The pedigree index for milk has also been combined with the growth rate index. The purpose of the combined index is to enable a simultaneous selection of young AI bulls to be made for these two traits.

The value of the combined index as a tool for the selection of performance-tested young bulls is dependent on the efficiency of the prior pedigree selection for milk production. The combined index was calculated on 62 performance-tested bulls. The pedigree index for milk production had, in this material, a greater influence on the value of the combined index, than had the index for growth rate. In both materials used, the bulls showed considerable variation in pedigree index values. The findings indicate that a combined index should be used for the selection of performance-tested bulls going into AI service.

A NOTE ON THE EFFECT OF HERD PRODUCTION LEVEL
AND HERD × SIRE INTERACTION
ON THE ESTIMATION OF BREEDING VALUES FOR AI BULLS

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According to several authors, the genetic variation is greater at a higher level of production than at a lower. Breeding values estimated at a higher production level may therefore differ from those estimated at a lower level. This difference may in turn affect the ranking of the sires if their daughters are distributed at various production levels. From the linear moder $Y_{ijk} = \mu + h_i + s_j + (hs)_{ij} + e_{ijk}$, where the different genetic variation is represented by the interaction term, it is possible to calculate how great the difference in herd level between two groups of daughters will have to be in order to affect the ranking. When the daughters are randomly distributed among herds, the differences in herd production level between sires are too small to affect the ranking. Under Swedish conditions this is the case within the AI studs. However, the test bulls are not used outside their own AI stud and as there are geographical differences in production levels, the fact that the genetic variation is higher at a higher production level may affect the comparison of bulls from different studs.

SOME PROBLEMS IN DETERMINATION OF BULL'S BREEDING VALUES

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This work studies the problem of the making of the rank list of the breeding bulls tested according to the productivity of the daughters for milk and milk-fat quantities. Five bulls of the black-white race were investigated and the test was made by the method CC, twenty in all, with 14. days control, while the calculation was made for 100, 200 and 305 days.

In cider to avoid incorrect calculations only cattle with at least 305 days lactation were taken into account.

The results show that at the first rank list (100 days of lactation) the positive and negative variants are being distinguished, while the same cattle retain the same places up to the end of the control i.e. 305 days of the lactation. In the other intervals of the milk quantity control the order is changed but this change is not so high for the milk-fat quantity. Therefore we think it is more reliable to make a rank list according to the total milk-fat quantity in any interval of the test. The investigations show that it would be certain even with only 100 days control, which is necessary for the test of the young bulls going to be artificially inseminated.

II. — Efficacité économique des programmes
de sélection porcine

EFFICACITÉ ÉCONOMIQUE DES PROGRAMMES DE SÉLECTION PORCINE :
INTRODUCTION

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L'efficacité économique de la sélection porcine dépend en premier lieu d'une définition adéquate de ses objectifs, qui sont multiples, et de leur importance relative. Cette définition, qui dépend des conditions économiques propres à chaque pays, est la base de l'établissement des indices de sélection.

Pour évaluer un schéma de sélection il est nécessaire d'en établir le coût et d'estimer les gains qui peuvent en résulter. Les facteurs qui influencent ces coûts et ces gains sont nombreux : méthode de sélection, intensité de sélection annuelle, répartition des coûts dans la sélection des deux sexes, vitesse de diffusion des gènes du noyau de sélection aux producteurs, taux d'actualisation des profits, durée des opérations, etc. En outre, selon que l'on considère la rentabilité (gain /coût) ou le profit (gain-coût) les solutions les meilleures sont différentes.

SILER, PODEBRADSKY et KVAPIL évaluent économiquement l'ensemble du système sélection-croisement appliqué en Tchécoslovaquie, alors que LINDHE et HOLMQUIST-ARBRANDT placent leur étude dans les conditions de la plupart des pays d'Europe occidentale, avec utilisation par les sélectionneurs de stations de sélection d'État.

L'évaluation économique précise d'un schéma de sélection est plus difficile si l'on se place, comme le fait BICHARD, dans le cadre d'une entreprise privée de sélection face à un marché concurrentiel de reproducteurs. Des facteurs extra-génétiques et extra-économiques deviennent alors importants pour conquérir et garder ce marché, et l'efficacité économique doit être jugée d'un point de vue dynamique.

ECONOMIC EFFICIENCY OF PIG BREEDING SCHEMES.
A BREEDING COMPANY VIEW

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Economic efficiency in a breeding scheme is something dynamic. It is not possible to study the situation, decide on the perfect solution and then implement it. Instead it is essential to construct something which is initially sound, based upon as wide a view of the industry's requirement as it is possible to gain; this must then be allowed to respond continuously to new knowledge and changing conditions. This review has examined some aspects of pig breeding schemes which affect their economic efficiency. These include the type of crossbreeding system, the selection applied within the lines, the importance of starting up relatively quickly, of maintaining efficient production within the breeding herds and of structuring the scheme so that improvements are passed down quickly to the commercial slaughter pigs.

ECONOMIC EFFICIENCY OF PIG BREEDING SCHEMES
Aspects on a national two breeds program

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The main result of the present investigation is to illustrate how a model for pig selection can look like, and the effect on ΔG and profit if certain important factors are varied within the given model. The most time consuming part of the work has been to find a model simple enough to make it possible to understand what is going on when certain variables are changed but at the same time complicated enough to cover necessary requirements. So far the model is by no means good enough to allow far reaching conclusions to be drawn. The only thing so far achieved is that the consequences of different testing programs have been illustrated in genetic as well as economic terms.

As the arsenal of tools available to decision makers in pig breeding is getting more and more varied as well in terms of costs as in terms of effects, the need for an evaluation of the optimum combination of these tools is urgent. Breeding operation research is a new branch in the science of animal breeding. The models, worked out for dairy cattle already have affected the applied breeding schemes to a very large extent. The corresponding development in the field of pig breeding lies still in the future.

ECONOMIC ASPECTS OG THE HYBRIDISATION PROGRAMME IN PIG BREEDING

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At the production of slaughter pigs in large scale conditions the knowledge of basic economic features of all links of the whole production chain is of great importance. The distribution of the total profit in relation to the amount of work put in individual production sections is important.