the meantime, pending completion of the organization of the staff, the Iron and Steel Industrial Research Council will continue to be responsible for the large volume of research which is at present in progress, and the transfer of responsibility for the direction of this will not be made until the new organization is complete with director and headquarters staff. With the liberal financial provision which has been made by the British Iron and Steel Federation for an expenditure up to £250,000 per annum, a considerable expansion in present research activities is expected immediately the requisite personnel becomes available.

DISCUSSION

VARIANTS IN FUNGI: FORMATION, REVERSION AND PREVENTION

AN article by Hansen and Snyder[1] suggests nuclear heterogeneity (heterocaryosis)[2] as the probable cause of losses in ability of *Penicillium notatum* Westling cultures to form penicillin, and suggests remedies. The description of variant strains also applies to variants of *Aspergillus niger* v. Tiegh. obtained through chemical induction by Thom and the writer.[3] Nitrous acid and other compounds were used.[4] Reversion of variants to normal-appearing strains could be brought about by growth on high concentrations of amino acids, particularly lysine. Loss in ability to differentiate was attributed to upsets in the characteristic basal complement of enzymes employed in the utilization of amino acid nitrogen in the normal strain.[5] Inability to differentiate seemed proportional to extent of inability to utilize amino acid nitrogen, particularly hydroxyproline. The culture of *A. niger* employed has proved stable under laboratory conditions for twenty-seven years.

The use of amino acids may prove helpful in recovery of the normal strain of *P. notatum* after variant formation, though in some instances the reversion form is not identical with the initial strain. There is a distinct possibility that a cycle of variant formation and reversion might lead to better penicillin producers for this reason.

Autolyzed cultures of *A. niger* produce variants that seem to be eliminated by culturing at optimum temperature and frequent transfers. The procedure now used to maintain stock cultures in liquid medium includes growth at optimum temperatures until spore formation is well under way and storage in the ice-box at 10° C. until needed.

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[1] H. N. Hansen and W. C. Snyder, SCIENCE, 99: 264, 1944.

[2] H. N. Hansen and R. E. Smith, *Phytopath.*, 22: 953, 1932.

[3] C. Thom and R. A. Steinberg, *Proc. Nat. Acad. Sci.*, 25: 329, 1939.

[4] R. A. Steinberg and C. Thom, *Proc. Nat. Acad. Sci.*, 26: 363, 1940.

[5] R. A. Steinberg and C. Thom, *Jour. Agr. Res.*, 64: 645, 1942.

BACTERIOSTATIC AND FUNGISTATIC ACTION OF SOME ORGANIC CHEMICALS[1]

A RECENT abstract in *Chemical Abstracts*[2] reporting the use of sodium selenite in the isolation of paratyphoid bacilli in feces suggested the publication of some observations made in 1940. While attempting to develop a non-sterile technic for studying sugar absorption and assimilation of higher green plants, it was noted that several organic antiseptic chemicals possessed selective bacteriostatic and fungistatic activity.

The results presented in Table I were obtained in a diamalt agar media. The cultures were inoculated with a composite mixture of those air-borne microorganisms which were capable of growing in a liquid media comprised of inorganic nutrients and 0.25 per cent. glucose. The incubation period to determine the selective inhibitory action of the chemicals was six days at 30° C.

TABLE I

BACTERIOSTATIC AND FUNGISTATIC ACTION OF SOME ORGANIC CHEMICALS

Chemical	Concn. in p.p.m.	Selective inhibitory action	
		Bacteria	Fungi
Anisic acid	150	+	−
Benzoic acid	150	+	−
Chrysoidine Y	60	±	−
Chlorothymol	60	−	+
Hexylresorcinol	80	−	+
Sodium 2, 4, 5 trichlorophenate	10	−	±
8-hydroxy quinoline sulfate	10	−	±
Sodium ortho-phenyl phenate	60	−	±

Note: (+) Indicates inhibitory action.
(−) Indicates no inhibitory action.

The data suggest that some of these chemicals may have possible use in the separation of bacteria and fungi. It will be noted that anisic acid, benzoic acid and possibly chrysoidine Y at the concentrations tested selectively inhibited bacterial growth. Chlorothymol and hexylresorcinol selectively inhibited fungal

[1] Journal Paper No. 161 of the Purdue University Agricultural Experiment Station.

[2] M. A. Gohar. Sodium Selenite as a Bacteriostatic Substance and Its Use in the Isolation of Paratyphoid Bacilli. *J. Trop. Med. Hyg.*, 46: 29–32, 1943. (*Chem. Abst.*, 37: 5995, 1943).

growth. At least at the concentrations used, sodium 2, 4, 5 trichlorophenate, 8-hydroxy quinoline sulfate and sodium ortho-phenyl phenate produced variable fungistatic action. No doubt proper adjustment of concentrations would give more definite results.

These results thus indicate that the use of various bacteriostatic and fungistatic organic chemicals offer a means of separating bacteria and fungi in pathological organism isolation work.

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EDUCATION IN ARGENTINA

HAVING just returned to the United States after two years spent in Argentina, I can not refrain from passing along a few comments concerning certain changes which are taking place in education there.

Since the revolution of June 3 (1943), the Military Government in the field of education has carried on such policies as attacks upon progressive education and measures against foreigners, repressions in the form of new interventors in the various districts and institutions of higher learning, and affirmative measures emphasizing nationalism, Catholic instruction and totalitarianism in the university field.

In the universities all the deanships have been filled by the appointment of temporary administrators usually of totalitarian sympathy and of clerical stripe. The internal struggle for power within the military clique has resulted in a reshuffling of the ministerial posts and several men have occupied the position of Minister of Justice and Public Instruction. Each change in the position brings about the resignation of each of the interventors assigned to Argentina's six universities. This year, two weeks before the opening of the school year, only one of the six institutions of higher learning had any resemblance to a functional administration.

It may be important to keep scientists informed regarding the situation since under present conditions great caution must be used before further efforts are made by either institutions or individuals to contribute to the betterment of education or scientific research in Argentina. Until there is again freedom of assemblage, freedom of speech and freedom of the press, the opportunities for assisting the educational programs of the country by grants for research, libraries or exchange fellowships are greatly diminished.

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SCIENTIFIC BOOKS

CHROMOSOMES AND PHYLOGENY

Contributions to the Genetics, Taxonomy and Ecology of Drosophila pseudoobscura and its Relatives. By TH. DOBZHANSKY and CARL EPLING. Carnegie Institution of Washington Publication 554. Washington, D. C., 183 pp., 4 plates. Price, $2.25 (paper), $2.75 (bound in cloth).

WHEN T. H. Morgan's studies on *Drosophila melanogaster* led to a revolutionary development of the field of genetics, many taxonomists, paleontologists and other naturalists remained sceptical as to the significance of this work. A study of the mutations of a semi-domestic animal in milk bottles, they insisted, might well clear up the mechanics of inheritance and still leave us in the dark on the course of evolution in natural populations. This criticism was well taken, and students of *Drosophila* have turned in recent years with ever-increasing frequency to the outdoor study of wild *Drosophilae*.

Dobzhansky's ten-year work on the *Drosophila pseudoobscura* group finds its culmination in the present publication. A taxonomist by training and an outdoor naturalist by inclination, Dobzhansky was particularly well fitted to engage in research that covers the genetics, taxonomy and ecology of *Drosophila*. In the taxonomic section he shows convincingly, in joint authorship with Epling, that the so-called races *pseudoobscura* A and B have all the biological characteristics of good species. In spite of the minuteness of the external differences race B is raised to specific rank under the name *D. persimilis*, an action that will be applauded by all biologists to whom the species is more than a receptacle of morphologically similar specimens. The two species *pseudoobscura* and *persimilis*, together with *miranda*, are the only American representatives of the otherwise Palearctic *obscura* group.

The ecological section contains the first thorough account of a wild species of *Drosophila* considerably more detailed and informative than the preliminary descriptions of earlier authors. Particular attention is paid to the factors that affect the population structure, such as food preference, daily cruising radius, population density, daily and seasonal cycles and so forth.

The main body of the book is devoted to a study of the geographical distribution of the various gene arrangements in *pseudoobscura* and *persimilis*. The study of the giant salivary gland chromosomes of the *Drosophila* larvae makes it possible to determine where the chromosomal breaks took place and in what sequence the inversions must have occurred that have