was itself embryonic. So they remained special cases. But once the needed ingredients were available, they could be combined to form a viable structure. One is reminded of the self-assembly of the components of the bacterial virus coat: provide the necessary protein components and the proper conditions, and the assemblage forms the structure. It is not unlikely that some such process is at the root of the tendency for multiple discovery: the appropriate information must be available before the new idea can appear; and if this is so, then the chance of its appearance will be a function of the number of people who are interested in the problem.

Where does this leave the hero? Merton is concerned to point out that geniuses differ from other folk not so much in having unique ideas, but in having more of them. One then has an insight into scientific history closer to Tolstoy's view of secular history as due to the mass movements of people, rather than to the specific dynamism of their leaders. These are important, sometimes critically so, but in response to the pressures of the age. So also in the history of science: as information accumulates, new combinations of facts yield new insights, the individual hero serving almost as a vehicle for transmission of the collective intelligence of the culture of which he is part.

This interdependence of advances in different fields points to a regrettable shortcoming in Carlson's range of view: it is parochial. He seems unaware, for example, of the interrelations between cell biology and genetics, omitting any reference to the work beginning in the late '30's which revived the interest in nucleic acids, provided methods for their study in chromosomes, pointed up their consequence for protein synthesis, and in general laid the groundwork for the microbial experiments in which the definitive answers were obtained. There has come into existence a canonical text, in which bacterial transformation begins the story and all the other work is forgotten. It provides a rich chapter of history, important in displaying the contingencies governing advances in science.

Finally, a word about the style of the book, which ranges from lively to grandiloquent. A good editor could have spared us such sequences as the following: "Like Pandora's box the gene through the mind of genius unleashes a horde of implications which are both awesome and prophetic."

Books Received

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