of the heating curve of carefully chemically purified carbon disulphide. The apparatus used in this study was the same as that used previously for ethyl ether and nitrobenzene.[2] Carbon disulphide was cooled to a temperature $-93°$; we then observed the change with time of the gradually increasing temperature of the substance, which was isolated from all external thermic influences. The observations of temperature were made in intervals of 10 sec. The observations, repeated five times, have shown that at $-90 \cdot 03°$ there appears a distinct break on the heating curve (see the part *AB* of the curve on the accompanying graph, Fig. 1). Both parts of the curve, above and below *AB*, are to a high degree of approximation straight lines, making appreciably equal angles with the axis of time. This shows that the specific heat of carbon disulphide does not undergo an appreciable change

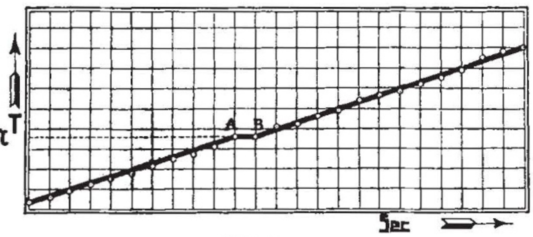

FIG. 1.

at the transformation point. Measurement of the value of the refractive index as a function of temperature shows also a break at this point.

It should be mentioned that the existence of two different liquid modifications of carbon disulphide could be distinctly observed during the cooling of the substance, because the two modifications do not mix together and so a sharp dividing line can be seen. This dividing line between the two liquid modifications can also be sharply seen during the slow heating of carbon disulphide. This phenomenon depends, of course, on the sharp change of the refractive index.

The heat of transformation, estimated roughly from the heating curve, is for carbon disulphide about 0·04 cal./gr., for ethyl ether 0·07 cal./gr., for nitrobenzene 0·14 cal./gr. All these values are of the order of the heat of transformation of helium I into helium II.[3]

The phenomenon reported in the present communication is the third case observed by us of the existence of two different liquid modifications of an organic substance.

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[1] *Zeit. für Phys.*, **9**, 153; 1922.
[2] M. Wolfke and J. Mazur, NATURE, **126**, 684; 1930.
[3] M. Wolfke and W. H. Keesom, *Comm. Leiden*, No. 190b.

Bridges' Genic Balance Theory of Sex Determination.

IN Bridges' table of sex indices,[1] in connexion with balanced intersexuality in *Drosophila*, the fact that the female intersex is a triplo IV and the male intersex a diplo IV is not expressed. The chromosomal difference between the two is not allowed for in the calculation of the series of sex indices. Since the addition of a IV chromosome to the male intersex chromosome relation converts it into a female intersex, the " IV chromosome must have a net female tendency similar to that of the *X* and different from that of the other autosomes ". The following modification is, therefore, suggested:

X and IV represent the totality of female determining genes.

II and III represent the totality of male determining genes.

The addition of one IV chromosome to the chromosomal complex of the *male intersex* converts it into a *female intersex*. On the other hand, the addition of an *X* chromosome to the male complex converts the *male* into a *female*. The efficiency of the female determining genes on the IV chromosome must consequently be very much less than those on the *X* chromosome.

Assigning arbitrary values to the efficiencies of the two interacting components, male on the autosomes II and III, and female on chromosomes *X* and IV, the subjoined series of sex indices is obtained:

Let the efficiency of the female determining genes on the *X* chromosome be represented by $100 = f$, that on the IV chromosome by $10 = f'$, and the efficiency of the male determining genes on II and III chromosomes be represented by $100 = M$.

Chromosome Relation.	Gene determining Relation.	Sex Type.	Sex Index.
3X : 2A.	$3f + 2f' : 2M$	super female	1·60
4X : 4A.	$4f + 4f' : 4M$	4N female	1·10
3X : 3A.	$3f + 3f' : 3M$	3N female	1·10
2X : 2A.	$2f + 2f' : 2M$	2N female	1·10
1X : 1A.	$1f + 1f' : 1M$	1N female	1·10
2X : 3A.	$2f + 3f' : 3M$	female intersex	0·77
2X : 3A (- IV)	$2f + 2f' : 3M$	male intersex	0·73
1X : 2A.	$f + 2f' : 2M$	male	0·60
1X : 3A.	$f + 3f' : 3M$	super male	0·43

This table represents more accurately the genotypic differences of the various sex types, more especially the difference between the male and female intersexes, and can be applied to Bridges' suggestion that " by variation in the number of IV chromosomes, it is possible to have a fringe of minor sex types about each of the major types of sex difference ".

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[1] Bridges, C. B., *Amer. Nat.*, **59**, 127; 1925.

Forestry Research in Great Britain.

THE correspondence in NATURE and the leading article on " Forestry Research in Great Britain " in the issue for May 16 lay stress on certain points which need to be emphasised. It appears, however, that an even wider view of the problems must be taken if we are to make the most of our opportunities and of our obligations. Every schoolboy knows about the struggle for existence, the survival of the fittest, and similar phrases, but it is rare to meet a forester who has been trained to pay attention to the analysis of the factors as they occur either in natural woodlands or in plantations. This is not surprising, for intensive research in fundamental problems has been almost completely neglected in Great Britain.

Some attention has been paid to a few obvious diseases, but the results are almost negligible compared with what is known about fungal attack when timber has been worked, though these are often part of the same problems and should be treated as such.

The fungus-root (mycorrhiza) of trees is equally a subject which should be investigated seriously. Little or nothing has been done in Britain, and no one has been wholly engaged in its study. It does not seem