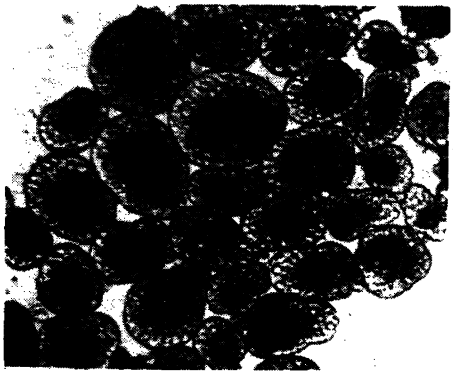

FIG. 1. Resting yolk cells from a hibernating egg at the beginning of incubation. Photographed about 5 min after the explantation (ca. ×280).

FIG. 2. Yolk cells changing form in the same preparation as shown in Fig. 1. Photographed 30 min later (ca. ×280).

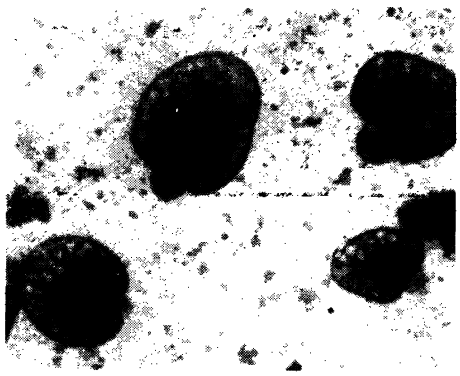

FIG. 3. Moving yolk cells (ca. ×400).

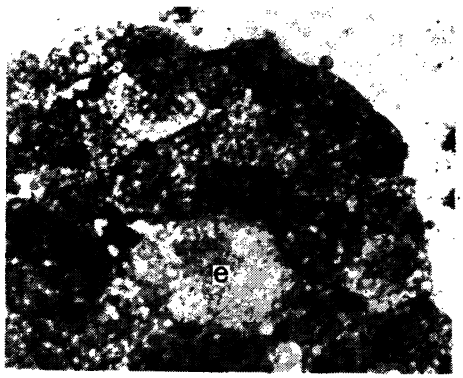


FIG. 4. Tissuelike grouping of yolk cells. e, embryo (ca. ×300).

after the explantation. They recover their round shape, and the neighboring cells come into intimate contact with each other to form tissuelike groups (Fig. 4). But some cells often continue to move for several hours, as seen under the microscope.

In hibernating eggs the active movement period of yolk cells covers about 1 wk or more, beginning about 40 hr after deposition. Then the yolk cells gradually become less active. In the nonhibernating and artificial nonhibernating eggs this period is very short, and continues only for a day or less. In these nonhibernating eggs the movement of yolk cells is not restored, whereas in the hibernating egg it is restored at the beginning of the next spring and is retained until just before the time of the curvature reversal of embryos.

Manuscript received August 26, 1953.

# Communications

## Unpopular Science

AT a recent meeting of representatives of federal agencies sponsoring biological and medical research, the question of the limitations imposed on scientists in regard to travel and security was discussed. I expressed the belief that both are merely symptoms of a growing distrust of science and scientists. This matter has concerned me for a long time. The problem is indicated by a number of phrases and statements (some only approximate quotations) which have appeared in speeches, articles, and books, particularly during recent months.

"Science is in conflict with society. . . . Science has failed. . . .Science is charged with some, if not most, of the failures, violence, brutalities, suffering and confusion of our times. . . .There is a growing anxiety to minimize and localize science. . . .Science is tolerated only on its best behavior. . . .It has become a passion and a luxury. . . .A sacred cow. . . .A cult of men in white coats. . . .Its revelations have been considered alien to the human spirit. . . .It will destroy civilization. . . .There is a steady hunger for irrationalism—unscientific and antiscientific

attitudes of mind. . . .Scientists are valuable but untrustworthy. . . .There is a widespread tendency in the public mind to identify science with destruction. . . .Science must not be permitted to go on a rampage. . . .Science is respected for its power; not for its spirit. . . .Moral incompetency of science. . . .A revulsion against science is said to be in the making. . . .Disappointment and suspicion enshroud science. . . .Hovering over science are storm clouds of suspicion, recrimination and fear. . . .There is abundant evidence to indicate a serious decline in the popularity of science and scientists during the past few years. . . .Scientists have been more pushed about by U.S. security regulations than any other group in our society. . . .Touting for their precious freedom, scientists are really speaking of permissive freedom—exemption from legal restraint in pursuit of knowledge. . . .Let's demand a moratorium on science."

This is only a small sample of expressions which I believe reflect attitudes now in ascendance. The trend may be insignificant, transitory, or even imaginary; or it may be very real and serious. Irreparable damage may be done before it is apparent. Of course, critics of science have always been with us and science from its beginning has contended with these attitudes. The contemporary criticism, however, while exhibiting the same ignorance and lack of understanding, is arising in new and powerful quarters, is aimed at our basic philosophy, and appears to be building up to the point where the "sins of science" is a popular topic of conversation.

Some of the causes of the adverse developments appear to be:

1. The concept that science and religion are in opposing camps—suspicion that science is largely responsible for whatever degree of abandonment there has been of moral principles and ethical standards.
2. The internationalistic outlook of scientists—misunderstanding of the scientific philosophy of free exchange of information.
3. Social neutrality of science—the detachment—the indifference of scientists to public attitudes—the practice that some scientists have of setting themselves apart, above, and beyond the rest of society.
4. The ridicule of areas of knowledge not subject to precise measurement, the disagreement among scientists themselves as to what can legitimately be considered "scientific."
5. The time lag between the views held by scientists and public awareness of such views.
6. Fear and resentment of the "destructive" power of science.
7. Disappointment in the wake of the exaggerated hopes penned by newspaper and magazine writers.
8. The extraordinary scientific illiteracy in America even among intelligent, educated people—ignorance of the basic precepts without which there would be no science at all.

The situation demands further study of causes and solutions. Science needs no special pleaders, but respect is a necessity and can come only with understanding. Scientists are dependent upon society for their privileges and it behooves them, no matter how many years it may take, to communicate a more accurate conception of science to as many people as possible. Naïve as it may sound, I am urging a deliberate effort to disseminate widely the story of science and the habits of thinking which underlie it.

Government scientists, particularly those dealing with administration and policy matters, are in a unique position to contribute to this effort. It seems to me that we not only represent science and scientists to our Government, but we also represent our Government to the scientific community. It is our responsibility to promote understanding and to resolve problems threatening their mutual interest. For example, if the structure upon which science has grossed its achievements is threatened by Government-sponsored intimidation and hysterical security regulations, or if our Government is threatened by dangerous views and affiliations of politically naïve scientists, we must in either case, or both, do more than observe the phenomenon. We must assume the freedom and take the risk, if necessary, of promoting a satisfactory general policy as well as safe and fair decisions in the individual cases.

When any misunderstanding, disappointment, or unjustified criticism arises, it must be met with an adequate, honest, and intelligent response. Some appropriate and respected organization should make a business of this. Of the three existing agencies—the National Academy of Sciences, the American Association for the Advancement of Science, and the National Science Foundation—which by charter have broad responsibilities for the welfare of science in the United States, can we hope that at least one of these will take the immediate initiative?

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[1] The opinions expressed herein are those of the author and do not in any way represent official statements from or reflect the policies of the Office of Naval Research, Department of the Navy.

Received December 10, 1953.

## Nomenclature of the Amines Derived by Decarboxylation of Cysteine and Cystine

THERE exists some confusion in the biological literature about the chemical significance of the name cystamine. The importance of β-mercaptoethylamine in the chemistry of coenzyme A and in protection against ionizing radiations suggests the necessity of a trivial name, for the specific purposes of biological discussions, which shows its relation to cysteine and avoids confusion with the corresponding disulfide.

We agree to accept *cysteamine* for β-mercaptoethylamine ($HS—CH_2—CH_2—NH_2$) and *cystamine* for β,β′-diaminodiethyldisulfide