inches in diameter, with a one-inch galvanized pipe, 18 inches long, brazed to the top to form a T handle.

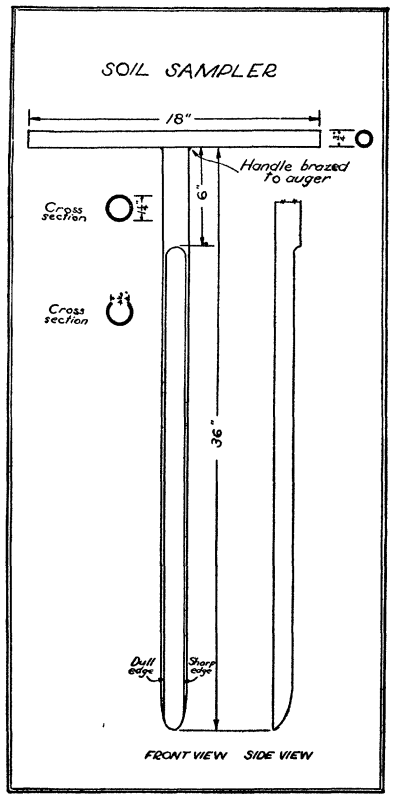

FIG. 1

A ¾-inch slit is cut in the main pipe, from the bottom to a point six inches below the handle. The right edge of this slit, as viewed from the handle, is dull; the left edge is beveled from within, making a cutting edge 30 inches in length. The lower end of the tool is finished in a rounded point, sharpened at the end.

In operation the tool is simultaneously thrust into the ground and turned gradually to the right in the same manner as an ordinary screw type soil auger. After the tool has entered the soil to the desired depth a slight backward twist releases the core from the main body of the soil. The tool is then slowly pulled out, with particular care to avoid sudden jerks. When the tool is taken from the soil it carries a cylindrical core of slightly compacted soil. A pocket knife is inserted into the soil core at the point where the cylinder begins to taper. This piece of core is pushed out in order to permit the easy removal of the main core from the cylinder. The core can be gradually pushed out in sections, by means of a knife blade or other flat instrument. The emerging core is cylindrical, and it will be found that the interior physical structure has been but slightly affected. The writer has used such a soil sampler at different times and under diverse conditions, always obtaining better results than with the screw-type auger.

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SPECIAL ARTICLES

ADRENAL CORTEX EXTRACT AND CANCER[1]

THE treatment of cancer by glandular extracts has had a moderate study limited by the few glandular extracts existing in pure form. The most recent and highly vaunted treatment has been that of Coffey and Humber,[2] of San Francisco, who used what was said to be an adrenal cortex extract of unstated composition. The curative claims made for their method are so great as to make further study of these extracts of importance in order to establish the place of cortical extracts in the treatment of cancer patients.

A modified adrenal cortex preparation has been described and discussed by Sokoloff.[3] The preparation of Auler and others[4] is unfortunately rather toxic. Kondo[5] was unable to discover any definite evidence that extracts of the suprarenal cortex act as stabilizers of growth in young mammals. The outcome obtained by Joannovics,[6] Pearce and Van Allen,[7] Auler[8] and Floercken[9] is of academic interest only, as removing or destroying the adrenal glands in an effort to elicit a restraining influence on transplanted tumors is an indirect method of approach, after all. Still less direct is the method of Flaks,[10] who mixed the tumor graft with adrenal tissue and found an inhibitory effect when the mixture was tested by injecting into normal animals.

In all these experiments no statement is made as to the efficiency of the adrenal cortex extract in substituting for the glandular hormone itself in adrenalectomized animals. Such an efficient extract has been prepared and described by Swingle and Pfiffner[11] and

[1] From the Cancer Research Laboratories, Graduate School of Medicine, University of Pennsylvania.

[2] W. B. Coffey and J. D. Humber, *J. A. M. A.*, 94: 359, 1930.

[3] B. Sokoloff, *J. A. M. A.*, 94: 652, 1930.

[4] H. Auler, H. Schlottmann, W. Rubenow, P. Meyer and B. Wolff, *Zeits. f. Krebsforsch.*, 32: 195, 1930.

[5] T. Kondo, *Archiv. f. Jap. Chir.*, 6: 62, 1929.

[6] G. Joannovics, *Beitr. z. pathol. Anat.*, etc., 62: 194, 1926.

[7] L. Pearce and C. M. Van Allen, *Trans. Assoc. Amer. Phys.*, 38: 315, 1923.

[8] H. Auler, *Zeits. f. Krebsforsch.*, 22: 210, 1925.

[9] H. Floercken, *Zeits. f. Krebsforsch.*, 24: 465, 1927.

[10] J. Flaks, *Zeits. f. Krebsforsch.*, 30: 145, 1929.

[11] W. W. Swingle and J. J. Pfiffner, SCIENCE, 71: 321 and 489, 1930.

named by them the *cortical hormone*. The method of preparation of this cortical hormone has been fully given, so that there is no secret about it. The extract has been shown to be effective in substituting for the cortical hormone in adrenalectomized cats and is therefore an effective extract. Previously described extracts have not been proved to be effective in preventing symptoms in adrenalectomized animals.

So with an adrenal cortex extract of proved efficiency, experiments were made upon cancer animals. Those chosen were mice with spontaneously developing carcinoma of the breast of a long-established stock. These mice have cancer occurring spontaneously in approximately 20 per cent. of the females. The disease progresses to a fatal result with a known duration and such spontaneous cancers are not subject to the remissions and disappearance of the tumor as are the transplanted, grafted or induced cancers in rats and other animals. In addition, the character of the tumor and its course are more like human breast tumors.

The adrenal cortical extract or cortical hormone was prepared for us by Swingle and Pfiffner[12] and was periodically obtained fresh from their laboratory. There was, therefore, the association of a freshly prepared cortical extract of known and not secret composition and a definite cancer tumor of known character and one which is not subject to remissions.

The subcutaneous dose suggested by Drs. Swingle and Pfiffner was 0.03 cc. This amount, for a mouse weighing 30 gm, would be equivalent to 60 cc in a 60 kgm man. Assuming a life-span for the mouse of 3 years, and for man one of 60 years, 3 months' observation on the mouse would correspond to 5 years on man.

The material was first tested on normal animals, daily injections being given to new-born and premature mice. They did not show any ill effects and developed well, as did their controls, even when the dose was greatly increased. In other words, no stabilization of growth could be demonstrated.

Injections of the same material given to the tumor mice were without any appreciable effect on spontaneous neoplasms of this species; these grew steadily, taking their usual course quite uninfluenced by the treatment. Even when a large dose was given this was also the case. Not a single tumor in two dozen mice was arrested clinically, the results having thus been entirely negative. Death occurred at the customary times in all the animals, and the injections were without effect.

[12] The laboratory wishes to express here sincere thanks to Drs. W. W. Swingle and J. J. Pfiffner, of Princeton University, for their courtesy and their generous gift.

As spontaneous growths of the mouse are analogous with those of man,[13, 14, 15] it is very probable that the treatment here described would be useless in the human patient. The charting of the tumors was done by measurement weekly, and inspection of these shows a continuous and progressive growth in spite of injection of adrenal cortex extract of known efficiency in substitution for the cortical hormone in adrenalectomized animals.[16]

CONCLUSIONS

Spontaneous breast carcinoma in the mouse was treated by the adrenal cortex extract of Swingle and Pfiffner without any curative or restraining effect upon the tumors. No therapeutic value in the treatment of such animal cancers was shown in the cortical hormone, although the efficacy of this preparation in substituting for the adrenal cortex hormone in adrenalectomized animals has been thoroughly proved. The use of such adrenal cortex extract in human patients is not therefore to be recommended as a treatment of cancer but this in no way detracts from the value of this adrenal cortex extract of Swingle and Pfiffner in other conditions than cancer, as it has been proved to be effective as a substitute for the cortical hormone.

SHIGEMITSU ITAMI
ELLICE MCDONALD

THE LIFE CYCLE OF THE PARASITE OF EAST COAST FEVER IN TICKS TRANSMITTING THE DISEASE. (PRELIMINARY NOTE)

EAST COAST fever is a disease of cattle of considerable economic importance which is found on the eastern half of the African continent from the Sudan to the Cape of Good Hope. The causative agent *Theileria parva* is one of a large group of parasites which inhabit red blood cells and are called piroplasms. Perhaps the widest known among the group is *Babesia bigemina,* the organism causing Texas cattle fever, which holds the distinction of being the first parasite definitely proved to be insect (*i.e.,* arachnid) transmitted (Smith and Kilborne, 1893). Despite this early epoch-making discovery the actual life cycle of not a single piroplasm has been completely worked out in the tissues of the transmitting ticks, though many attempts have been made.

The following is a preliminary report of some results secured in an experimental study of the parasite of East Coast fever in ticks (*Rhipicephalus*

[13] F. C. Wood, *J. A. M. A.*, 66: 94, 1916.
[14] W. H. Woglom, *Jour. Cancer Res.*, 7: 379, 1922.
[15] S. Itami, *J. A. M. A.*, 72: 934, 1919.
[16] Illustrations showing the growth will be included in a reprint which will be sent to scientific men who may be interested.