Sample E.—From Brain Tissue.

The material was injected in form of an emulsion with normal salt solution.—Tested Aug. 9, 1919.

Minutes	10:49	10:56	11:13	11:25	11:40	1:45	2:25
1	—	—	Inj.	1	1	1	—
2	1	1	5 Cc.	1	2	2	1
3	2	2	emulsion	2	3	3	2
4	2	2		3	4	3	2
5	3	3		4		4	3
6	3	3					4
7	4	4					

Coagulation time only slightly affected.

TEST OF HEMOSTATIC SERUM.

Same day. Same dog.

Minutes	2:25	2:35	2:37	3:10	4:09	4:15
1	—	Inj.	1	1	2	2
2	1	2 Cc.	2	2	2	4
3	2	of	3	3	4	
4	2	sample	3	4		
5	3		4			
6	4					

Coagulation time shortened from 6 minutes to 2 minutes in $1^2/_3$ hours.

An illustration of one form of failure which occasionally occurs in attempting to test a coagulating agent.

May 21, 1919.

Minutes	10:33	10:43	10:49	10:52	11:48	1:31	2:11	3:00
1	—	1	1	4	2	1	1	2
2	—	2	4		4	3	2	3
3	1	3					3	
4	2	4						
5	2							
6	2							
7	3							
8	3							
9	4							

No injection was made into this dog as the coagulation time would not remain uniform at any time.

RESEARCH LABORATORY
PARKE, DAVIS & CO.
DETROIT, MICH.

ABSTRACT OF DISCUSSION.

DR. PITTENGER: I just wish to state that during the past several months I have had considerable experience in testing blood coagulants. Although we have not done as much work towards perfecting the method as Dr. Hamilton brings out in his paper, we have obtained practically the same results, *viz.*, that there are quite a few preparations on the market which appear to be valueless as to their coagulant properties, and some others which apparently do the work very well.

I employed a method somewhat similar to his in which I used very small paraffined glass test-tubes. The only difference between Dr. Hamilton's technique and that which I employed was that our experiments were carried out at room temperature. We anesthetized a dog, tied a paraffin-coated cannula into the carotid artery, and then withdrew four or five tubes of normal blood. The coagulant was then injected into the saphenous vein and samples of blood drawn

into paraffined tubes every two minutes. The clotting time of the normal blood was then compared with the clotting time of the samples taken after the coagulant was injected. We found that normal blood clotted in about fifteen to twenty minutes, while after an effective coagulant was injected the clotting time was reduced to four to eight minutes. We found, however, that a few of the preparations on the market instead of increasing the coagulability of the blood actually retarded coagulation. In one case after injecting a so-called coagulant, clotting did not take place in two hours, whereas the normal blood from the same animal clotted in eighteen minutes.

A STUDY OF CHENOPODIUM AMBROSIOIDES VAR. ANTHELMINTICUM AND ITS VOLATILE OIL.*

BY ELMER HAUSER WIRTH.†

Oil of Chenopodium, or oil of American Wormseed, is official in the United States Pharmacopoeia (IX) as Oleum Chenopodii. The fruit of Chenopodium was formerly also official but was dropped from the U. S. Pharmacopoeia in 1900. The drug and its oil have long been esteemed as anthelmintics and are said to have been used by the Indians as vermifuges before the landing of Columbus. They are particularly useful for ascarides which they seem to narcotize so that they may be eliminated by means of a cathartic or laxative.

During the duration of the World War, which caused a shortage of thymol, the oil also found use in the treatment of hookworm. Schüffner and Vervoort[1] claim it to be superior to thymol, naphthol or eucalyptus oil in the treatment of this infection, which view is supported by Levy[2] in several case reports.

The anthelmintic action is attributed to the compound first isolated by Schimmel & Company[3] and named by them "ascaridol." Kobert,[4] 1914, detected the presence of two saponin bodies in the herb and seeds. He claims that the anthelmintic action of the powdered drug is due to these saponin bodies as well as to the essential oil.

The source of the oil is the mature plant of *Chenopodium ambrosioides* var. *anthelminticum*. The principal supply comes from Maryland[5] although attempts have been made to raise the plant commercially in the Middle West.[6] These plants, however, always give an oil of low specific gravity.

The volatile oil is distilled from the plants with steam; practically all of the oil is contained in the seeds. The leaves contain some oil; however, it is usually absent in the mature plant; the stem contains no oil.

Owing to the interest in oil of Chenopodium, particularly as the market supply was inadequate in 1918, several hundred plants of *Chenopodium ambrosiodes* var. *anthelminticum* were grown at the Botanical Gardens of the University of

* A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in the University of Michigan, June, 1919.—Presented in Scientific Section, A. Ph. A., New York meeting, 1919.

† The author wishes to acknowledge his deep indebtedness to Professor Henry Kraemer for his many kind and helpful suggestions during the progress of this work.

[1] *München. med. Wochnschr.*, 60, 129, 1913.

[2] *Jour. A. M. A.*, 63, 1946, 1914.

[3] Schimmel & Co. Report, 1908, p. 114.

[4] Schimmel & Co. Report, 1914, p. 100; Year Book, A. Ph. A., 1914, p. 206.

[5] *Amer. Jour. Pharm.*, 22, p. 303.

[6] *Ibid.*, 26, p. 503.