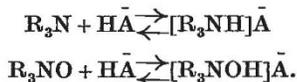
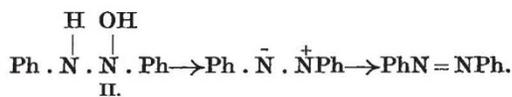
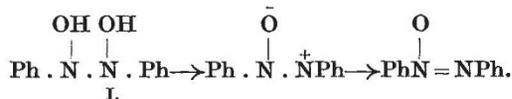


lone pair of electrons on the nitrogen atom, and even when these are used in co-ordinating an oxygen atom, the capacity for salt formation is nevertheless retained in the resulting amine oxide. The oxides are recoverable from their salts, as are the amines :



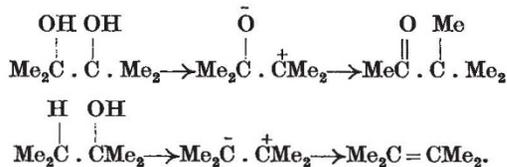
Although this is a particular case of the application of the principle of transmission of electronic effects by electrostatic induction, the implications attached to the relationships thus exemplified seem not to have been fully appreciated hitherto.

Thus, it will doubtless be agreed that the interaction of nitrosobenzene with β -phenylhydroxylamine will yield (I.) in the first place :



Since, however, the lack of basic properties in azobenzene indicates that (II.) would at once break down into azobenzene and water, so (I.) at once furnishes azoxybenzene, and it will be noted that the modern, rather than the obsolete cyclic formula is thus deduced for the product.

The pinacone-pinacolone change has been the subject of extended discussion during recent years,² but does not seem to have been connected with the formation of azoxybenzene. Yet the grouping $\rightarrow \text{C} \cdot \text{O}$ may be regarded in the manner just discussed, and in fact the formation of *o*-nitrosobenzyl alcohol from *o*-nitrotoluene in presence of alkali must be regarded as proceeding by transference of a co-ordinated oxygen atom to a negatively charged carbon atom. The mode of formation of tertiary alcohols from their hydrocarbons also is probably of this kind.³ The behaviour of pinacone towards acid therefore corresponds to that of methyl isopropyl carbinol, as indeed was suggested by Tiffeneau :



This view is also the basis of the electronic mechanism adopted by Robinson in regard to the reaction, but the present angle of approach seems worthy of record, since it may help to correct a not uncommon tendency to regard the pinacone change as something apart, rather than as essentially a particular case of the Hofmann decomposition of amines (as the dehydration of alcohols also may be considered to be).

Whereas, in the cases of the nitrogen compounds and of methyl isopropyl carbinol, neutrality of the product can be achieved by the sharing of a lone pair of electrons, originally present or resulting from the reaction, no such pair is available in the case of pinacone, and the necessary electrons can only be provided by transference at the same time of the group attached to them. This, it is suggested, is the real significance of Meerwein's demonstration that the

Wagner and similar rearrangements are dependent on a cationic condition of the complex involved.

The above comparison between nitrogen and carbon compounds also lends point to the view that, in an entirely different field, the ortho-para directive properties of alkyl groups do not differ fundamentally in their origin from those of the amino-group, but correspond with the relative positions of carbon and nitrogen in the periodic system.

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¹ Compare Priyadarajan Ráy, NATURE, vol. 127, p. 856, June 6, 1931.
² A review is provided in the Annual Reports of the Chemical Society, 1930, p. 114.

³ Compare Jones and Kenner, Jour. Chem. Soc., p. 1846, 1931.

Cotton Growing in Egypt.

In his review (NATURE, Oct. 31, p. 766) of recent publications on the working of the Seed Control Law in Egypt, Mr. Slater directs attention to the complementary nature of this law to the work of pure seed propagation carried out by the scientific staff.

As an agricultural research worker I very much doubt if it is correct to say that the cotton plant is the best studied agricultural crop. But with regard to legislation, it is probably true to say that no crop is subject to such an amount of careful legislative control as is the cotton crop in Egypt. Apparently the cultivator does not always know what is good for him, since attempts to evade the law appear to have been numerous. Perhaps it is unfortunate that the operation of the law has synchronised with a period of progressive market depression, so that it is not possible to make any estimate of the effect of the law from the economic point of view. Mr. Slater, who is in a position to know, does not comment on the effect of the law from the consumer's point of view.

These publications, unfortunately, do not give any information of a scientific nature on the principles underlying the working of the law, but it is said that the administration is indebted to the prevalence of a certain type of cotton plant known as Hindi which serves as an index of impurity. This Hindi cotton is recognised in the field by its white flower and general resemblance to American cotton. Its seed is quite naked, and except for its sharp point at the micropylar end is almost identical with the seed of Sea Island cotton. It thus possesses the characters of both its parents, Sea Island and American. The Seed Control Law operates only by excluding seeds of this naked Sea Island type. No account is taken of the lint characters, nor has anyone proved that the lint of naked seeded cottons is inferior to the lint of fuzzy seed cottons. I have seen evidence to the contrary, and also that cotton from fully fuzzi seed is frequently inferior in spinning properties. From the genetic point of view, the Seed Control Law operates to exclude types resembling that of the best long staple parent, and propagates seed of full fuzz regardless of its lint quality.

Egypt certainly presents us with an interesting experiment in legislative control of an important crop. If the result is ultimately beneficial to the cultivator he will doubtless support it, but should it turn out to be nothing more than pseudo-scientific interference it will require more than scientific ingenuity to circumvent the evaders.

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Harpenden, Nov. 8.