

Therapeutical Memorandum.

THE PHYSIOLOGICAL ACTION OF ARNICA MONTANA ON THE CIRCULATION.

BY H. A. HARE, M.D., (UNIV. OF PA.)
Demonstrator of Experimental Therapeutics and Instructor in Physical Diagnosis in the University of Pennsylvania.

ARNICA has been used for several hundred years chiefly as an external application for bruises, cuts, or like local injuries, and much less frequently, internally, as a stimulant in low fevers to the circulatory and even to the general nervous system. Used more largely by the older physicians than those of the present day, many of them asserted that it possessed value in intermittent fevers or in typhoid conditions, while even more favorable reports were made as to its effects in the treatment of peripheral palsies, as of the bladder and auditory nerve. It has also been used in the advanced stages of paralysis depending on centric lesions, after all tendency to inflammation has subsided.

Neligan found it useful in nervous headache.

Stoll claims that in the typhoid form of dysentery it should be regarded as a specific. Very few remedies, which have been so rarely used by the physician as has arnica, have found so great favor in the popular mind as has this substance. Nearly every household uses it whenever a sprain or bruise is produced, and it seems hard to believe that the results thus obtained exist only in the imagination of the patient, without any foundation, notwithstanding the fact that Garrod in a series of tests found that he obtained as good results with pure alcohol as with the tincture of arnica. Whatever may be the therapeutic conclusions drawn from empirical experience with the drug, it has certainly been found to be possessed of certain toxic properties, and for this reason it appeared to the writer worthy of a therapeutic study.

Viborg reports that it produces in the horse increased cardiac action, flow of urine, and warmth of the skin, followed by a full pulse, muscular tremors and depression. With large doses salivation was increased, and finally, insensibility to external irritants came on. Locally it acts, if concentrated, as a severe irritant.

When a dose of from five to ten drops of the official fluid extract of arnica root is injected into the jugular vein of a dog weighing from fifteen to twenty pounds, the pulse-rate and arterial pressure are for a moment depressed, but in the course of from thirty seconds to a minute return to their normal position. In about five minutes, however, the pulse-beats become one-third slower than they are normally, arterial pressure remaining unchanged, save that the pulse-waves usually produced by inhibitory stimulation give it a greater range. If under these conditions the pneumogastric nerves be cut, the pulse instantly increases its rate considerably beyond the normal, though not to the point generally produced when the peripheral vagi are in a normal state. This difference was, however, more marked in some cases than in others. We may therefore conclude that the drug stimulates in small ordinary doses the vagal centre in the medulla, thereby producing a slow full pulse, and that it has an effect on the peripheral ends of the vagus for the reason that when these nerves are cut, the pulse-rate only increases somewhat. That this failure of the pulse to become very rapid after vagal section is not due to

cardiac depression, is proved by the strong pulse-waves and the increase in arterial pressure, rather than a fall.

When a much larger dose (five c.c.) is given to a dog of twenty pounds weight, the primary slowing does not take place, but in its stead the pulse becomes very rapid with a fall of arterial pressure which, however, soon recovers itself, the pulse still remaining rapid. Under these circumstances it was found that galvanizing the vagus nerves, even for as long as one minute and a half, failed to produce any cardiac slowing, proving palsy of peripheral vagi, and this was also proved by the fact that when the vagi were cut and their peripheral ends stimulated by small doses, large doses immediately produced a rapid rate, but no more than a momentary fall of arterial pressure, lasting perhaps twenty seconds and due simply to the sudden entrance of the drug into the heart *en masse*.

Arnica therefore slows the pulse in ordinary medicinal dose by stimulating the pneumogastrics both peripherally and centrally, increasing the fulness of each pulse-wave, and also slightly the arterial pressure. That the increased arterial pressure is chiefly due to increased work done by the heart is strongly indicated by the fact that in none of the experiments was arterial pressure influenced to any extent, by any dose, except when an enormous amount (5 c.c.) was injected rapidly into the jugular vein, when there was for the space of from ten to fifteen seconds a fall in pressure very evidently due to momentary heart-failure, as the pressure returned at once to normal as soon as the heart freed itself from the volume of the drug.

That the fluid extract used was pure I am confident since it was prepared by a reliable druggist especially for these experiments, and that no fallacy underlies the results of the experiments themselves seems proved by the fact that no less than seven tracings were taken from the carotid artery of as many different dogs, and in all cases the effects were the same.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL OBSERVATION.

C. P. STRONG, M.D., SECRETARY.

MEETING, November 7, 1887, DR. INGALLS in the chair.

DR. H. F. VICKERY read a paper on

APPENDICITIS, WITH REPORT OF CASES.¹

DR. WHITTIER said: Dr. Vickery's timely paper presents very clearly and concisely, the main features of the subject — appendicitis and its results, and suggests important topics for discussion. I think there is great danger of perpetrating a double error in all these cases. An error of delay in reaching a diagnosis or a guide for treatment, and an error in postponing surgical procedures when the diagnosis of appendicitis and its result has been made.

I am familiar with a number of cases of reported recovery from this formidable malady, treated on the expectant plan. But I am also painfully aware of the very large number of valuable lives lost because the diagnosis was unwarrantably delayed, or because surgi-

¹ See page 39 of this number of the Journal.