

have been constantly indicative of its ultimate value. In every set of experiments we have controlled our tests by determining the limit of agglutination with the typhoid serum and by testing for conglutination with alexin plus conglutinin alone, and also with various dilutions of a normal serum. In certain of our experiments we have obtained positive reactions without the presence of a typhoid serum, owing either to a great susceptibility of the organism used as a reagent, or else to the presence of a normal sensitizer as well as an alexin in the fresh serum of the guinea-pig employed. In many of our experiments, however, we have met with clear cut positive reactions with typhoid sera alone which, in point of dilution, ran far higher than the control agglutination reactions and which failed to occur in the controls without serum or with dilutions of normal serum. It seems at the present moment unwise to use a formolinized culture of the typhoid bacillus as we did with dysentery, as it tends to sediment spontaneously. It may be mentioned that in one case of typhoid fever a conglutination reaction was obtained on the second and third days, whereas a blood culture was negative on the fifth day and the Widal reaction did not appear until the ninth day.

A few preliminary results with cases of acute tuberculosis offer hope that the reaction may also be of value in the diagnosis of at least certain forms of this disease. Our results on this subject, however, are not sufficient to warrant a communication.

It would seem to be indicated, then, that the reaction of conglutination may prove of superior value to the agglutination reaction in the diagnosis of acute bacterial infections, both on account of its greater constancy and its early occurrence in the disease.

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### **Analysis of the cleavage products of the nucleoprotein of the mammary glands.**

By **J. A. MANDEL.**

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Many theories as to the origin of casein in milk have been discussed in the past and for the present we have no positive ex-

perimental evidence of the origin of this important constituent of the milk. The theory of Basch that casein is formed by an action of the nucleic acid of the mammary gland upon the protein of the blood plasma has been shown to be untenable by the researches of Mandel and Levene and by Loebisch upon the nucleic acid of the mammary glands.

In order to determine, if possible, the relationship of the cell substance of the glands to the casein, I prepared the nucleoprotein of the glands according to Hammarsten's method and purified the product by solution in sodium carbonate and reprecipitation with acetic acid several times. The product obtained on purification differed materially as shown below from the same product reported by Odenius and prepared by the same method.

	Odenius.	Mandel.
Nitrogen .....	17.280 per cent.	15.720 per cent.
Phosphorus.....	0.277 “	0.551 “
Sulphur.....	0.890 “	trace

In order to compare the constitution of this nucleoprotein with casein, the amino acids in several portions were determined by the ordinary methods, after hydrolysis with hydrochloric acid and sulphuric acid and the average results given below obtained. The purine bases and the pyrimidine bases were also determined as given.

	Nucleoprotein.	Casein.
Glycocoll.....	0.00 per cent.	0.00 per cent.
Leucine } .....	8.15 “	10.50 “
Valine } .....		
Glutamic acid.....	8.58 “	11.00 “
Tyrosine.....	2.47 “	4.55 “
Tryptophan.....	present	1.50 “
Lysine.....	4.111 “	5.80 “
Arginine .....	3.021 “	4.84 “
Histidine.....	3.064 “	2.59 “
Guanine.....	1.725 “	
Adenine.....	0.930 “	
Thymine .....	0.346 “	
Cytosine .....	0.732 “	

On comparison with the figures given by Abderhalden and Fischer for the monamino acids and by Hart for the hexon bases we see that there is a striking correspondence in constitution between the casein and the nucleoprotein of the cell substance.

This correspondence seems to be a strong proof that the casein of the milk is formed by a breaking down of the nucleoprotein of the cell protoplasm with a setting free of the carbohydrate and the purine and pyrimidine bases.

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**Respiration by continuous intra-tracheal insufflation of air.  
A demonstration.**

By **S. J. MELTZER** and **J. AUER**.

At the April meeting of this year, we reported that by means of continuous intra-tracheal insufflation of air, we succeeded in keeping up the life of curarized animals. We do not intend to discuss now this subject theoretically, but wish to demonstrate this method in its simplified form.

A stomach tube, having only one opening at its lower end, is introduced, through mouth and larynx, in the upper end of the right bronchus. The outside end of the tube is connected by means of a T-tube with a manometer and a bottle containing ether. This bottle is connected with glass blowers bellows, which are so handled that the pressure is kept up at about 15 millimeters of mercury. The dog has been operated nearly two hours before and the thorax has been opened transversely, so that lung and heart are freely exposed. The lungs are continuously moderately distended and quiet and the heart beats strongly and regularly.

The principle of this method differs from that of Brauer (and others) that the greatest part of the "dead space" of the respiratory path is eliminated, that the pressure is not static but dynamic, the air being continuously driven in by this pressure, and that the carbon dioxide is continuously driven out from the trachea by the same pressure, instead, as in the Brauer method, of escaping against a higher pressure.

A good many dogs were operated by this method; none had bronchitis or pneumonia. Under aseptic precautions, many survived various profound surgical procedures (in the hands of Dr. Carrel and Dr. Elsberg). We may add that no animal died from ether, even when used very freely, and that no vomiting occurred.