of animals and plants. He declares that he has never doubted the transmission of changes which depend on alterations of the germ-plasm. He then inquires: "And how could the germ-plasm *be changed* except by the operation of external influences, using the words in their widest sense?" To this we may reply, that he has hitherto attributed all changes to sexual mixture alone. If he is willing to admit that use and disuse of organs, changes in nutrition, and in the environment in general, may bring about modifications of organisms, he will not find it difficult to come to an agreement with many of his opponents, even if he does insist on postponing the results for a few generations. A few may insist that some characters acquired by the parent, for instance by the use of an organ, may be inherited by the next generation, but most persons would contend only that a predisposition to the reproduction of the character is inherited.

PAPERS READ.

CONDENSATION OF ACETOPHENONE WITH KETOLS BY MEANS OF DILUTE POTASSIUM CYANIDE. By ALEX. SMITH.

[ABSTRACT.]

It has been proven for some years that when benzaldehyde is boiled in dilute alcohol with a small quantity of potassium cyanide, two molecules of benzaldehyde unite to form benzoin. The present paper describes a class of cases where the same reagent has the power of causing the union of two bodies with the elimination of water—a condensation. The interaction takes place between a ketol such as benzoin, on the one hand and a ketone such as acetophenone on the other. For example benzoin and acetophenone in dilute alcoholic solution, in presence of a little potassium cyanide, yield on boiling desyl-acetophenone. (Jour. Chem. Soc. LVII, p. 643.)

$$C_6H_5—CO—\underset{\displaystyle C_6H_5}{\underset{|}{CH}}—OH + CH_2—CO—C_6H_5 =$$

$$C_6H_5—CO—\underset{\displaystyle C_6H_5}{\underset{|}{CH}}—CH_2—CO—C_6H_5 + H_2O$$

The interaction is now found to extend to other ketols. From cuminoin

and acetophenone, cumino-desylacetophenone was prepared according to the equation—

$$C_{20}H_{24}O_2 + C_8H_8O = C_{28}H_{30}O_2 + H_2O$$

It is a substance melting at 145° C. With phenyl hydrazine it yields an o-diazine derivative and its constitution as a 1:4 diketone was proved by its yielding furfurane and pyrrol derivatives. Piperonoin, furoin, and benzoylcarbinol have also been used, and the interaction seems to hold for them also. The products have not yet been fully investigated.

In all cases a small amount of another, much less soluble, product is formed. The equation for this action seems in the case of benzoin to be—

$$3C_6H_5{\cdot}COH + C_8H_8O = C_{29}H_{22}O_2 + 2H_2O$$

The examination of these products is in progress.

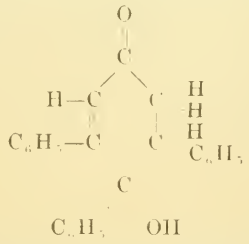
CONDENSATION OF ACETONE WITH BENZOIN BY MEANS OF DILUTE POTASSIUM CYANIDE. By ALEX. SMITH.

[ABSTRACT.]

In connection with the work mentioned in the preceding paper, experiments were also made where the ketol was benzoin but acetone was used in place of acetophenone. The main course of the interaction was an entirely different one. A substance melting at 246° C was produced according to the equation—

$$3C_6H_5{\cdot}COH + C_3H_6O = C_{24}H_{20}O_2 + 2H_2O$$

It appears to possess the following constitution:



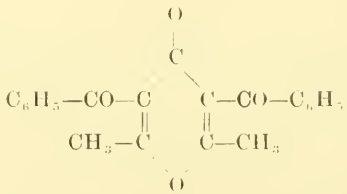
It yields a monoxim and a monophenyl hydrazone. With acetic anhydride it yields the acetate of triphenyl phenol. From this triphenyl phenol itself is obtained by saponification. Distillation over zinc dust yields the hydrocarbon triphenyl benzene and the original substance yields the same

product under similar treatment. A substance, found to have almost identical properties, is described by Japp (Chem. Soc. Jour., vol. LVII, p. 783). He had formerly ascribed to it the formula $C_{16}H_{10}O_4$. In the later note he points out that the analysis agrees approximately with the formula $C_{24}H_{20}O_2$. The substance was prepared by Japp's method, namely the action of dilute caustic potash on a mixture of benzoin and acetone in alcoholic solution. It appears to be the same body as that obtained by the action of potassium cyanide, but acetic anhydride acts on it with extreme difficulty only and distillation over zinc dust yields none of the hydrocarbon.

PYRONE AND PYRIDONE DERIVATIVES FROM BENZOYL ACETONE. By ALEX. SMITH.

[ABSTRACT.]

Conrad and Guthzeit's reaction was applied to benzoyl acetone. Cuprobenzoyl acetone was found to yield with phosgene a pyrone derivative possessing the formula—



Dimethyldi-benzoyl pyrone melts at 188° C. With phenyl hydrazine it yields a diphenyl hydrazone and with ammonia the oxygen of the ring is replaced by the group :NH and dibenzoyl-lutidone is formed. Similarly the action of aniline gives dibenzoylphenyl-lutidone. These substances are bases whose hydro-chlorides form double salts with platinum tetrachloride.

CARBON DIOXIDE IN THE URINE. By T. C. VAN NUYS and R. E. LYONS.

From the intense alkalinity of the normal urates, as well as the di and basic phosphates of potassium and sodium, we were led to believe that, ordinarily the urine is not alkaline from the presence of the carbonates of