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ON THE TEACHING OF MATHEMATICS¹

By Dr. F. D. MURNAGHAN

THE JOHNS HOPKINS UNIVERSITY

THE principal obligation incurred by a vice-president of the American Association for the Advancement of Science upon his election to office is the preparation, and deliverance before the section of which he is chairman, of an address. In discharging this obligation I wish to speak on a subject which I regard as of fundamental importance, namely, the teaching of mathematics. By this I mean not merely the provision of information about mathematical methods and results but also the development of an interest in, and understanding of, the spirit of mathematics. For I take it as evident that no teaching can be successful which attempts to skim off the products of mathematical fermentation and ignores the process of fermentation itself.

It is unnecessary for me to dwell on the fact that the demands of war have focussed a strong search-

light upon the mathematical capabilities of graduates of our high schools and colleges, nor to call to your attention the fact that the disclosures are disquieting. All of us who teach know that it is possible for a young man to spend twelve years in school and yet not know with that assurance, which comes only from a thorough understanding, how to add fractions. When we meet a young man in college who calculates thus:

$$\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$$

it is not enough to chide him for his stupidity. No, the fault lies in the manner of his teaching. We expect our students to add $\frac{1}{2}$ to $\frac{1}{3}$ and obtain a result

without knowing what $\frac{1}{2}$ or $\frac{1}{3}$ is. I visualize you as objecting thus: "Why, this is absurd; every young student is told that $\frac{1}{2}$ is one half, i.e., one divided by

¹ Retiring vice-presidential address before Section A of the American Association for the Advancement of Science, Cleveland, September 12, 1944.

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