intensity as does G586A. It will be noted, however, that when the latter was used rickets did not develop with long exposures, whereas when G86B was interposed marked rickets developed, even with exposures of 60 minutes at a distance of 9 inches. The chief difference between these filters is that G86B, which is a nearly neutral filter, allows far more of the longer visible rays to pass than does G586A, which is a purple filter. Further experiments are in progress to ascertain whether the interference of visible rays can account for these divergent results.

Filters of various clothing material were also employed. It was found that woolen as well as cotton goods interfered with the activity of the light in proportion to their thickness, but did not prevent protection if the dosage of irradiation was made adequate. Black cotton material filtered out the protective rays to an extent greater than white material of the same weave.

5 (1965)

The mechanism of bacteriostasis.

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The effect of bactericidal agents is often tested by adding these substances to the media on which the organisms are planted; and the assumption is usually made that if the substances, when present in the media, exhibit a selective hostility to bacteria they will exhibit a hostility—selective in the same sense—when added directly to the organisms themselves. This assumption is usually justified by the facts; no single exception to such a parallelism has been met with in the large number of experiments made with gentian violet and allied tri-phenylmethanes. We are in the habit therefore of reasoning from experiments which test bacteriostasis to conclusions as to bactericidal value, at least so far as selective features are concerned.

Proof will here be presented to show that this sort of reasoning is not always justified by the facts. Suppose for example that we plant *B. prodigiosus* and *B. megatherium* on acid fuchsin agar and find that *B. prodigiosus* grows well and *B. megatherium* not at all. We would then certainly expect that if these two organisms were exposed to acid fuchsin and planted on plain agar the latter would be killed and the former unaffected. As a matter of fact the opposite occurs. A similar result is obtained if the experiment be done with the flavines instead of with acid fuchsin.

If we describe the bacteriostasis which a substance exhibits when bacteria are exposed to it (before being planted on plain agar) as *intrinsic* bacteriostasis, and that which a substance exhibits when it is present in the media on which the unstained bacteria are planted, as *extrinsic* bacteriostasis: then we may say that the intrinsic selective bacteriostatic features of a substance so far from necessarily running parallel with its extrinsic selective features may run directly counter to them. There seems little doubt that these facts explain in part some of the discrepancies between laboratory experiments and clinical results.

Since certain dyes, like gentian violet, are highly bacteriostatic for some organisms which they penetrate little if at all (e.g., subtilis spores), and are almost without bacteriostatic effect on other organisms which they have penetrated thoroughly (e.g., *b. coli*) it is certain that selective bacteriostasis is not entirely dependent on selective penetration. There is considerable evidence for the assumption that selective bacteriostasis depends on H-ion concentration at the surface of the bacteria.

FILTRATION OF RAYS (MERCURY VAPOR QUARTZ LAMP)

Rat No.	Filter	Exposure		Lower Limit of Spectra of Filters	Rickets	
		Time (min.)	Distance Inches		Radiograph	Microscopic Examination
949 950 951	G 38 H (4.0 mm.)	10	12	475 $\mu\mu$	moderate moderate moderate	marked marked marked
1063 1064 1065 1066	G 38 H (4.0 mm.)	30	9	475 $\mu\mu$	moderate moderate moderate moderate	moderate moderate slight moderate
1204 1205 1206 1207	G 38 H (4.0 mm.)	60	9	475 $\mu\mu$	moderate moderate moderate moderate	moderate moderate slight slight

1302	Window Glass (2.6 mm.)	15	36	334 μμ	marked	marked
1303					marked	marked
1304					marked	marked
1305					marked	marked
1493	Window Glass (2.6 mm.)	30	9	334 μμ	marked	marked
1494					marked	marked (slight calcification)
1488		60	9	334 μμ	marked	marked
1489					moderate	marked
1490					moderate	marked
1491					marked	marked
952	G 586 A (4.32 mm.)	10	12	313 (302) μμ	moderate	extreme
953					moderate	marked
954					moderate	extreme
1067	G 586 A (4.32 mm.)	30	9	313 (302) μμ	very slight	minimal
1068					slight	minimal
1069					slight	minimal
1070					neg. (?)	almost neg.
1200	G 586 A (4.32 mm.)	60	9	313 (302) μμ	neg. (?)	negative
1201					neg. (?)	slight
1202					neg. (?)	negative
1203					neg. (?)	negative
1330	Pyrex (0.8 mm.)	15	18	289 (280?) μμ	negative	No. R.
1331					negative	No. R.
1332					negative	No. R.
1333					negative	No. R.
1516	Pyrex (0.8 mm.)	6	18	289 (280?) μμ	negative	No. R. osteoporosis)
1517					negative	
1518					negative	No. R. (osteoporosis)
1519					negative	No. R.
1512	Pyrex (0.8 mm.)	3	18	289 (280?) μμ	slight	slight
1513					negative	slight
1514					slight (?)	slight
1515					slight (?)	slight
1334	G 86 B (4.1 mm.)	15	18	313 (302) μμ	marked	marked
1335					marked	marked
1336					marked	marked
1337					marked	marked
1500	G 86 B (4.1 mm.)	30	9	313 (302) μμ	moderate	marked
1501					moderate	marked
1502					moderate	marked
1503					moderate	marked
1496	G 86 B (4.1 mm.)	60	9	313 (302) μμ	moderate	marked (slight calcification)
1497					marked	marked
1498					R (?)	marked
1499					moderate	marked