adipic acid. Since the present work has also shown that the initial enzymatic steps in the breakdown of tryptophan are common to bacteria and mammals, it would not be surprising if β-ketoadipic acid proves to be an intermediate in the mammalian oxidation of tryptophan and other aromatic compounds. Full experimental details will be published shortly.

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The Ultraviolet Absorption Spectra of Some Heterocyclic Phosphorous Compounds[1]

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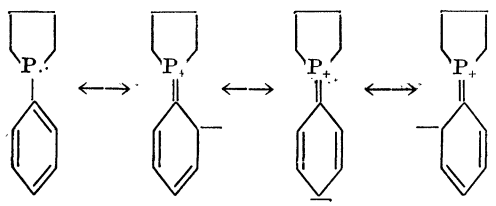
It is becoming increasingly evident that the phenomenon of resonance is not an exclusive property of any group of atoms in the periodic chart. For the ε max value of 1-phenylcyclotetramethylenephosphine (I), its 2-methyl (II), or its 2,5-dimethyl (III) homologues can best be explained in either of two ways; both explanations involve the concept of resonance.

As 1-phenylcyclotetramethylenephosphine (I) is an isologue of a substituted aniline, an analogous postulate can be made:



This hypothesis (A) should predict the following: (*a*) The ε max should have a lower value if the compound is measured in hydrochloric acid; (*b*) the 2-methyl homogogue (II) should not have the phenyl group completely planar with the phosphorous group, and hence some interference with the resonance should be manifested by lower ε max values; (*c*) the 2,5-dimethyl homologue (III) should have very little resonance, if any, other than the usual Kekule resonance of the benzene ring. No effect should be noted when hydrochloric acid is added to this compound. All these predictions are borne out (Table 1).[3]

TABLE 1

	I*	I in HCl†	II*	II in HCl†	III*	III in HCl†
λ(mμ)	250	251	249	247	252	No
ε max	6,500	2,830	4,050	3,020	865	Change

* I and II as 2 mg % and III as 10 mg % in 95% ethanol.
† For second measurement, one drop of concentrated hydrochloric acid was added.

An alternate explanation (B) for the high ε max values compared to aniline (*1*) may lie in the extreme ease of oxidation of these compounds by the oxygen of the air. These phosphorous compounds may tend to exist partly as free radicals. The lone electron can resonate with the benzene ring. This hypothesis should predict that on standing the ε max should rapidly decrease. Observations show this, too.

Additional work is being done to see if the phosphorous group will direct a new group to the *ortho* and *para* positions on the benzene ring in support of hypothesis A, and if these compounds are associated in support of hypothesis B.

The values reported here were taken from compounds kept in sealed tubes, but opened occasionally for withdrawal of samples. It is possible that measurements taken under completely anhydrous and oxygen-free conditions would show that the ε max values for these compounds would be much higher.

Details of preparation will be published elsewhere.

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[3] The authors wish to thank Michael K. Hrenoff for the spectra data.

The Effect of Aureomycin and Vitamins on the Growth Rate of Chicks

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Following the discovery by Stokstad and Jukes (*1*) that the feeding of aureomycin had a stimulating effect on the growth of the chick, several reports have appeared on the effects of feeding antibiotics to chicks and to various other animals. It was found that with animals other than ruminants the inclusion of an antibiotic in the feed almost invariably resulted in a marked increase in the rate of growth. There are, however, reports of instances where the addition of antibiotics to a ration had no effect on the growth rate. Speer *et al.* (*2*), for example, reported an experiment in which the addition of aureomycin to a ration fed to young pigs had no effect on the growth rate. The

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[2] Taken from the M. S. thesis of Robert J. Horvat.