Inasmuch as it may be said that the plasmolyzed material does not represent a true solution, a series of experiments were made with the filtered (Berkefeld) plasmolyzed liquid. While these experiments go to show that immunity can probably be induced by such filtered soluble products, they are not as decisive as they should be and for that reason will have to be repeated. The chief reason for this uncertain result is the rather frequent failure of the control rats to develop infection. Although young rats (50–80 grams) were used to guard against previous infection with trypanosomes, it is certain that a large percentage of the rats, as purchased on the market, have acquired an immunity against *Tr. Lewisi.* That the immunity encountered is really acquired and not natural is shown by the fact that we have many times isolated *Tr. Lewisi,* by means of the cultivation method, from rats which on repeated examination were found to be free from parasites and hence were supposed to be normal.

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On secondary transplantation of a sarcoma of the rat.

By **SIMON FLEXNER** and **J. W. JOBLING.**

[*From the Rockefeller Institute for Medical Research.*]

At a meeting of the Society held on October 17, 1906, we presented specimens of a sarcoma of the rat which was being transplanted successfully.[1] In the course of the transplantations the percentage of successful issues has reached approximately one hundred. In many series, every transplanted fragment developed into a tumor, and in none of the latter series has the percentage of "takes" fallen below ninety. The tumor having reached this maximum of infectivity, it was thought desirable to ascertain to what extent secondary transplantation would succeed. The method followed was to inoculate rats, in which a tumor nodule was already present, with another fragment of the tumor tissue. The second inoculation was made, as a rule, on the side of the body opposite the existing nodule, but in a few cases it was made in the tissues adjacent to the first nodule. After the second growth had developed to the size of a pea or bean, the rats were

[1] This volume, p. 12.

killed in order to determine whether metastasis from the first inoculation had taken place. The results of this series of experiments show that secondary inoculation succeeds in a high percentage of the rats in which no visible metastases can be seen, and in which visible metastases, in the lungs chiefly, are present. The exact figures will be given in the complete publication to be issued soon.

The results of this series of experiments bear upon the view expressed by Sticker, that a primary tumor protects the body from the development of a secondary tumor until the period of metastasis arrives, and upon Ehrlich's negative results in secondary transplantations of a rapidly growing mouse carcinoma. The sarcoma of these experiments is characterized by its infiltrative growth, but it increases far less rapidly than the most active of Ehrlich's tumors, and reaches, in relation to the size of the rat, no such large size as the latter does in proportion to the size of the mouse.

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On certain chemical complementary substances.

By **HIDEYO NOGUCHI.**

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In blood serum there is a constituent known as complement or alexin, which dissolves blood corpuscles or bacteria when the latter are properly sensitized. Its existence can only be demonstrated by the aid of immune bodies or amboceptors. The action of complement disappears when the serum gets old or is heated to 56° C. for a short time. The fate of complement after inactivation is not known. Complement is generally believed to undergo disintegration. Blood serum yields upon warm alcoholic extraction a substance or a group of substances of powerful lytic activity. The same is also true of leucocytes, glands and certain visceral organs. On account of some differences existing in the lytic mechanism and thermal resistance between genuine serum complement and alcoholic "extract lysins," no direct comparison has been made to establish a possible relationship between these two constituents. Complement is lytic only in the presence of immune