with aqueous mineral acids. This type of fission takes place more readily with the aryl sulphonyl derivatives of the amines. Thus while *tertiary* butylaniline is converted into aniline to the extent of 50 per cent by heating it with 15 *N* sulphuric acid at 120°–140° for 14 hours, the *p*-toluene sulphonyl derivative of *tertiary* butylaniline yields more than 90 per cent of the *p*-toluene sulphonyl derivative of aniline when it is heated with 15 *N* sulphuric acid for 1 hour at 135°–145°. The experimental evidence so far obtained indicates that the readiness with which the alkyl group is split off by the action of hot diluted sulphuric acid is in the order *tertiary* butyl < *tertiary* amyl < *tertiary* hexyl.

It has also been observed that the free amines do not react readily with acetic anhydride or with aryl sulphonyl chlorides. On the other hand, methyl iodide reacts with *tertiary* butylaniline fairly readily. Some of these reactions appear to find an explanation on the electrochemical theory recently elaborated by Robinson².

A detailed account will be submitted for publication elsewhere shortly.

W. J. HICKINBOTTOM.

Department of Chemistry,
University of Birmingham.

¹ Nef, *Liebigs Annalen*, **309**, 164; 1899.

² Robinson, "Outline of an Electrochemical (Electronic) Theory of the Course of Organic Reactions".

Higher Homologues of Sulphur Hexafluoride

In fractionally subliming solid sulphur hexafluoride at low temperatures, we have noticed that the last fraction liquefied before vapourising. The vapour was obtained in a fairly pure state after repeated fractionation and its density was determined with a microbalance. As fractionation proceeded, the density rose rapidly from approximately 73 (that of sulphur hexafluoride) to the neighbourhood of 125, at which it remained steady. A new sample of sulphur hexafluoride was then prepared and a further quantity of the heavy constituent obtained. Two density determinations carried out independently by each of us on different microbalances and with different samples, gave values of 126 and 129.

From these figures it is evident that the gas has a molecular weight of about 256 and is probably S₂F₁₀ (molecular weight 254). During the preparation of the sulphur hexafluoride the air present in the apparatus was previously displaced by nitrogen. Hence the possibility of contamination by oxygen compounds was excluded. Moreover, the gas was allowed to stand over concentrated potash for a long period before fractionation, so that the new gas resembles sulphur hexafluoride in not being easily hydrolysed. Its boiling point is in the vicinity of 0° C. We have also obtained, in very small quantity, a volatile oil, immiscible with and unattacked by water, which may be a still higher homologue of sulphur hexafluoride.

We are proceeding to analyse these compounds and to investigate their properties.

K. G. DENBIGH.
R. WHYTE-LAW-GRAY.

Chemistry Department,
The University,
Leeds.
May 16.

Inheritance of Intelligence in Man

In a recent paper¹ Dr. C. C. Hurst has discussed the inheritance of intelligence in man. After adverting to the fact that the data of Galton and Woods show that general intelligence in adults grades continuously from high to low both in general and in selected populations, Dr. Hurst finds it convenient to adopt ten grades of intelligence, because some of the data he uses is already so graded. He regards as a special *non-segregating* type those families which consist only of Grade 5 (mediocre) offspring whatever the grades of the parents, while he is content to classify as *segregating* a family of four Grade 4 (dull) offspring of parents themselves both of Grade 4.

Grade 5 is certainly peculiar, as will be seen at once from the frequency distribution of some of the data which is plotted upon permille paper in Fig. 1. The grading is stated to be equivalent to that of Galton except that the number of grades is reduced by compressing into Grade 5 six of Galton's grades,

FIG. 1. Frequency distribution for R.F. data.

(C, B, A, a, b, c). It is just because these grades are merged into one that so many families consist only of Grade 5 offspring. These *non-segregating* families are a product of the system of grading and it is difficult to follow Dr. Hurst when he states that "the gradings are naturally imperfect . . . but, taken as a whole, the results show a general agreement which . . . signifies a close approximation to reality."

Dr. Hurst proceeds to develop a basic genetical formula for the inheritance of natural intelligence. This development, also, appears to be highly arbitrary, for by using three grades only a much simpler formula would surely emerge, while forty grades would yield a formula no less portentous than, and possibly quite as useful as Dr. Hurst's hexagenic one, with its 729 genotypical forms. It may perhaps be remarked that it seems somewhat lavish to postulate 729 genotypical forms in a hypothesis framed to justify ten discrete grades of intelligence.

A. F. DUFTON.

Greenbank, Garston,
Hertfordshire.
April 1.

¹ *Proc. Roy. Soc.*, B, **112**, 80; 1932.