The digestibilities of the mixtures did not conform to a straightforward summation of the digestibilities of the components of the mixtures. Preliminary experiments have shown that there are two reasons for this: the presence of the liquid oil increases the digestibility of the hard oil, and the digestibility of the completely hardened oil is affected by the level of the hardened oil in the diet.

**The Neglect of 'Nutritional' Genes in the Selection of Ewe Lambs for Scottish Hill Flocks.** By G. DUNLOP, *West of Scotland Agricultural College, Auchincruive, Ayr*

On hill grazings the selection of ewe lambs for the breeding flock depends largely on the live weight *A* of the lamb at the time of selection 3-4½ months after birth (Dunlop, 1947). *A* can be correlated with the live weight 11 weeks previously (at the lamb marking) when the lambs are 3-8 weeks old. In a normal year, therefore, *A* is influenced largely by the age of the lamb. While a lamb born during mid-April is selected for the flock, a May lamb is rejected.

Flock owners, however, stress the importance they attach to (1) the milking capacity of the mother, and (2) the ability of the lamb to maintain itself on the grazings with little supplementation of the herbage diet with its mother's milk.

It was desirable, therefore, to obtain full information on the progress of all lambs in

\* See notice on p. 306.

a flock at intervals from birth until selection was made. During April and May metal disks were affixed to 400 ewe lambs in five different flocks on the day of birth. The live weights of these animals were found on three occasions: (a) early in June, (b) about mid-July, and (c) late in August when selection was made. A measure of (1) is given by the daily gain from birth to (a), while (c)–(b) gives a measure of (2).

The results showed that actually little or no consideration was given to (1) or (2) in the selection of ewe lambs for the breeding flock; the live weight *A* was the chief factor considered and it depends largely on the age of the animal.

## REFERENCE

Dunlop, G. (1947). *J. Minist. Agric.* 54, 222.

### **Anaemia and Marasmus Occurring in Indian Troops on Active Service.**

By R. H. GIRDWOOD

### **The Metabolism and Physiology of the Lactating Cow as Affected by Thyroxine.** By E. C. OWEN, *Hannah Dairy Research Institute, Kirkhill, Ayr*

The effect on six lactating cows of the subcutaneous injection of 10 mg. thyroxine/day for 4 weeks was investigated. The resulting stimulation of the yield of milk was accompanied by an increase in the pulse rate, a marked loss of weight, an increase in the output of water by the kidneys and a marked reduction of phosphatase in the milk. Creatine in the urine attained a maximum during the treatment and showed a pronounced minimum soon after its cessation. These maxima and minima tended to correspond to those of the milk production. The first four cows showed negative nitrogen balances during treatment, but, in the last two, negative nitrogen balances were prevented by a more liberal allowance of food. On discontinuing treatment, weight was rapidly regained, the pulse rate fell somewhat below the value before treatment, milk phosphatase increased markedly, and in the first four cows nitrogen balances became strongly positive.

In all the cows the percentage of fat in the milk increased considerably. Statistically significant increases also occurred in the protein, lactose and phosphorus in the fat-free milk, but not in the calcium.

None of these changes were observed in control cows receiving the same diet and management. It is concluded that thyroxine stimulates lactation by depleting the body of mobilizable nutrients with a consequent production of negative nitrogen balances, but that such negative nitrogen balances may be prevented by increasing the food intake.

### **The Incidence and Course of a Virus Infection (Strawberry Footrot) in Sheep on Two different Planes of Nutrition.** By S. T. HARRISS

**Nutrition and other Factors in the Rearing of Piglets.** By W. THOMSON, W. A. BIGGAR and R. COOK, *Rowett Research Institute, Bucksburn, Aberdeenshire*

Suckling pigs reared indoors on concrete without access to soil or grass were subject to anaemia and troubles probably arising from anaemia. If the pigs were reared in wooden huts and given access to soil and grass, anaemia did not develop and the pigs were remarkably healthy. Experiments showed that the Hb of all pigs fell from about 100% at birth to 70% at 6 hr. and 40% at 1 week. The Hb of pigs reared in huts returned to about 70% during the 3rd week of life; that of the indoor pigs remained about 40% for 1 month and reached 70% only after 2 months. When pigs were given 200 mg. reduced iron on alternate days up to the 18th or 31st day, or a daily dose of iron pyrophosphate and copper solution, the fall of Hb was arrested at about 60% early in the 2nd week. A single dose of 2 g. of reduced iron given on the 2nd day of life prevented serious anaemia. This can be recommended as a simple method of dosing. Addition of 600 mg. of folic acid to the reduced iron gave no higher Hb levels than the iron alone.

**The Use of Mice for Testing the Influence of Diet on Capacity to Resist Infection.** By J. W. HOWIE, S. T. HARRISS, W. G. MACLEOD and E. B. REID

**The Influence of Manurial Treatment on Stem-end Blackening of Potatoes.**

By J. C. THOMPSON, *Food Research Laboratory, Peter Merchant Ltd., Cowley, Oxford*

While the stem-end blackening of potatoes is largely a varietal and strain factor, growing experiments over 2 years have shown that it is possible to influence the degree of blackening of a variety by manurial and fertilizer treatment. In 1945 King Edward and Majestic potatoes were grown in Scotland under varying conditions in ground prepared with no manure, farmyard manure, or straw, and treated with and without normal fertilizer, potash-rich fertilizer, or phosphate-rich fertilizer. The blackening was worst with potatoes grown in straw-treated ground and those treated with normal fertilizer. When treated with phosphate-rich fertilizer, King Edward potatoes were generally improved, but Majestic potatoes were worse. Some correlation between blackening and tyrosinase or ascorbic acid was found, but none between blackening and ash, protein, calcium, iron, magnesium, copper, total and free tyrosine, or oxygen uptake. The tendency to blacken remained unchanged during storage either in a normal earth clamp or in sand. These results were confirmed by a potato-growing investigation in Essex in 1946, in which some correlation was also found between blackening and the total solids of the stem ends.

**The Fodder-grass Consumption of Tropical Dairy Cows, a Problem in Milk Production.** By J. DUCKWORTH, *Rowett Research Institute, Bucksburn, Aberdeenshire*

The suggested fodder-grass system for tropical dairy cows involves the intensive cultivation of the selected grass and stall-feeding of the cattle. There is little or no grazing. Dung and urine are to be used for composting.

A test of the system showed that the average daily consumption of Elephant Grass (*Pennisetum purpureum*) by Holstein-Zebu dairy cows was 52 lb. This was insufficient to provide sufficient protein and energy for maintenance needs. Hitherto emphasis has been placed on the low protein and energy content of such roughages when assessing their value as feeding-stuffs. It appears that in some cases low consumption may be a factor of equal importance.

Costings for milk production and economic data for a peasant community were given. The low milk production of peasant cows represented full exploitation of the available herbage but incomplete exploitation of the milk-producing capacity of the cattle. Because of inferior nutritive value and low consumption, it is unlikely that Elephant Grass, and perhaps other fodder grasses, can be of much value in stimulating peasant milk-production. Under prevailing conditions, increased production can only be stimulated by increased feeding of concentrates.

**The Influence of Ascorbic Acid on the Repair of Epithelial Structures in Guinea-pigs.** By NANCY M. GALLOWAY (Holder of a Scholarship awarded by Roche Products Ltd.), R. C. GARRY and A. D. HITCHIN, *Physiology Department, University College, Dundee, University of St Andrews*

Equal numbers of adult guinea-pigs were used as principals and as controls. The diet was rat-cake nuts devoid of ascorbic acid. The controls received 5 mg. ascorbic acid/day in solution by mouth, the principals 0.5 mg. ascorbic acid on alternate days. When signs of ascorbic acid deficiency developed in the principals the injuries were inflicted under full anaesthesia.

*Skin wounds* (thirty guinea-pigs). Circular disks of skin, 2 cm. in diameter, were removed from the lateral aspects of both thighs. There was a statistically significant delay in healing in the principals.

*Ear wounds* (forty-two guinea-pigs). A marginal strip, roughly 1 cm. long, was removed from both ears. In this type of wound also there was a statistically significant delay in healing in the principals.

*Gum wounds* (fifty guinea-pigs). A disk of muco-periosteum, 2 mm. in diameter, was removed by trephine from the diastoma of the upper jaw or from the front of the lower jaw. Healing took place as rapidly in the principals as in the controls.

*Wounds of the corneal epithelium* (fifty guinea-pigs). The epithelium over the cornea was removed by the circular cutting face, 3 mm. in diameter, of a dental fissure burr driven by a dental engine. Pressure on the cornea removed the epithelium without injury to underlying tissue. Healing was rapid—24–48 hr.—and there was no statistical difference between the rates of healing in the two groups.