We have previously shown[1, 2, 3] that the non-acid-fast filtrable phase of a saprophytic acid-fast bacillus may revert to the original directly, or by way of the diphtheroid without its stabilization. But the interpolation of several stabilized non-acid-fast cyclostages between the filtrable form and the original is now shown for the tubercle bacillus. This establishes conclusively the reproductive or gonidial status of the filtrable form, which cannot be of "involution" nature.

Summary. Dissociation of the tubercle bacillus into a heterogeneous non-acid-fast progeny and its occasional reversion to the original is a very old observation. The S and R variability reversions are more recent, while demonstration of a filtrable phase (granules of Much and their congeners) for pure cultures is quite recent. The sum total of these observations constitutes a collection of "variability fragments", so to speak; but it requires orderly allocation by experiment to dispel the chaos that they have represented to monomorphic theory.

These studies represent, I believe, the first experimental integration of these several "variability fragments" in accordance with a single unifying conception, namely, the biologic sequences of a true life cycle. Single-celled cultures only have been employed. The variability of the non-acid-fast progeny is of such a character as to suggest strongly its implication with the genetic mechanism of the cell, which accounts in part for the following paper.[4]

6369

Therapeutic Effect of Specific Immune Serums Against a Metazoan Parasite (Cysticercus Fasciolaris)*

HARRY M. MILLER, JR.

From the Department of Zoology, Washington University, St. Louis.

Since it had been found possible[1] to protect the rat against infection with *Cysticercus fasciolaris* by means of serums from rats infected with this cestode or artificially immunized by powdered

[4] Lindegren, Carl C., and Mellon, Ralph R., PROC. SOC. EXP. BIOL. AND MED., 1932, **30**, 110.

* This investigation was made possible by a grant for research in science made to Washington University by the Rockefeller Foundation.

[1] Miller, H. M., Jr., and Gardiner, M. L., *Science*, 1932, **75**, 270; PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 779; *J. Prev. Med.*, in press.

worm, experiments were then carried out to determine whether such serums, given after infection, would inhibit development of the cysticerci. Accordingly rats were fed, by stomach tube, equal portions of a uniform suspension of onchospheres, and pooled serum from immune rats (infected with *C. fasciolaris*) was injected intraperitoneally, in proportion to body weight, at varying intervals after infection. Control animals of one group received normal rat serum, and those of another group were not given serum.

The results of 3 experiments with more than 140 animals show that the immune serums were effective in arresting the development of *C. fasciolaris,* when administered within about 9 days after the rats were fed onchospheres. At autopsy 28 days later cysts were completely, or almost completely absent in the animals of these groups, while numbers of large cysts (3 to 6 mm. diameter) were present in the livers of the rats of control groups. Cyst development was but slightly hindered in the animals of groups to which immune serum was given later than 9 days after infection.

The results of one experiment are given in Table I.

TABLE I.
Figures give the average number of cysts in liver.

Group	Injected with†	Days after Infection	No. of Rats	Cysts Living	Cysts Dead
Control			7	52	43
"	Normal rat serum	4	7	112	38
A.	Serum from infected rats	4	7	0.3	17
B.	" " " "	5	7	2	27
C.	" " " "	6	8	1	44
D.	" " " "	7	7	9‡	80
E.	" " " "	8	7	0.7	81
F.	" " " "	10	7	60	75

† 1 cc. of serum per 100 gm. body weight.
‡ 1 rat with 57 cysts raised this average from a fraction to 8.7.

6370

Effect of Certain Extracts on Basal Metabolism of Guinea Pigs.

WARREN H. COLE AND NATHAN A. WOMACK. (Introduced by E. A. Graham.)
From the Department of Surgery, Washington University Medical School and Barnes Hospital, St. Louis.

Urine from patients with toxic goiter was obtained in 5 gallon lots from such patients, concentrated and extracted with petroleum ether as well as alcohol. An equal amount of urine from presu-