also in Lead II. The negative T waves were usually sharp, cove-shaped, not unlike that described as *typical of coronary closure.* In only one instance, however, was there any RST or ST deviation in these control tracings. In one of the 2 control animals no early electrocardiographic changes were noted. Nine hours after operation, however, there were slight directional changes in the T waves which became quite pronounced by the third, fourth and fifth days. Further slight directional changes were noted over a period of 3 weeks. In the second control animal marked T, ST and RST changes were noted in the first 9 hours post-operatively. Twenty-two hours after operation there were further directional changes in the T-waves and 2 days later the dog was found dead.

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Destruction of Levo-, Dextro- and Racemic Hyoscine by Egg White and Rabbit's Serum.

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It was demonstrated[1] that rabbit's serum destroys atropine (dl-hyoscyamine) and its isomers, levo- and dextro-hyoscyamine, at different rates and it was suggested that this accounts for quantitative differences of the systemic action of these alkaloids in different species. In the following report levo-, dextro- and racemic hyoscine* were studied as to their destruction by egg white and rabbit's serum.

The determination was performed in the same manner as described in the previous paper. In the first series 20 mg. of the alkaloids were dissolved in 2 cc. of water, mixed with 8 cc. of fresh egg white and incubated for 0, 3, and 6 hours at 38°C., three experiments being done for each compound and each series. At the end of the incubation period the alkaloids were isolated and determined by means of the Vitali reaction. It was found that with all 3 alkaloids without incubation all material added could be recovered

[1] von Oettingen, W. F., Marshall, I. H., *J. Pharm. Exp. Therap.*, in press.

* The levo- and dextro-hyoscine used in this study were prepared by the Sandoz Chemical Works, Basle, Switzerland, and furnished through the courtesy of Dr. E. Rothlin in Basle.

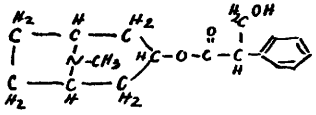
within the limit of error which is ±5%; after 3 hours of incubation 21.9% were destroyed and after 6 hours 37.5%, the 3 isomers being destroyed at the same rate. It is interesting that under identical conditions atropine and its isomers were destroyed at the same ratio, namely ±5%, 21.5%, and 37%, the 3 isomeric forms showing also no differences in regard to their destruction.

Similar experiments were performed with rabbit's serum in the same proportion and with the precautions discussed in the previous paper. In this series also 3 experiments were made for each alkaloid and each time interval, which all gave identical results. After 6 hours 100% of the levo-, 68.3% of the dextro-, and 81% of the racemate were destroyed, which agrees with the values found in the atropine series, 100% for levo-, 57% for dextro-hyoscyamine and 81% for atropine (dl-hyoscyamine).

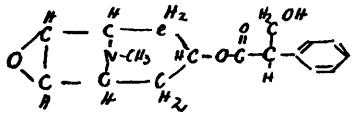
After an incubation period of 3 hours the destruction of the 3 alkaloids of both series was as follows:

d-Hyoscine	50%	d-Hyoscyamine	18%
l-Hyoscine	100%	l-Hyoscyamine	67%
dl-Hyoscine	79%	dl-Hyoscyamine	37%

It appears, therefore, that the hyoscine alkaloids are more rapidly destroyed in the beginning than the hyoscyamine preparations,



dl-Hyoscyamine (Atropine)



l-Hyoscine (Scopolamine)

As indicated by the formula for dl-hyoscyamine and l-hyoscine, both compounds have the tropic acid radical in common. According to Gadamer[2] the optical isomerism of these compounds is due to the stereoisomerism of the tropic acid radical, and the results reported in this paper and in our previous report on the destruction of both alkaloids and their isomers by egg white and rabbit's serum indicate also that the tropic acid radical is responsible for the different resistance of the optical isomers of the same rotation towards the decomposition by the serum.

[2] Gadamer, *Arch. d. Pharm.*, 1901, **239**, 300, 663.