in the wall of a single *Cysticercus* cyst, one of 30 to 50 present in this organ. Each of the involved cysts contained a worm about 20 cm. long, only one of which was living. Three of the tumors had metastasized freely into the peritoneal tissues. In each of two of the animals early and probably independent malignant changes had occurred in the walls of other cysts in the liver. Histologically, the tumors were sarcomata of either the spindle-cell or polymorphous-cell type. The transplantation of two of them into young rats resulted in 92 and 46 per cent. respectively of successful inoculations. The other two were not transplanted.

Complete data on a fifth rat which bore a tumor is lacking due to the loss of the liver through partial evisceration of the animal by his cage mates. The peritoneal tissues were, however, studded with tumor nodules which histologically proved to be spindle-cell sarcoma. In all probability these nodules were metastases from a primary growth of the liver.

19 (1601)

Further studies on intestinal implantation of bacillus acidophilus.

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The more recent observations on transformation of the intestinal flora in man have fully confirmed the earlier conclusions, which are briefly summed up as follows. The daily administration of 150–300 grams of lactose or dextrin to adults will, with few exceptions, bring about a marked change in the character of the flora in which the usual mixed types of bacteria give way to *Bacillus acidophilus* of Moro, which is a normal intestinal organism, but which is present in the intestine after early infancy in relatively small numbers only. In some instances 350–400 grams of the carbohydrates are required. The same results may be brought about with 150–300 cubic centimeters of a whey broth culture of *B. acidophilus* and with 500–1,000 c.c. of *B. acidophilus* milk, as well as with smaller amounts of the milk in combination with 100 grams of either lactose or dextrin.

Particular attention is being given to the preparation of *B. acidophilus* milk which is uniform from day to day in its physical and chemical properties. Experience thus far has shown that such a product may be obtained easily when certain conditions are carried out. In the first place, the stock strains, preferably mixed strains, must be grown sufficiently long in milk to bring about light curdling within a period of 24 hours. When such strains are once developed they should remain viable for many months at least. We are still employing the strains which were first used for this purpose eight months ago, and are unable as yet to detect any signs of deterioration. The character of the soft curd is very much influenced by the quality of the milk at the time of sterilization preliminary to inoculation. If the milk is more or less acid, even though no curdling is observed, the final product tends to be of uneven consistency, granules and lumps of curd being quite apparent. As a rule overnight incubation suffices to bring about the formation of the soft curd. At any rate, the incubation should not be continued for more than 24 hours.

Successfully prepared *B. acidophilus* milk should have the following properties. It should be of a uniform creamy consistency, except for some particles of thin film which is formed during the process of sterilization of the milk, and should have only a very thin layer of whey on the surface. The creamy character becomes more marked on vigorous shaking of the product. The odor should be slightly aromatic with no suggestion of ordinary bacterial decomposition. Both odor and taste should be pleasant. On standing at ordinary or refrigerator temperature without contamination, little change should be noted in the physical and chemical characters. The acidity, which always remains well below 1 per cent., increases but little after the initial incubation period. Samples of the milk which have been held at room temperature for two weeks were practically indistinguishable from the freshly prepared product.

Although a number of clinical cases have been included in the 30 or more subjects which have been employed in the present study of implantation of *B. acidophilus*, and with most promising results, we do not wish to make any statements as to the therapeutic value of *B. acidophilus* feeding until a time when an abundance of information on this phase may be at hand.

A full record of the authors' work is now in the Yale University Press, and will appear in book form at an early date.

20 (1602)

Changes in organ weight produced by diets deficient in antiscorbutic vitamine.

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Young guinea pigs weighing 250–300 grams, fed on a diet deficient in water-soluble C (antiscorbutic vitamine), show at death a pronounced increase in weight of the adrenal glands amounting to approximately 100 per cent. when computed on basis of body weight minus alimentary canal. (Confirming McCarrison's statement.)

The increase in size is equally definite but not so pronounced when computed on basis of the beginning, or maximum, body weight attained. Starvation controls do not show an increase in adrenal weight.

The increase in adrenal weight is directly proportional to the length of time which the animal is on the scorbutic diet and is most pronounced in those animals in which life has been prolonged by affording them partial protection with small but insufficient quantities of tomato juice.

This may be interpreted as indicating a compensatory response to the decreased adrenalin production known to exist in the scorbutic animal. This point is of interest in connection with the extensive intramuscular and intestinal hemorrhages found in scurvy.

Our data comprising 40 scorbutic and 15 control animals gives no indication that the liver is affected by a lack of water-soluble C alone. There is, however, some evidence that the heart and kidneys are increased on the scorbutic diets.