

notably the relation between principle and action, theory and practice.

The hero is Charles Osman, a professor of history at a small co-educational college, who has been so ill-advised as to fail the indispensable halfback, Raymond Blent, just before the homecoming game. The heinousness of Osman's offense is explained to him by a large number of people: the president of the Student Council and a member of the student honor committee; Blent's girl, Lily Sayre; the president of the college; and the coach. Finally Blent himself visits Osman and reveals that he has—for no reason that he can explain—accepted money to throw the game, and has consequently failed two courses in order to make himself ineligible to play. And a further series of interviews and discussions follows.

Charles Osman, having acted responsibly in judging Blent's work inadequate, is driven by every imaginable force to retract his decision. Since he is not unsympathetic to Blent and has no wish to become a martyr, he temporizes. At once the whole fabric of the college (and, indeed, of society itself) is endangered—if one can believe Mr. Nemerov's fable. But this is precisely where the



book proves most disappointing. Osman, in order to carry the fullest freight of Mr. Nemerov's meaning, must be more than the man whose innocent action has set in train a course of events; he is also the guilt-ridden widower of a suicide, he is a Jew and therefore an object of anti-Semitism, and he is the would-be lover of Lily. All this existentialism aside, there are simpler problems: why does Blent allow half a dozen people to see Osman in his behalf before seeking him out directly? Why, worst of all, did Blent commit the *acte gratuit* of accepting a bribe that he neither wanted nor needed? These are among the more obvious corners that Mr. Nemerov has cut in contriving his plot; unfortunately, they deprive his characters of the plausibility without which they cannot live.

—M. C.

A RECOGNIZABLE SOUTH: Two years ago Doris Betts's collection of short stories "The Gentle Insurrection" won her the respectful, almost startled attention of the critics and the \$2,000 award in the first Putnam-University of North Carolina contest. Now comes her second book, "Tall Houses in Winter" (Putnam's, \$4.50), the story of a man who returns to his home town to confront the secrets of the past, hugging the memory of his lost, pitiful, incestuous love, summarizing his different levels of experience, and trying to reach decisions and make plans for the future of the wistful, likable boy, who is probably his son.

The title is appropriately taken from the poem by Anthony Cronin, reproduced on the first page. "Tall Houses in Winter" is a substantial first novel, well constructed, well sustained, evocative of a South recognizable to the majority of Southerners. The characters, too, are recognizable, everyday people, though some of them are a little too typed, a little too pat, to convince readers of "The Gentle Insurrection" that this is the best Mrs. Betts can create. It is good to know that she can sustain the weight of 383 pages without faltering and can handle complexities of plot and counterplot in a far-better-than-average book, but she is a greater artist in the short story than she proves herself to be—so far—in the novel.

—EVELYN EATON.

DOOMED MAN ON MADISON AVENUE: "The Wall-to-Wall Trap," by Morton Freedgood (Simon & Schuster, \$3.50), describes a now familiar syndrome:

the case of the adman or flack trapped by his appetite for luxury into following a trade that wounds his sensibilities. In Mr. Freedgood's high-speed novel, the well-fed but dyspeptic victim is the publicity director (identified only as "Ted") of the Above All Pictures Corporation. Ted arrives at his office one sunny morning, and after checking the premises for the hidden microphones that are sometimes there, discovers that he is the victim of an office rumor: namely, that he is about to be fired. What happens before the canard finally becomes authentic, crystallizes all of Ted's relationships—with Larry, his boss; with Tubby, his logical successor; with Willie, his sponsor; with Roxanne, his wife.

Perhaps the keynote to Ted's character lies in a nocturnal conversation he has with his wife, in which he refers to himself as leading a life of quiet desperation. "It may be desperation," says his stolid helpmeet, "but it damn well isn't quiet." It is Ted's unhappy pattern to rant bitterly about the suffocating quality of his overstuffed habitat, to excoriate Willie, who has a generosity mania, and to wish loudly for a life with more freedom and less upholstery. But rant is all he does, and when the ax does fall he is still the half-willing captive of his lush life.

Mr. Freedgood writes knowingly of the nastier aspects of office politics, and his novel carries the reader along at a dizzy pace from the moment that his jittery hero gets wind of the rumor, until he is administered the coup de grace.

—MARTIN LEVIN.



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Answer to Literary Crypt No. 721

You've no idea what a poor opinion I have of myself, and how little I deserve it.

—W. S. GILBERT.

How Social is Science?

Continued from page 11

there were more important inventions. In the area of basic knowledge there was endless speculation about the nature of things and valuable work in mathematics, physics, biology, and astronomy. The point is that all this remained the province of the philosopher. (I should perhaps make a small exception for medicine, which by Galen's time was on the verge of becoming truly scientific—but this petered out.) On the one hand, there was a body of theory, on the other a good deal of empirical fact and useful technique. But the two were never joined, and it is precisely this wedding of analysis and experiment which constitutes science.

THERE was no natural law forbidding the event in Hellenistic times. Though the Greeks suffered from certain deficiencies, such as the lack of good optical glass, this could have been overcome. They must have noticed the magnifying effect of a sphere of glass, and a few years of work ought to have produced a decent lens. The need for such a lens could have occurred to any physician or jeweler. Even without making up these lacks, the Hellenistic world could have performed most of Galileo's and Newton's experiments, such as those involving pendulums and falling bodies.

To get very far in these lines they would have needed a mechanical clock, but such devices had already been adumbrated.

Why, then, did they fail to create a science?

Technical deficiencies must be a partial answer. Since there were no lenses to start with, Lippershey's accidental invention of the telescope was not possible. Though communications were not much worse than in the Renaissance, there was no printing press, which made it harder to establish a universal community of scholarship. But these troubles were not insuperable, and do not explain the failure to conduct methodical experiments with the apparatus available.

It was not lack of intellectual enterprise. The Greek thinkers were men of enormous curiosity and ingenuity. But this intellect was faced in another direction from that of Western society. Experiment was not respectable. The goal was pure knowledge, independent alike of the senses and of any merely practical application. No philosophy was considered to need empirical proof. Even Hero and Archimedes were rather apolo-

getic about their own material accomplishments, and they never attracted many disciples.

These are purely social phenomena, perhaps due to large slave populations. Manual labor, even the most skilled, was not fit for the Hellenistic intellectual, only for slaves and artisans. The plentiful supply of cheap labor not only made such work socially degrading, but left small inducement to create new machines; in our world engineering problems have started off much pure research, for example in thermodynamics. (A similar attitude prevailed in the heyday of Spain, and it is interesting to note how few Spaniards have made contributions to science, despite their talents in other endeavors.)

When Classical civilization collapsed the so-called Dark Ages set in. To some degree, this is a misnomer. Though politically chaotic, the period was one of great technological advance. Not only were Hellenistic machines like the water wheel put to extensive use, but major innovations such as the horse collar, the horseshoe, the moldboard plow, and the deep-water ship were made—all this in the "Dark Ages" proper, say prior to the Hildebrandine Papacy. Thus, a preoccupation with mechanics has characterized Western society from its very birth, an attitude which other cultures, such as the Byzantine, found rather repugnant. Technological improvement continued at an accelerating pace through the high Middle Ages, roughly 1050-1450, and at this time the intellectual foundations of the present world were being laid. Obviously, no one could build a Gothic cathedral by merely piling up stones; considerable precise thought was required of the architects.

By the Renaissance gunpowder, clocks, the magnetic compass, and clear glass had become everyday; so too, and far more importantly, had the habit of wondering what the world was actually like, rather than what it ought to be like. Galileo did not spring from nowhere: some of his father's writings, remarking on the foolishness of those who blindly accept authority, are extant, and reflect a general climate of opinion. Not only had the working engineer reached a level which would have astonished his Roman ancestors, but the philosopher was considering that same world in which the engineer operated. And engineer and philosopher respected each other!

But the cause of the development is obscure. Very likely the fact that, in the Western world, trade and handicraft have generally been socially acceptable was important. The capitalist—and the Middle Ages had capi-

talists on a grand scale—will naturally be interested in useful discoveries, and support the men who can make them. This attitude will, in turn, influence the clergy, the aristocracy, and the military, if these are dependent on the mercantile class as they normally have been in Europe. For instance, a systematic interest in astronomy might well have derived from the navigators of the fifteenth and sixteenth centuries, to whom exact knowledge of the heavens was important. A more recent example would be Rumford's spadework on the conservation of energy, based on a study of the industrial process of boring cannon. Generally speaking, the expansion of industry has offered to both pure and applied science a continuous necessary stimulus in the form of challenging new problems.

TO summarize, the scientific method appears to have been born in the later European Renaissance after a gestation extending well back into the Middle Ages. Its ancestry is obscure, but may to a large degree be the triad: accumulated technology, Christian respect for order and theory, and a vigorous practical-minded capitalism. Whether this be right or wrong, it seems clear that science was not a matter of inevitable progress, but of the accidentally right combination of social circumstances.

The result of this inquiry is not only useful for scholars. True, the origin of science, if this could be established precisely, would be an interesting bit of scientific knowledge in itself; and it is a grave mistake, ultimately fatal to all intellect, to insist that everything must have worldly applications. I have repeated often enough that practical knowledge of the how-to-do-it variety is not science: the Chinese made fine paper, the Arabs were excellent metallurgists, the Polynesians were tremendous navigators, and none of them were scientists. At the same time, though, we have many other examples, with the Greeks the most obvious one, to show us how quickly a body of exact thought degenerates into sterile metaphysics when it is divorced from the real world.

Perhaps it can be proven, as I have only been able to suggest, that the scientific enterprise is a social enterprise: that the discoveries we make—even the kind of discoveries, or whether we are to make any discoveries at all—depend on the society in which we live. If so, we might well take a little thought before changing the conditions of that society too much. It is all too possible that we may improve and organize our science out of existence.