success. Pending that analysis, the chromosome theory, though providing much that is certainly true and of immense value, has fallen short of the essential discovery" (p. 235).

However profound our present ignorance of the method of ontogenetic segregation may be we are nevertheless bound to conceptions of strict determinism concerning the phenomena involved. The phenomena of genetics and of embryonic induction exhibit strict experimental determinism, which would be impossible if the ontogenetic processes on which both depend were not deterministic also. Nothing that has been said in this essay should be interpreted in any contrary sense. The processes of embryonic segregation are open to observation and experiment equally with the processes of genetics and of embryonic induction. My contention is merely that we have no present working hypothesis effective in this most fundamental aspect of the life history.

The dilemma at which we have arrived appears to be irresolvable at present. It is the apparent duality of the life history as exhibited in the associated phenomena of genetics and ontogeny: on the one hand the genes which remain the same throughout the life history, on the other hand the ontogenetic process which never stands still from germ to old age. It is no confession of weakness that we should admit our inability to form a picture of life-processes that have taken longer to evolve than the mobile crust of the earth itself. Instead of distorting our workable conceptions to include that which they can in no wise compass, may it not be profitable, for a while, to admit that more lies without than within our confines of mechanism and statistics? If physics and chemistry will not be complete until they have explained the action of their units in living matter, that is after all their affair. Certain it is that physics and chemistry have no place among their categories for the ontogenetic process and *a fortiori* for the phylogenetic. Why not surrender ourselves, in consideration of these problems, to the current of more naïve biological categories?

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

NEWSPAPER REPORTS ON THE MEETINGS

IT is commonly remarked that the general public, throughout the reading world, is increasingly interested in the progress of science. Practical achievements, such as inventions and directly useful discoveries, have long interested people not specially trained or engaged in scientific work, for such achievements affect the daily routine of ordinary life, but the last decade has witnessed a remarkable development of public interest in the more easily discussed aspects of scientific research and scientific progress. Intelligent people now wish to read about advances in knowledge that do not apply directly to their daily activities, and this desire appears to be rapidly spreading and becoming more intense. The technological or applied aspects of scientific progress remain, of course, the subjects of most popular discussion, and superficially descriptive science, including mere observational facts without discussion of relationships, naturally constitutes a large part of what is prepared for popular scientific reading.

All three of these different aspects of scientific knowledge — observational facts, applications that economize time or simply make life more pleasant or more gainful in the financial way, and theoretical or philosophical advances in interpretation or appreciation of relationships between objects of knowledge— are receiving much more popular attention than ever before. In this and many other countries writers for newspapers and magazines and for radio talks, and also those who have charge of museums, are increasingly occupied with the popular presentation of science material. Many writers are primarily so engaged; this sort of work is becoming an important branch of the teaching profession in a broad sense. The demand increases more rapidly than the supply, which may be taken to indicate that the reading public really desires all kinds of science material presented in simple fashion.

For many years the American Association for the Advancement of Science has tried to facilitate the popular reporting of its meetings, but it is only recently that its efforts have been met half-way by the

COLUMN-INCHES OF SPACE GIVEN BY EIGHT NEWSPAPERS TO REPORTS OF THE FIFTH PHILADELPHIA MEETING

	Sections	Philadelphia Evening Ledger	Philadelphia Public Ledger	Baltimore Evening Sun	New York Times	New York American	New York World	Boston Transcript	Christian Science Monitor	Total
A.	Mathematics				9.25	7.25	13.25			29.75
B.	Physics	15	3.50	9.75	17.50	17.50	12	62.75	1.25	139.25
C.	Chemistry			4		1.50	1.50	6.50		13.50
D.	Astronomy	6.25	23.75	24	17	32.50	41.25	23.25	11.25	179.25
E.	Geol. and Geog.	26.75	21.50			2		12	30	92.25
F.	Zool. Sciences		14	21	32.25	3.75	1.25	21.50	1	94.75
G.	Bot. Sciences		4.50	4.25	2.50		1.50	26.25	26	65
F–G.	Additional zool. and bot. material, not separated			16	31	8.25	6	8.50	2	71.75
H.	Anthropology		2.75	11.50	15	4.25		5.75	14	53.25
I.	Psychology	6.75	9.50	17.50		11.50	5.50	34.75		85.50
K.	Soc. and Econ. Sciences	5.25	42.50	7.75	5	19.50	6	52.50	34	172.50
L.	Hist. and Philol. Sciences		12.50		31.50		8	13.25		65.25
M.	Engineering		8							8
N.	Medical Sciences		5	6.25	7.50	7	8	51.25		85
O.	Agriculture			1.75			2.50	12.50	13.50	30.25
	Education and Science in general	14.75	87.75	3.50	7.25	16	6.75	16.25	42	194.25
	Total	74.75	235.25	127.25	175.75	131	113.50	347	175	1,379.50

news writers for the press. At the great Chicago meeting in 1920 the few press representatives who were present were apparently not greatly interested in attempting to report the scientific material presented at that meeting. Those were times when editors seemed generally to desire amusing incidents and slap-stick comedy at the expense of science workers, and little energy was expended to present science in a popular way. The public had little opportunity to learn what science workers were trying to do. Such an attitude on the part of the daily press aroused antagonism in the minds of the speakers at meetings of workers in science and made it more difficult for a news writer to secure useful material, even when that was attempted.

Beginning with the Toronto meeting in 1921, these conditions have changed rapidly and very thoroughly. Many of the most able writers of popular science have attended the recent meetings and have gone more than half-way in meeting the attempts of the association to get science and the scientific method of work before the public. Press reports of the meetings have become increasingly more thorough and more adequate. The antagonism of science workers has now largely disappeared and leaders in research are now generally willing to aid the representatives of the press in this important work. At the same time, the association has put forth greater effort in this direction. Hundreds of abstracts of papers to be presented at the meeting are secured beforehand from the speakers and are placed at the disposal of the representatives of the press, for release at proper times. Arrangements are also made to facilitate the interviewing of science workers by press representatives. Photographs of prominent speakers are supplied to the press in many instances. A special news office has been made a part of the annual meeting, in charge of a news manager who represents the association.

Several of the great American daily papers usually have special representatives detailed to report the association meetings, representatives who are masters of the art of popular scientific presentation, and the same is true of several news agencies. Science Service, in the founding and operation of which the association has been specially interested, has been well represented at recent meetings and its work has been very helpful.

The last annual meeting, at Philadelphia, may be taken as an illustration of the present status of the

reporting of association meetings in the daily press and the data given in the following table will be of interest in this connection. This table has been prepared by Mr. W. Eric Drake, of the Washington office of the association. Eight leading newspapers that gave special attention to the meeting were selected and the amount of space given by each of them to news from the meeting, for each branch of science and for science in general, was determined in terms of column-inches. Illustrations were not included; they are generally half-tone reproductions of photographs of eminent men, though pencil sketches are sometimes used. The results are the data given in the table, the names of the eight dailies being shown at the top. The several fields of science are shown in the first column, referring generally to the sections of the association. But it will be noted that the F-G category includes material of zoology and botany that could not be readily separated. Also, the last category of the list is, for the same reason, made to include both general science and the special field of education (Section Q). To avoid these combinations, which are perhaps not logically satisfactory, would have required more time and attention than seemed to be justified in such a little study as this.

Members of the association and of the associated societies who are interested in this aspect of the popularization or humanization of science will find interest in the fact that the permanent secretary's office now prepares regularly a scrap-book of newspaper clippings for each annual meeting, each clipping being marked to show the name and date of the paper in which it appeared. The clippings are attached to strong sheets, which are finally bound in permanent form. These scrap-book volumes may well be of considerable interest as time goes on. They form a part of the association archives. Any one who cares to examine the scrap-books may do so at the Washington office at any time.

Turning to the table of measurements of space given by the newspapers to reports of the fifth Philadelphia meeting, it will be noticed that all eight papers together devoted nearly 1,400 column inches to the sessions. The largest space (347 in.) was given by the Boston *Transcript* and the next largest (235 in.) by the Philadelphia *Public Ledger*. As to the amounts of space devoted to the association sections by all papers together, it appears that Section D (Astronomy) was most generously treated and that nearly as much space was devoted to the programs of Section K (Social and Economic Sciences). Section B (Physics) received a large amount of space. If zoology and botany were combined (items F, G and F–G in the table) the resulting total (232 in.) would be larger than any other in the table, but the separate items are not very large.

If one studies the general program of the meeting it becomes clear that at least three factors take part in determining the amount of space devoted to any branch of science: the number of papers presented in the given branch; the adaptability of the material presented, with reference to popular accounts such as are suitable for newspaper publication; and the degree of reportorial or editorial interest in the given branch. The figures given in the table are not to be taken to represent any single one of these factors, but in some cases one factor appears to have dominated while in other cases another factor seems to have been most pronounced. Mathematics is perhaps least adaptable to popular presentation and only three of the dailies attempted to do anything with this field. On the other hand, all of the eight dailies dealt with physics and astronomy as well as with social and economic science. Special editorial interest, or lack of interest, in certain fields appears to be indicated in some cases.

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SCIENTIFIC EVENTS

RESEARCH FELLOWS AT YALE UNIVERSITY

INVESTIGATIONS into scientific and literary problems are being made this year under Yale University auspices in Greece, England, Scotland, Germany, Austria, Belgium, Russia and Africa, according to an announcement by Dean Wilbur L. Cross, of the Yale Graduate School.

Eight holders of Sterling fellowships, the funds for which were provided by the trustees of the estate of John W. Sterling, are carrying on their work abroad. These include: Dr. Hempstead Castle, who is in Europe collecting material for a world monograph of the known species of radula; Dr. Filmer Stuart Cuckow Northrop, who has been studying in Berlin and Zurich the generalization beyond the general theory of relativity, and Dr. Prescott Wilson Townsend, who has been continuing his archeological research in northern and western Africa.

John Wynn Gillespie, M.A., Stanford University, and Victor Pietschmann, University of Vienna, who are the holders of Bishop Museum Fellowships, are conducting research in botany and zoology in the islands of the Pacific. Mr. Gillespie is concentrating on the Fiji and Samoa Island groups, and Dr. Pietschmann on the New Hebrides and Loyalty Islands.

Six of the scholars awarded Sterling fellowships