really the case. But whatever else may be said about the quality of the data, their quantity is such that our estimates are fairly precise and our test of the model fairly sensitive.

Table 2 gives the weighted least squares estimates of the parameters. The standard errors are approximate and assume that the deviations between observed and expected are small enough to be ignored. The expected values obtained by fitting the model to the data are given alongside the corresponding observed values in Table 1. Although individual deviations are sometimes large, the overall weighted sum of squared deviations, which is χ^2 if the observations are normal, is small in relation to the total weighted sum of squares of the observations.

Although the two data sets differ with respect to μ and E_c they are consistent for the estimates of D_R, H_R and A. There is some support for Jencks's conclusion that the heritability of IQ is apparently lower in the American studies than in Burt's British study. The best estimate of the broad heritability of IQ scores, however, for Jencks's data, is 68% which is 50% higher than the estimate Jencks has accepted. Since the model fits his data we cannot support his conclusion that the data give a heterogeneous picture of the genetics of IQ. Neither can we conclude that the data provide any evidence of genotype-environment covariation when proper allowance is made for dominance. On the contrary, when we allow for such covariation in the simplest way by adding to our five-parameter model one further parameter, r_{ge}, to specify the contribution of this covariation, no significant improvement in fit of the model to the data set is achieved. Furthermore, the weighted least squares estimate of r_{ge} is -0.31 with an approximate standard error of 0.20. This is not only non-significantly different from zero but in so far as it is negative it has the opposite sign to the covariation postulated by Jencks in his model.

A small anomaly in the results of our analysis of Burt's data is that A is numerically (though not significantly) greater than μ. This anomaly is removed by stipulating that parents and offspring do not share developmentally important environmental features. The correlation between foster parent and adopted children then has to be accounted for partly by placement.

The analyses strikingly confirm Jinks and Fulker's conclusion regarding the importance of dominance variation. Even if we make allowance for possible overestimation this can best be explained only if dominance deviations at individual gene loci are large or if increasing dominant alleles are more frequent than their recessive counterparts. Coupled with the evidence for inbreeding depression, this suggests that IQ displays the pattern of genetical variation associated with a fitness character, that is, a trait which has been subject to a history of directional selection for increasing IQ score. Whatever else may be said about its social significance, IQ is clearly a trait of biological relevance.

Because much has already been made of the relatively low estimate of heritability argued for by Jencks, we have concentrated on the small part of his book devoted to this subject. We felt that it was important for the continuing discussion to establish that Jencks's American data do not in fact give a picture for the genetics of intelligence which differs in principle from that which has long been apparent from British studies. In so doing we have not done justice to the scholarly presentation and thought-provoking discussions contained in both Herrnstein's and Jencks's books, which have more in common than perhaps either author would admit to, and little that we would wish to dissent from. We are agreed that there are individual differences for IQ, that only a proportion of these differences might be removed by environmental manipulation, and that the features of the environment that would require modification to achieve this have still to be identified. Those concerned with inequalities in our society might just as well resign themselves therefore to the fact that individual differences for IQ at more or less their present level will continue to be an important factor. In these circumstances, those who wish to see progress towards a more equitable society should turn their attention to the means of ensuring that the greater social and financial rewards of our society are not reserved for those who, whether through their genotype or environment, have a higher than average IQ.

J. L. Jinks
L. J. Eaves

Plan by computer

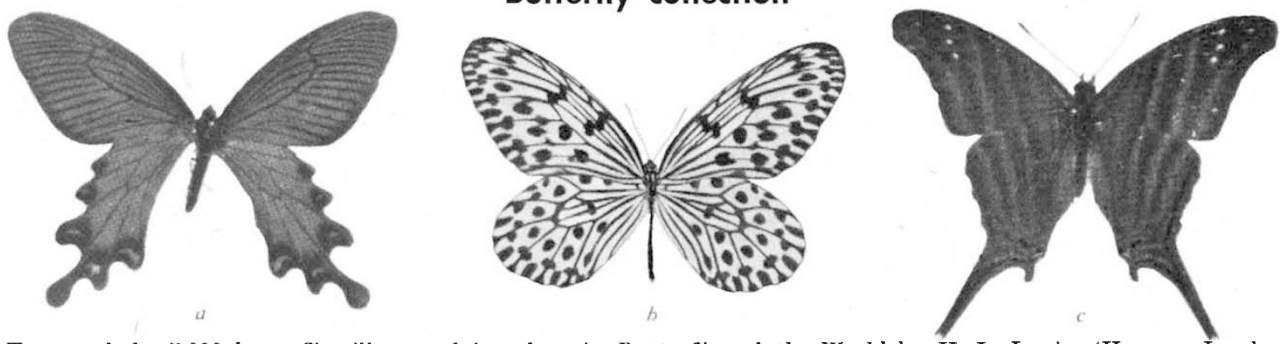
Computers and Socialism. By Stephen Bodington. Pp. 245. (Spokesman: Nottingham, 1973.) £4.00.

The book considers, in broad terms, the impact that computers could have on society in the foreseeable future. Descriptions are in non-technical terms, and are aimed at the intelligent layman with an interest in computers and economics.

A chapter is devoted to an appraisal of modern computer technology. Although in the thirty pages involved one could hardly expect a complete survey, there are some omissions. Little is said of the difficulty in constructing large software systems, in spite of the fact that software now dominates hardware in cost terms. It is rapidly becoming apparent that our capacity to control such large systems is a limiting factor in the development of computers as a whole.

A major part of the book is devoted to the thesis that computers should permit better planning by provision of more accurate information. As is noted in the book, such changes are already taking place with the aid of linear pro-

Butterfly collection



Three of the 7,000 butterflies illustrated in colour in *Butterflies of the World* by H. L. Lewis. (Harrap: London, February 1974.) £10.00. *a*, Female *Parides plutonius*, widely distributed in Asia; *b*, *Idea hypermnestra*, found in South America; *c*, *Marpesia chiron*, from Australia and southern Asia. Not to scale.