

ASSOCIATION OF SCHOOL NATURAL HISTORY SOCIETIES ANNUAL EXHIBITION, 1954

THE annual exhibition of the Association of School Natural History Societies was held in London at the British Museum (Natural History) on November 6. The main contribution this year was made by member schools, one-third of which exhibited; this was a larger proportion than hitherto and resulted in the welcome criticism that the supply of bench space was too limited.

In spite of the lateness in the year, a wide variety of living material was exhibited. A collection of freshwater gastropods by Oundle School admirably illustrated the importance of accurate identification in limnological work. Bishop's Stortford College had reconstructed with living plants a quadrat from a derelict railway siding, and St. Paul's School, London, displayed living specimens to illustrate a genetical investigation of the shaker mutant in mice. Next year the London exhibition will be held in mid-October. It is hoped that this will encourage schools to produce even more living material.

Where it was impracticable to bring living specimens, most schools had brought preserved ones. University College School, London, filled a long bench with specimens illustrating the littoral biology of Skokholm, while Haileybury and Imperial Service College displayed a collection of the butterflies of France, made by present members of their Society. Lord Wandsworth College, Hampshire, showed a specimen of the water-beetle, *Agabus affinis*, which is a new record for the vice-county of North Hampshire. Further 'new records' were exhibited by naturalists of Kimbolton School who, in their survey of an overgrown Huntingdonshire orchard, have added seven new naturalized species, including *Anemone ranunculoides*, *Doronicum pardalianches*, *Tulipa sylvestris* and *Ornithogalum nutans*, to their county flora.

Many schools made good use of charts, diagrams and photographs to illustrate their work. Those exhibited by Bishop's Stortford College—on starling ringing, watches for visible migration and other ornithological problems—were exceptional for combining complexity with clarity, many being three-dimensional. Dulwich College and Reading School also provided well-documented accounts of their surveys. An interesting item was the 16-mm. colour film of the emergence, from the pupa, of a hornet clearwing moth, filmed by a member of Oundle School. Several schools demonstrated techniques which they had found useful, such as the plant-recording scheme shown by Uppingham School, and a method of mounting seaweeds demonstrated by Orange Hill Girls' Grammar School, Middlesex.

In addition to exhibits by member schools, there were displays by the Botanical Society of the British Isles, the British Naturalists' Association, the School Nature Study Union, the Universities Federation for Animal Welfare and several organizations connected with the British Museum (Natural History).

The increase in the number and size of exhibits received this year is an encouraging sign for the Association. Yet there are many members whose distance from London is such that they cannot attend. It is difficult for them, particularly if they are boarding schools, to arrange to bring a party to London; there is usually no possibility of being away from school overnight. For the benefit of its more

distant members, the Association plans to hold an additional exhibition in Leicester next year. This should be within easy reach of schools situated in the Midlands and Northern England. O. N. BISHOP

FINANCIAL EFFECT OF LABOUR TURNOVER

THE Research Board of the Faculty of Commerce and Social Science, University of Birmingham, has published a further monograph in its series of "Studies in Economics and Society", this latest being on "The Financial Effect of Labour Turnover", by Dr. F. T. Pearce*. The monograph, which is a mimeographed production, can be divided conveniently into three sections. The first section, of sixty pages, reviews many variants of the analytical definition of 'labour turnover' and its complement 'labour stability'. Not unnaturally, the author concludes that the definition adopted by the Birmingham School is to be preferred. This defines the rate of turnover as the number of employees who leave in a given period and have to be replaced expressed as a percentage of the average number employed during the period.

It should be pointed out that the rate so defined confuses current trends with the past economic fortunes of the employing company. A number of recent surveys (including one carried out by the Birmingham School) have established that the rate of labour wastage diminishes as length of service increases. If $F(t)$ is the proportion of an entrant group remaining in employment after t years service, if the rate of wastage $\varphi(t)$ is defined (by analogy with the demographer's 'force of mortality') by

$$\varphi(t) = -\frac{d}{dt} \{\log F(t)\},$$

and if n_j is the number of entrants into the firm during the year j , then the rate of labour turnover for the year x , to a first approximation, may be written:

$$\frac{\sum_t n_{x-t} F(t + \frac{1}{2}) \varphi(t + \frac{1}{2})}{\sum_t n_{x-t} F(t + \frac{1}{2})}$$

Clearly the numbers n_{x-t} depend only upon past history and have no bearing upon current man-power problems. Equally clearly the formula will yield different rates of turnover for firms with identical rates of wastage but varying in their rates of growth or decay. This confusion of past and present makes it difficult to find any useful meaning for the calculated rate.

The second and largest section, which occupies the next hundred and ten pages, is an essay in accounting. A preliminary chapter outlines the theoretical approach and is followed by two detailed case studies. This section considers the effect on profits of the elimination of *all* labour wastage, and of all those extra charges which are incurred by management (for example, reserves of labour) in order to keep production flowing in spite of constant change in the labour force. A given output yields a gross profit margin of $\mathcal{L}P$ and requires N man-hours of 'direct' labour. If all workers had been experienced men, the same output would have required $N - l$ man-

* The Financial Effect of Labour Turnover. By Dr. Frank T. Pearce. (Monograph A.4 of the Research Board, Faculty of Commerce and Social Science, University of Birmingham.) Pp. 228; 1954. 15s.