Age of culture (hr.)	No. of organisms	Ribose contents (μgm.)	Final No. of phage plaques per ml. (× 10^8)
4	2×10^8	4·6	37·8
4	3×10^8	6·9	21·8
20	3×10^8	2·2	77·0
44	3×10^8	0·9	2·6

reported an increase in yield of phage from *Staphylococcus muscæ* cells treated with a ribonucleoprotein fraction from yeast. On the other hand, Cohen[6] has shown that ribose is produced by the *B* strain of *Escherichia coli* from glucose and gluconate through an oxidative pathway not conducive to the synthesis of virus deoxyribonucleoprotein. On the basis of our results, it may be argued that one prerequisite for maximal phage production is a definite concentration of ribonucleoprotein. This concentration might be expected to vary considerably with the type of phage.

It may be of interest to know whether the coliphage here described constitutes a rare deviation from the norm, or whether the bacterial viruses studied in much detail in the past just chanced to belong to a common type. The ability of this phage to multiply in cells which are in a natural resting state should facilitate the evaluation of antiviral agents.

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[1] Adams, M. H., "Methods in Medical Research", 2, 11 (1950).
[2] Krueger, A. P., Cohn, T., Smith, P. N., and McGuire, C. D., *J. Gen. Physiol.*, **31**, 477 (1948).
[3] Gratia, A., *Ann. Inst. Pasteur*, **57**, 652 (1936).
[4] Kerr, S. E., and Scraidarian, K., *J. Biol. Chem.*, **159**, 211 (1945).
[5] Price, W. H., *J. Gen. Physiol.*, **32**, 301 (1948).
[6] Cohen, S. S., *Bact., Rev.*, **15**, 131 (1951).

An Examination of *Bacterium thiocyanoxidans*

In 1937 Happold and Key[1] isolated from sewage effluent treated with gas-works liquor an organism which was capable of multiplication in solutions containing only potassium or ammonium thiocyanate and phosphate. Ammonium sulphate and carbon dioxide were produced. The organism grew to form small dewdrop colonies on agar containing only thiocyanate, but it also formed large yellowish-green colonies on the surface of ordinary 'nutrient agar'. After growth on the latter medium, the organism failed to utilize thiocyanate when transferred to inorganic solutions, irrespective of the presence or absence of thiocyanate in the nutrient agar. Some time later[2] the isolation was made again, and the organism obtained showed all the same properties, including loss of the ability to utilize thiocyanate after growth to form yellowish-green pigmented colonies on media containing organic nutrients. During both isolation procedures, serial platings of the organism had been undertaken with successive selection of single colonies. The morphology of the organism and of the colonies formed on inorganic salt – agar medium appeared to be similar, although on the second occasion there was some evidence of the appearance of more than one type of colony on nutrient agar.

In view of the inability to utilize thiocyanate after growth on nutrient agar and of the suggestion of multiple colony formation when growing on the surface of this medium, it was decided to attempt to grow a culture from a single-cell isolation using the agar-block technique and dark-ground illumination[3,4]. Three types of organism were isolated. One grew in a simple solution of 0·01 *M* potassium thiocyanate and 0·01 *M* phosphate buffer at *p*H 6·9, utilizing the thiocyanate. The growth of this organism was strongly inhibited by the presence of organic nutrients in the medium. The two other types of organism grew slowly in ammonium thiocyanate medium, but appeared to use little or no thiocyanate. They grew well on the surface of nutrient agar and one produced a greenish-yellow pigment.

It must therefore be presumed that the culture originally called *Bacterium thiocyanoxidans* was, in fact, a mixture of organisms, growing in some form of symbiosis in solutions of thiocyanate not containing organic nutrients. Subcultured on media containing organic substances such as nutrient agar, the contaminating organisms are able to overgrow the thiocyanate utilizer, which apparently cannot multiply under these conditions.

Unfortunately, whereas in the original mixed culture the thiocyanate-utilizing organism appears to be very hardy and remains viable for many weeks in solutions of thiocyanate or on thiocyanate agar, in pure culture it is very delicate.

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[1] Happold, F. C., and Key, A., *Biochem. J.*, 31, 1323 (1937).
[2] Happold, F. C., and Rogers, H. J., *J. Gen. Microbiol.*, 2, xxxi (1948).
[3] Johnstone, K. I., *J. Path. and Bact.*, **55**, 159 (1943).
[4] Goldie, W., Gordon, M., and Johnstone, K. I., *J. Path. and Bact.*, **60**, 369 (1948).

Influence of Sulphur Nutrition on Leaf Morphology

In connexion with certain experiments dealing with the influence of sulphur nutrition on tobacco mosaic virus, the number of local lesions per unit leaf area was used as the criterion of susceptibility to the virus. The procedure involved the rubbing of a suspension of the virus on selected leaves of *Nicotiana glutinosa*, the test plant.

Sadasivan[1], working with plants adequately supplied with all essential elements, found that the product (length × width at widest point × a constant factor 0·88) compared favourably with more direct procedures as a measure of leaf area in *Nicotiana glutinosa*. The use of this formula is only valid, of course, where the particular experimental treatment does not lead to significant differences in the ratio of leaf length to width. Cursory examination of leaves from sulphur-deficient and control plants in the present work indicated that this requirement was not satisfied.

The methods employed for the culture of *Nicotiana glutinosa* were essentially those described for Turkish tobacco in an earlier communication[2]. Uniform three- to four-leaf seedlings were transplanted to complete solution from soil. After two weeks, half