were impressed by his genetics, but were in profound disagreement with his psychological fundamentals. Naturally I have no right to speak for others, yet I conjecture that the majority of psychologists who have worked in the field of mental testing would subscribe to the following criticisms:

1. Without for a moment impugning Dr. Hurst's attempts at impartiality, or his knowledge of his Leicester families, I would hold that it is quite impossible for a single investigator to make valid assessments of people's intellects. His ratings might indeed correlate to about +0·70 with the results of objective tests, but their subjectivity makes such ratings quite unsuitable for elaborate statistical or genetical treatment.

2. Dr. Woods's gradings of Royal families are likely to be still more unreliable. A would-be scientific psychologist would not put any trust in the "histriometrical" method, for "the adjectives used by biographers, historians and encyclopædists" are certain to reflect very largely the prejudices of these writers for or against the personages in question.

3. The work of Terman, Spearman, Thorndike and others has shown beyond doubt that intellect, or *g*, when reliably measured, accords with the normal or Gaussian distribution curve. The mere fact that Dr. Hurst grades 72·6 per cent. of his subjects as "mediocre" in intellect, instead of the normal 24·6 per cent., shows that his grades were not, as he states, of equal mathematical value, but were arbitrary and subjective divisions.

4. Since the genetical conclusions seem to be based largely upon the distributions of the populations within these grades, it is difficult to see how the conclusions can be accepted.

5. Dr. Hurst finds that "popular theories of the origin of grades of intellect by education, free will, family environment, or simple heredity" are disproved by his data. Psychologists do not, of course, nowadays ascribe intellect to free will, nor to *simple* heredity; but they have indubitable objective evidence that education and family endowment do play a certain part in its determination. Some are still inclined to an environmentalistic, some to a predominantly hereditary, viewpoint. Others, including myself, note that careful investigators, such as Freeman and Burks in America, and Hugh Gordon, Miss Lawrence and Shepherd Dawson in Great Britain, have obtained definite proofs of the influence of both factors. We are therefore content to accept Kelley's conclusion that the relative influence of these factors in adults is about fifty-fifty. If then Dr. Hurst's data are incompatible with the scientific investigations of mental testers, it is the former, not the latter, which must be rejected.

In conclusion I would point out that the whole topic rests upon the definition and delimitation of intellect. It is still quite legitimate to believe in the existence of a purely innate general ability which is entirely determined by some form of Mendelian inheritance. But since no means have been discovered for measuring this innate ability, it is necessary to accept the pooled result of a battery of suitable mental tests, i.e. *g*, as a substitute which does at least possess some scientific reliability; and it is to this conception which I refer in the above observations.

P. E. VERNON.

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To the Editor, Eugenics Review

SIR,—In reply to Dr. Vernon's criticisms, may I say that:

1. In no case were the Leicestershire gradings of intellect assessed by a single investigator, and that in most cases three or more persons took part in the ratings. The adult gradings were based entirely on objective achievements and were no more subjective than the marking of scores in the standardized mental tests. The reliability of these ratings was checked from time to time during a period of twenty-five years and it is estimated that they correlate higher with "*g*" than do the batteries of mental tests which, though excellent for juveniles and adolescents, were found impossible to apply to adults in general. It was found also that the ratings conform closely with occupational status (allowing a five-point scale for each occupation).

2. Dr. Woods's gradings and data of Royal families are quite independent and are regarded as accessory rather than essential to the investigation.

3. The work of Terman, Thomson and others shows clearly that intellect, or "*g*," does *not* accord with the normal frequency distribution curve; on the contrary, in the region of 90 to 110 I.Q. there is a high peak of mediocrity of about 50 per cent., similar to that found in the Leicestershire and Royal families, instead of the expected 24·6 per cent. of the normal curve. On the other hand the *nn* individuals of these families do accord closely with the normal frequency curve. These frequency differences cannot therefore be attributed to the grading and must have a genetical basis.

4. Genetical conclusions are of necessity based on families and not on populations, and my genetical conclusions were derived from both an analysis and a synthesis of individual families and not from the general distribution of the population.

5. My data confirm the point that education and family environment have some influence in the development of intellect, and are therefore *not* incompatible with the investigations of mental testers. The vital point, however, is whether education and family environment can, of themselves, *originate* grades of intellect without a

genetical basis to work upon. That is the popular theory which my data definitely disprove.

The most important part of Dr. Vernon's communication is his admission in concluding that "It is still quite legitimate to believe in the existence of a purely innate general ability which is entirely determined by some form of Mendelian inheritance." That statement, made by one of the most brilliant of our younger psychologists, is a source of peculiar satisfaction to me, since it suggests the likelihood of future co-operation between psychologists and geneticists, which may lead to a solution of the wider problem of the genetics of the human mind.

C. C. HURST.

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Sterilization: Voluntary or Compulsory?

To the Editor, Eugenics Review

SIR,—I am not sure how far the six-course sentimental-intellectual meal offered by Mr. Herbert Brewer in your issue of April last under the above heading is intended as a reply to my letter, but as my name comes in with the hors d'œuvres I suggest the following brief comments:

Hors d'œuvres.—Yes, decidedly outside the main issue. The scene is laid in Germany—mine was laid in England. I agree that Germany has recently been worked up to an intense sense of race, and as a natural reaction has driven out a good proportion of a competitive race. This race, much to its benefit and merit, has exhibited an equal sense of race, or "fanatical racialism," though this has not always been obvious to the world or recorded in history.

Einstein and others seem to be referred to in an airy way as "biological off-scourings"; I used this expression seriously in my letter, referring to low types of mental defectives.

Another hors d'œuvres refers to solving eugenic problems "with guts instead of with brains"; I suggested intelligence to direct and guts to act.

Soup.—Germany will certainly be in it if she deals out a deadly sin and damnation in two worlds too widely. But despite Dr. Mapother's observations should not one defer judgment a little longer as to Germany's handling of the sterilization problem?

Fish.—The argument wants filleting and reserving. Prohibition encroached on the personal freedom of the *sober majority* for the sake of the drunken minority. Sterilization encroaches on the personal freedom of the *unsound minority* for the sake of the sound majority.

Joint.—The meat of this paragraph seems to be the "evil of compulsory measures." But such are surely justifiable in the interests of a community when applied by responsible selected superiors to those whom they judge to deserve them.

Sweet.—This introduces a sweet reasonableness of view, which suggests that perhaps after an indefinite period of go as you please and self-determination one may be allowed to query the efficacy of voluntary sterilization.

Dessert.—More sweet reasonableness. An entirely palatable definition of the task of the eugenic movement, which when carried to fruition might leave the public mind in a mood to accept compulsion, should it be necessary.

It is, of course, possible that the principle of pussyfoot steps and safety first suit England best in her present phase.

NORMAN A. THOMPSON.

Monte Carlo.

Sterilization a Birth Control Method?

To the Editor, Eugenics Review

SIR,—The recommendations of the Brock Committee seem to me to involve an unjustified restriction of liberty which is likely to hinder rather than to aid eugenic aims. The essence of their Report is that voluntary sterilization should be made legal for the bearers of serious latent or manifest hereditary defects; and the implication is that sterilization of other persons should be illegal except for therapeutic purposes.

But there are many people of normal heredity for whom sterilization would be beneficial, both for individual and social reasons. Why, for example, should it not be available to married women in whose cases further pregnancy would involve serious risk to health or life? For these the Ministry of Health sanctions contraceptive advice; but ordinary birth-control methods are never certain; sterilization is. Surely, too, sterilization should be permitted to married people who have reached the limit in the number of children they can support. Consider the case of an agricultural labourer, earning thirty shillings a week, with four children to keep on it. When such a man decides he does not want to have children for whom he has no bread why should vasectomy be denied him?

Surgical sterilization might well be applied to regulate the size of the normal family. By that means, plans as to the number of children may be exactly fulfilled. Other methods may lead to hardship and even tragedy, as when a woman who has borne a family while young, and then hopes and believes that her reproductive phase had ended, finds herself pregnant practically at the menopause.

There exist undoubtedly many people who would like to be sterilized in order to have no part in supporting future generations. Included in this class are people who are condemned to unnatural celibacy by bad economic conditions and irrational customs: for instance, the army of women teachers and civil servants and vast numbers of unemployed young men. There are also the marriageable people whose only prospect of a home is in one or two rooms, perhaps in a slum. There are those