Lastly, it was observed that strong contractions of the gall-bladder could be induced by the direct application of pilocarpine to its wall. Atropine in small amounts, similarly applied, decreased the tone of the gall-bladder and rendered it refractory to pilocarpine, to excitation of the vagus nerves and to stimulation of the ampulla, but not to faradic stimulation of its wall. Adrenalin produced immediate and rather prolonged inhibition of the gall-bladder. This was present also after atropine.

In conclusion, the response of the gall-bladder to these autonomic drugs and to vagus stimulation suggests the existence in this organ of a thoracolumbar-parasympathetic nervous system antagonism—an hypothesis which is being subjected to further investigation.

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Studies on the Comparative Value of Intravenous Sclerosing Substances.

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Ochsner and Garside[1] reported the results of their studies on the effect of intravenous injection of 20 different sclerosing solutions. This paper is a report of the continuation of that work, comprising a similar study of 9 additional solutions.

Method. The methods used were the same as those previously employed. Eighteen dogs were used, and 4 injections were made at different levels in the veins of each leg, thus making 16 injections of a sclerosing substance in each dog. Only one drug was used for each leg, but different drugs were sometimes injected into each leg of the animal. Five-tenths cc. of each of the following solutions were injected into 16 veins:

	%		%
Searle's sodium morrhuate	—5	Sodium morrhuate (own)	—10, 5
Sodium gynocardate	—5, 3, 2	Sodium hydnocarpate	—5, 3, 2

The area of injection was marked and subsequently the veins were cautiously removed under local anesthesia to prevent the dislodgement of thrombi. The more distal segments of vein were removed first.

[1] Ochsner, Alton, and Garside, Earl, *Ann. Surg.*, 1932, **96**, 691.

Sections were removed at the following intervals: ½, 1, 3, 6, 12, 24, and 48 hr., 3, 4, 6, 10, 14, 21 days, 4, 6, and 8 weeks. Thus, there were 16 sections studied for each solution.

After removal the veins were prepared for microscopic study by staining with hematoxylin and eosin and Mallory's connective tissue stains. Some sections were stained by Werhoff's elastic tissue method.

Thrombus Production. Searle's sodium morrhuate produced thrombosis in the greatest number of instances, 71.4% of the veins, sodium gynocardate (5%) in 50%, sodium gynocardate (3%) in 50%, sodium gynocardate (2%) in 44%, sodium hydnocarpate (5%) in 37.5%, sodium morrhuate (own, 5%) in 33%, sodium hydnocarpate (3%) in 33%, sodium morrhuate (10%) in 19%, and sodium hydnocarpate (2%) in 12.5%.

As the methods used were the same and as one* of us studied the sections in each series, our results may be compared with those of Ochsner and Garside. In comparing the thrombus producing effectiveness of the drugs in both series, we find that their most effective experimental thrombus producer was only fourth in the entire series. Their sodium salicylate, 40%, produced thrombosis in only 47% of the veins, whereas our 3 most effective thrombus producers showed 71.4%, 50%, and 50% thrombosis, respectively, *v.s.*

Endothelial Destruction. The grade and incidence of endothelial destruction closely parallels the incidence of thrombosis. We have performed other experiments *in vitro* with Searle's sodium morrhuate and quinine and urea hydrochloride to show that these 2 sclerosing solutions do not decrease the clotting time of blood. Thrombosis occurs after injection of sclerosing substances by destruction of endothelium and liberation of thrombokinase. Sodium gynocardate, 5%, showed some endothelial destruction in 75% of the sections, but complete destruction in only 25%; whereas Searle's sodium morrhuate produced complete destruction of the endothelium in 72% of the sections. The remainder of the 9 solutions used by us produced endothelial destruction in smaller percentages; the least effective, sodium hydnocarpate 2%, showed evidences of endothelial destruction in only 19% of the sections.

Other Changes. Various other changes were found in the vein wall: edema, leucocytic infiltration, destruction of the internal elastic lamina, coagulation necrosis, new vessels, muscle atrophy. These changes, inflammatory or reparative in nature, will be reported by us in detail elsewhere.

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