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# EXPANDING CONSCIOUSNESS AND DEMOCRACY[1]

By Professor H. W. SHIMER

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FROM the point of view of a student of evolution it would seem that much of the trouble in the world to-day results from the age-old conflict between two major impulses of life. These are the impulses of each individual organism to live its own life in unhampered freedom, and the impulse of each individual to seek association with its own group. Life tends to vary, to differentiate, to individualize, a tendency which is in continued conflict with the "herd instinct," the impulse of individual organisms to come together for protection and aggression.

Evolution implies that through the long history of life new types have come into existence through descent, with slight modifications, of new individuals from pre-existing individuals. Life would long ago have vanished from the earth in the face of the difficulties and dangers in its environment, had it not been for this overwhelming urge of each individual organism to live and to reproduce.

While, however, life was limited to one-celled and self-sufficient organisms, there could be little advance in evolution. Later single cells came together to form many-celled larger units, with their enlarged possibilities. In each of these the component cells divided the labor of preserving the larger organism, and hence the existence of each individual cell came to depend on the existence of the other cells. And it is possible that in these larger many-celled organisms may have arisen the first diffused beginnings of the impulses which are sometimes classified together as the herd instinct.

From such cooperative beginnings the evolutionist traces the long succession of increasingly compact groups up to their culmination in the swarm, the herd,

[1] Address of the retiring president of the Boston Geological Society.

clotting or interference with the course of the experiment. Clotting has been prevented even in experiments in which agents which are known to produce intravascular clotting were used. The dye has proved very valuable in experiments conducted by students.

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## EFFECTIVE CONTROL OF CULTURE MITES BY MECHANICAL EXCLUSION

INVESTIGATORS working with fungi *in vitro* are unhappily familiar with the common mycophagous mites, which invade their test-tubes and cause many inconveniences by destroying pure cultures or by contaminating them with other fungi or bacteria. Control of these pests is claimed to have been effected by the use of various volatile chemicals which purport to kill the mites and their eggs. Since plant and other materials harboring these mites are brought almost daily into most mycological laboratories reinfestations readily occur necessitating repeated use of these chemicals, most of which are detrimental to fungous growth and noxious to the person using them. The method of control which was developed and is now being used in this laboratory is based on the positive exclusion of the mites from test-tube cultures by mechanical means. The materials to be used are: (a) 10 per cent. gelatin in water to which has been added 2 per cent. $CuSO_4$ to prevent fungous and bacterial growth, (b) 1 book of L.L.F. cigarette papers and (c) a heavy blotter. About 25 cc of the melted gelatin is poured into a petri dish and allowed to solidify. The cigarette papers are taken from the cover, the small dab of glue that holds the sheets together is cut off, the bundle of sheets is cut in halves, placed in a small preparation dish and sterilized in the dry oven. This treatment with dry heat tends to make the papers separate more readily. The ordinary laboratory procedure now follows: The cotton plug is removed, the tube is seeded and flamed, but instead of replacing the plug the tube is inverted and the hot rim is pressed gently against the surface of the solidified gelatin, thus becoming coated with a thin film of melted gelatin. By touching the gelatin-coated rim to the cigarette papers in the preparation dish the top sheet is neatly picked up and removed and then made to adhere more firmly by pressing it against the resilient surface of the blotter. The tube is now placed upright in a rack with other tubes similarly prepared and so arranged that the corners of the projecting pieces of paper touch. By igniting at a single point, the projecting paper on all the tubes will burn off, leaving neat, circular, paper seals that effectively keep out all faunal and floral contaminants. When sub-cultures are to be made the seal is readily burned off by flaming, and after the transfer is completed the process of sealing is repeated as before. For cultures in liquid media the gelatin is melted and painted on the rim of the tube with a small brush and the paper then placed on top by means of forceps. If so desired, the cotton plug may be retained but should of course be shoved well below the rim of the tube before sealing. We have tested several brands of cigarette papers, many other kinds of paper, several grades of Cellophane and other materials. All Cellophanes and treated papers such as waxed papers greatly depressed growth of the fungi and of all the others tested only the one brand of cigarette papers made a perfect seal and burned without leaving an undesirable black residue. The efficacy of the method was tested by placing together in the same drawer sealed cultures, unsealed, cotton-stoppered cultures and unsealed cultures heavily infested with mites. After a period of months only the sealed cultures remained free of mites. This new method of mite control has the advantage over older methods of being effective, nontoxic to fungi, inexpensive and easily applied. An illustrated account of this and other mite-control methods will be published elsewhere.

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## BOOKS RECEIVED

*American Chemical Society; Papers Presented before the Petroleum Division, Baltimore, April, 1939, Part 1.* The Society.

BERGMANN, LUDWIG. *Ultrasonics and their Scientific and Technical Applications.* Translated from the German by H. S. HATFIELD. Pp. viii + 264. 148 figures. Wiley. $4.00.

BRANDES, GUSTAV. *Bufchi; Vom Orang-Säugling zum Backenwülfter.* Pp. 135. 155 figures. Quelle and Meyer, Leipzig. RM 4, 80.

DAVIS, WILLIAM B. *The Recent Mammals of Idaho.* Pp. 400. 33 figures. Caxton Printers, Caldwell, Idaho. $5.00.

GATES, G. E. *On Some Species of Chinese Earthworms with Special Reference to Specimens Collected in Szechwan by Dr. D. C. Graham; Vol. 85, No. 3040, Proceedings of the U. S. National Museum, 1937.* Pp. 405–507. Smithsonian Institution, Washington.

HUDSON, JAY W. *The Old Faiths Perish.* Pp. 302. Appleton-Century. $2.00.

HYLANDER, CLARENCE J. *The World of Plant Life.* Pp. xxii + 722. Illustrated. Macmillan. $7.50.

LYND, ROBERT S. *Knowledge for What? The Place of Social Science in American Culture.* Pp. x + 268. Princeton University Press. $2.50.

RORTY, JAMES. *American Medicine Mobilizes.* Pp. 358. Norton. $3.00.

SIMMONS, JAMES S. and others. *Malaria in Panama.* American Journal of Hygiene Monographic Series, No. 13, January, 1939. Pp. xv + 326. 32 figures. Johns Hopkins Press. $1.10.