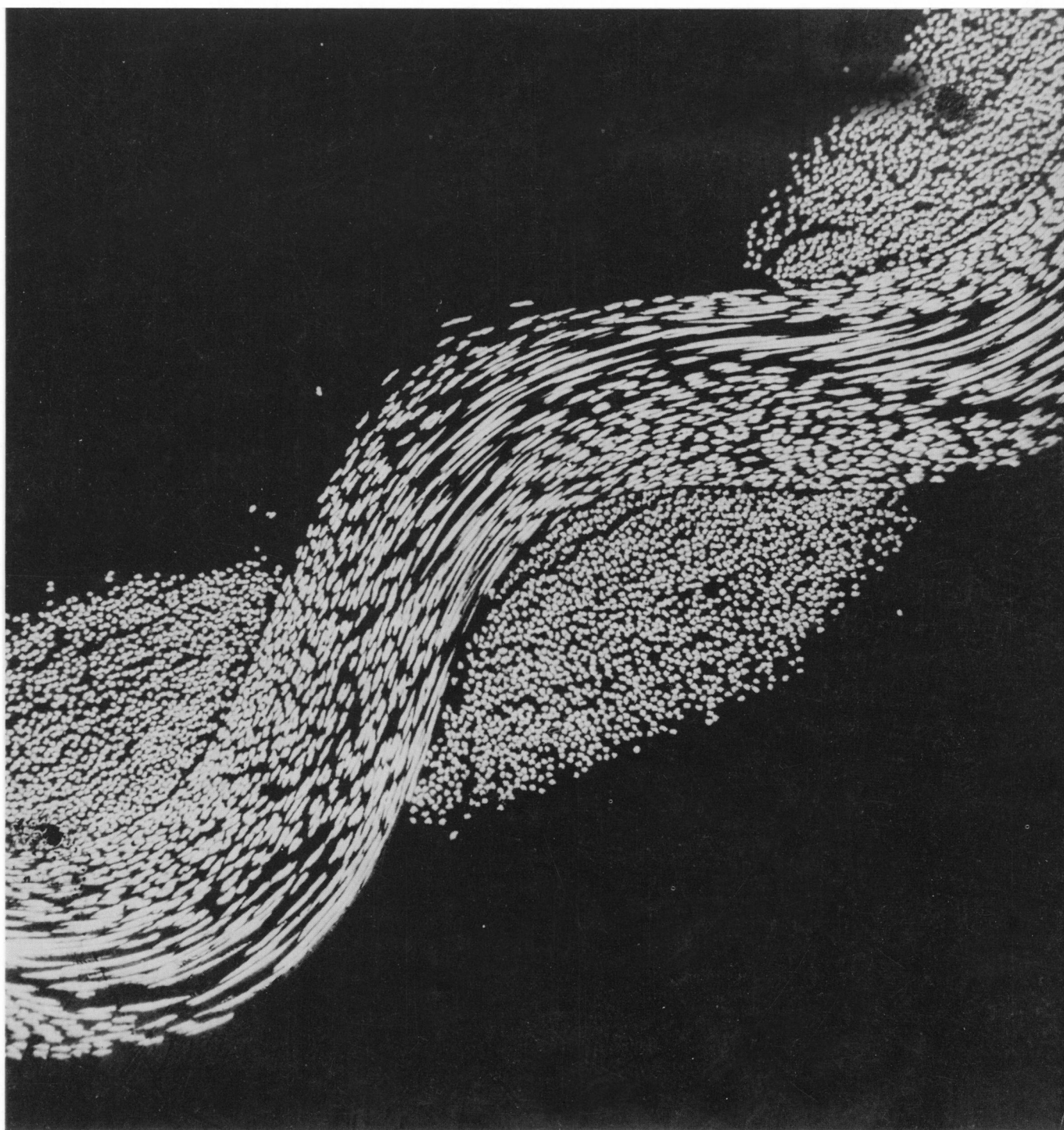


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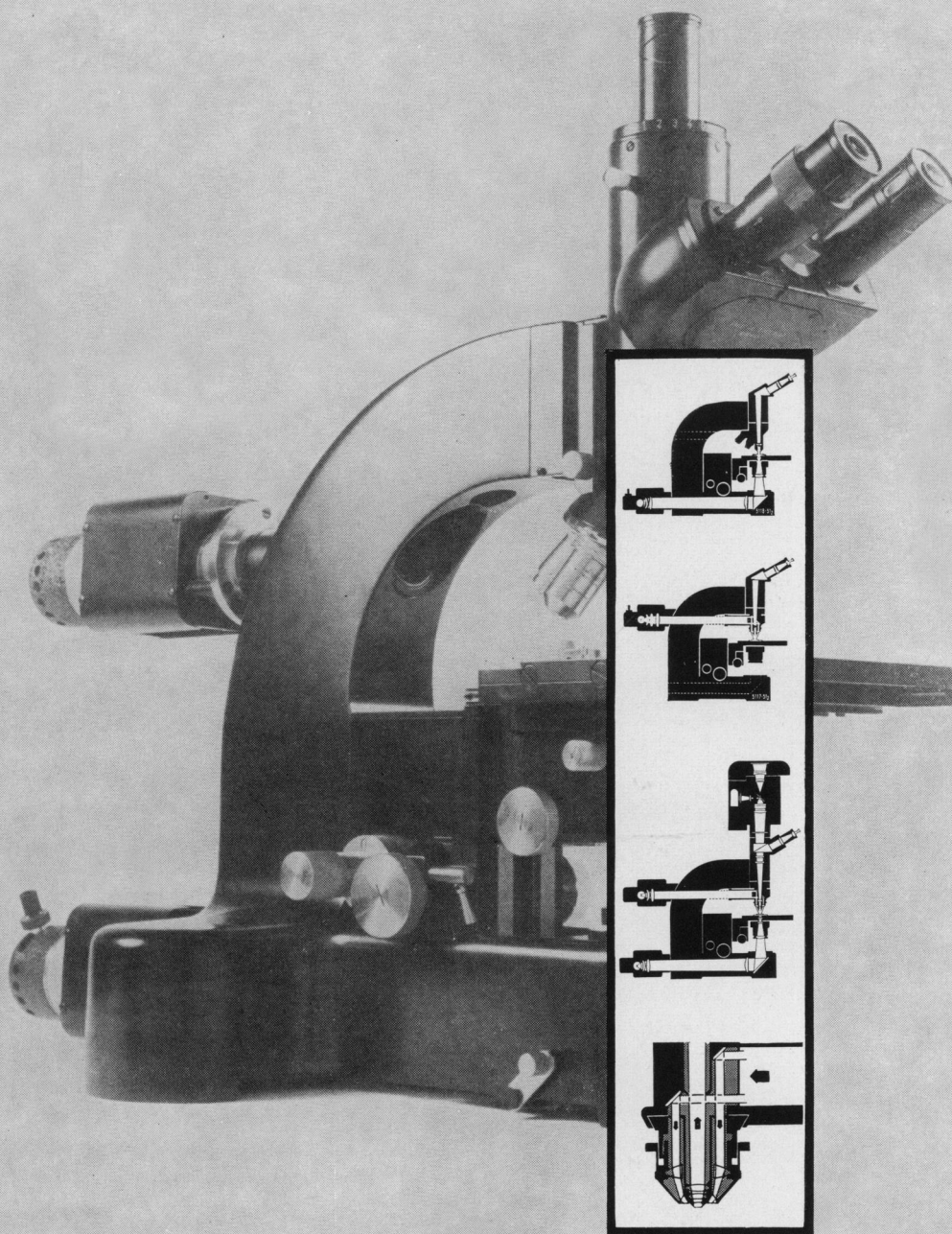
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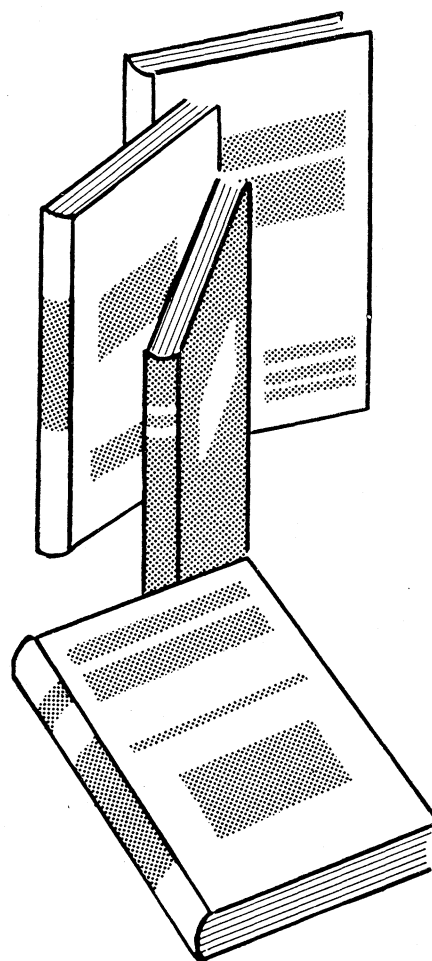
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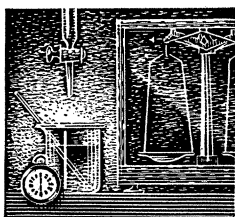
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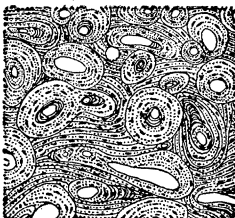
# IT HAPPENED THIS MONTH...

*a glance at yesterday in relation to today*



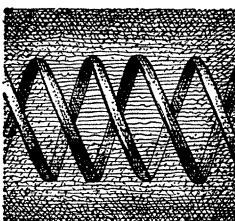
IN NOVEMBER — (1850) — *American Journal of Science and Arts* reports a talk by A. Voelcker in which he attempts to show that there is considerable inaccuracy in the usual estimation of the nutritive qualities of food (based upon determination of total nitrogen). The food under discussion is a fungus called *Agaricus pruness*, which is highly edible and remarkable for forming most beautiful fairy rings. Protein was separated by precipitation with basic acetate of lead, and nitrogen determined by combustion. Results indicate that less than 5 per cent of the nitrogen in the dry fungus exists as proteine compounds and nearly one-third is ammonia or some other form without nutritive value.<sup>1</sup>

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IN NOVEMBER — (1937) — Thannhauser and his co-workers<sup>2</sup> report some studies on the effects of thiol compounds on phosphatase activity of human serum. In a previous paper they had reported a marked activation of serum phosphatase by ascorbic acid. Now, cysteine and reduced glutathione are shown to produce a sharp decrease in phosphatase activity and to neutralize ascorbic acid activation. This deactivation occurs in serum taken from normal individuals and from patients with Paget's disease (a bone disorder characterized by high serum phosphatase levels). However, these impressive deactivating effects of cysteine cannot be reproduced *in vivo*.

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IN NOVEMBER — (1956) — the Watson-Crick structure of DNA is slightly modified. They had assumed that one of four pairs of complementary purines and pyrimidines (adenine-thymine, thymine-adenine, guanine-cytosine, and cytosine-guanine) is present at each level of two intertwining polynucleotide chains. Each pair was presumably linked by two hydrogen bonds. The model provides a postulate for the duplication of genes: the two polynucleotide chains could separate, and each might serve as a template for replication. Now, study of crystal structure data by Pauling and Corey indicates that adenine and guanine should be linked by *three* hydrogen bonds. This corresponds to a higher degree of specificity and therefore strengthens the Watson-Crick theory of gene duplication.<sup>3</sup>

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1. Voelcker, A.: On the percentage of nitrogen as an index to the nutritive value of food. *Am. J. Sc.* 10:403 (Nov.) 1850.
2. Thannhauser, S. J.; Reichel, M.; Grattan, J. F., and Maddock, S. J.: Studies on serum phosphatase activity. IV. The deactivating effect of thiol compounds and bile salts on serum phosphatase activity in vitro and in vivo. *J. Biol. Chem.* 121:721 (Nov.) 1937.
3. Pauling, L. and Corey, R. B.: Specific hydrogen-bond formation between pyrimidines and purines in deoxy-ribonucleic acids. *Arch. Biochem.* 65:164 (Nov.) 1956.



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## The Well-Rounded Man

"Musical, literary, artistic, but I should say normal—a very charming girl."

"Margaret's anger and terror increased every moment. How dare these men label her sister! What horrors lay ahead! What impertinences that shelter under the name of science!"

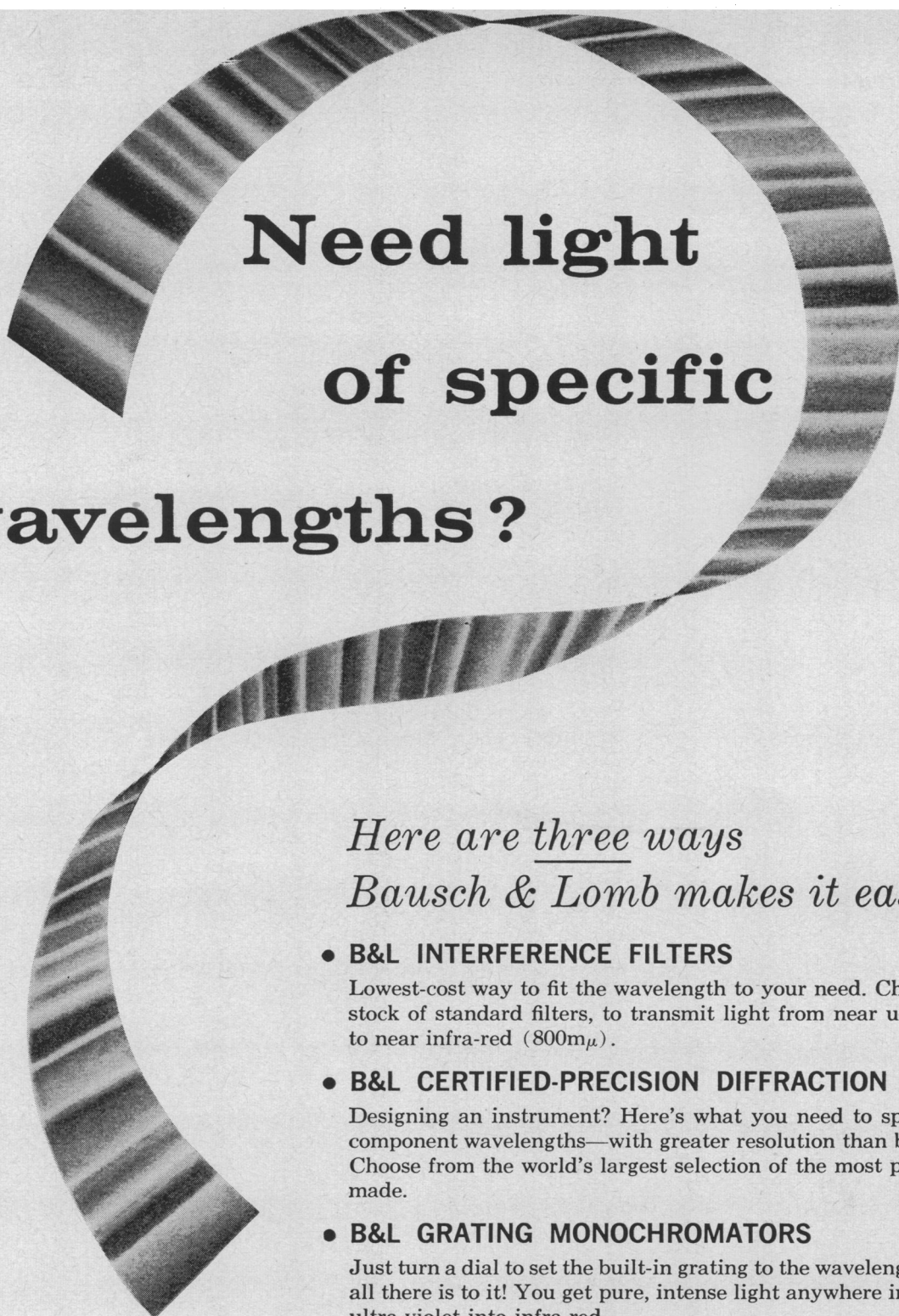
Thus does E. M. Forster, in his novel *Howard's End*, epitomize the differences between the scientific-medical and the romantic-humanistic appraisal of personality. And Sir Charles Snow, in his *The Two Cultures and the Scientific Revolution*, thus deplores the gulf between those educated in the humanistic and those educated in the scientific tradition: "Closing the gap between our cultures is a necessity in the most abstract intellectual sense, as well as in the most practical. When these two senses have grown apart, then no society is going to be able to think with wisdom."

The latest evidence that the gap exists is provided by the results of a test prepared by Kenneth Richmond of Glasgow University [*The Times Educational Supplement* (29 Sept. 1961)]. Each of more than 3000 people (students and professors) was asked 20 questions in the arts and 20 in the sciences. Here are some of the questions in the sciences: "The uncertainty principle was enunciated by (a) Gauss; (b) Heisenberg; (c) Tinbergen; (d) Lamarck; (e) T. H. Huxley; (f) none of these. A cloud chamber is used in (a) an artist's studio; (b) an oil refinery; (c) a physicist's laboratory; (d) a weather ship; (e) an actor's dressing room." And in the arts: "One of these is said to have a *Blue Period*—(a) Henry Moore; (b) Cezanne; (c) Utrillo; (d) Balzac; (e) Picasso; (f) Rembrandt; (g) none of these. With which of the following would you couple the name of Frank Lloyd Wright? (a) Erik von Stroheim; (b) Jan Van Eyck; (c) Mies van der Rohe; (d) Gerard Manley Hopkins; (e) Schrodinger; (f) none of these."

The following tentative conclusions emerge: the average performance is surprisingly low; those who do well in science are on the average more one-sided than those who do well in the arts; and few do well in both fields. The averages range from a low of 3.2 out of 20 in the arts and 3.7 in the sciences for students at a women's training college for teachers to a high of 7.3 in the arts and 10 in the sciences for "sixth-formers" (grammar school students) in a public (equivalent to our private) school. Graduate students in university teacher-training courses did a little less well than the sixth-formers: 6.8 in the arts and 9.3 in the sciences in one university; 7.4 in the arts and 8.6 in the sciences in another.

It is not clear whether the pattern of one-sidedness and the attitudes that accompany it are set so early that broader education could not correct the imbalance, and whether, indeed, Sir Charles and Mr. Richmond are asking the most important questions. Would all be well if education could fuse the two cultures into one, as Sir Charles seems to imply?

What is extraordinary about this test and about Sir Charles's book is the assumption that knowledge of the sciences and the arts is alone worth considering. As Lloyd Fallers points out in the *Bulletin of Atomic Scientists* (Oct. 1961), Sir Charles almost completely neglects a "third culture—that concerned with man in society." So does the test. Education that neglects to give some understanding of politics, of history, of anthropology, of economics, and of the parts that science and engineering play and should play in a modern state, will hardly suffice to give us wise administrators in government and industry—G.DuS.



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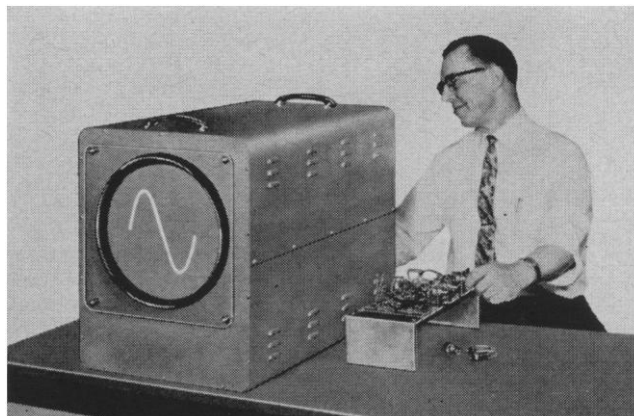


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