with prostigmine have led to the assumption that the therapeutic effect may be attributed to an inhibition of proprioceptive reflexes in the spinal cord by prostigmine.

"The increased use of curare and of substances with a curare-like action in the therapy of spasticity has renewed the interest in the action which these substances have on the central nervous system. West (1937) reported that the relief from spasticity is not associated with the true curare action at the neuromuscular junction and concluded that the beneficial effect in certain patients is due to a central effect ("lissive" action). Our findings with d-tubocurarine, dihydro-beta-erythrodine and quinine ethochloride emphasize that consideration should be given to the effects on the central nervous system which these substances may exert in the treatment of various neurologic conditions.

"More recently curare has been used as an adjuvant in relaxing abdominal muscles during inhalation anesthesia, particularly by cyclopropane (Griffith and Johnson, 1942; Cullen, 1943). It has been found useful especially for patients who are resistant to the anesthetic agent (Baird and Adams, 1944). However, the application of curare in patients as well as in dogs has shown (Cullen, 1943) that this drug alone failed to produce a satisfactory relaxation of the peripheral muscle and that the combination with scopolamine and the anesthetic agent was necessary to produce and to maintain a satisfactory relaxation. . . . In view of the inherent danger in the administration of curarizing drugs, it should be pointed out that prostigmine which counteracts the action of these drugs on the neuromuscular junction itself suppresses the electrical activity of the brain. Consequently, as would be expected, prostigmine failed to reverse the depression of the electrical activity of the frog brain caused by curarizing drugs."

A. W. F.

CULLEN, S. C.: *The Use of Curare in Anesthesia.* South. M. J. 38: 144–148 (Feb.) 1945.

"The improvement of muscular relaxation during inhalation anesthesia with the domesticated version of the old South American Indian arrow poison, curare, has served to facilitate surgery, reduce the hazard to the patient and lighten the burden of the anesthesiologist. . . . There is no intention of promoting curare as a panacea for all poor operating conditions. It is advisable to use it for the purpose of inducing muscular relaxation only in those cases where it is difficult to secure that relaxation without raising the concentration of the anesthetic agent to toxic levels. Curare should not be used to produce relaxation in situations in which the incomplete relaxation is due to poor selection of agent and technic, inadequate airway, high carbon dioxide tension or other results of poor technic and lack of appreciation of the pharmacology and physiology associated with the production of that anesthesia. . . .

"The induction and establishment of anesthesia are performed as usual with the carbon dioxide absorption technic. If curare is applied in the manner Griffith recommends, it is used only in those situations in which it is impossible or too hazardous to obtain relaxation with the anesthetic agent alone. In this circumstance the curare is administered intravenously. Usually, 0.100 gram (5 c.c. of 'Intocostrin') is required in the average sthenic patient under cyclopropane anesthesia. It is our practice to use curare in small repeated doses rather than large single doses. It is possible to carry the patient in light second

plane inhalation anesthesia, and, with proper doses of curare, obtain as good relaxation and quiet breathing as with spinal anesthesia. . . . The agent most frequently used is cyclopropane. With this agent, there is no excessive or prolonged respiratory depression with optimal doses of curare. . . .

"Curare is being used during anesthesia with nitrous oxide, and provides the muscle relaxation not ordinarily secured with this anesthetic agent alone. Curare is also being used during ethylene anesthesia. Our experience to date with ethylene demonstrates that it is necessary to use larger doses of curare, and respiratory depression is more frequent, more marked, and more prolonged. Although the oxygen concentration in the inspired atmosphere is at least 20 per cent, considerable difficulty with cyanosis has been experienced. Strangely enough, this difficulty was not encountered with nitrous oxide. . . .

"Curare can be used during ether anesthesia, but the dose must be reduced to one-third of that used during cyclopropane anesthesia. . . .

"Experiences with curare during inhalation anesthesia and laboratory investigations of its properties give the impression that curare is a safe drug, and that it is proving to be a valuable adjunct to the anesthetist's armamentarium. Its ability to provide complete muscular relaxation assists materially in improving the working conditions of the surgeon without significantly increasing the immediate or ultimate hazard to the patient. Its principal disadvantage is the narrow margin between the effective dose and the dose which produces respiratory depression. With proper control of respiration, this disadvantage proves, however, to be minimal." 12 references.

J. C. M. C.

BERNHEIM, F., AND BERNHEIM, M. L. C.: *Note on the In Vitro Inactivation of Morphine by Liver.* J. Pharmacol. & Exper. Therap. **83**: 8[illegible] (Jan.) 1945.

"SUMMARY

"Morphine is conjugated, not oxidized when it is incubated with liver slices in vitro."

A. W. F.

LEHMANN, G., AND YOUNG, J. W.: *The Anti-histamine Activity of Diethylaminoethyl-Dihydroanthracene-Carboxylate and Other Substances.* J. Pharmacol. & Exper. Therap. **83**: 90–95 (Jan.) 1945.

"Many investigators believe that the manifestations of anaphylactic shock and allergic conditions are caused by histamine. For this reason many attempts have been made to find an agent capable of antagonizing the action of histamine or of preventing the occurrence of anaphylactic shock by interfering with the antibody-antigen reaction. . . . Certain amino acids have been claimed to have a specific anti-histamine activity. However, very high concentrations of these aminoacids are required to antagonize the histamine effect on smooth muscle (5).

"In a previous paper (6) we have studied the antagonistic action of diethylaminoethyl-dihydroanthracene-carboxylate (D) against the effects of histamine on smooth muscle. We have extended our investigation to study the antagonistic action of D and other substances (diethylaminoethyl-fluorene-carboxylate (F), diethylaminoethyl-xanthene-carboxylate (X), aminophylline and epinephrine) against anaphylactic shock. . . .

"SUMMARY

"Diethylaminoethyl-dihydroanthracene-carboxylate provides 100 per cent