moted to the head of the department of geology. At the same meeting Mr. Irving Perrine, instructor in geology at Cornell University, was appointed associate professor of geology.

Dr. Percy E. Raymond, formerly of the Carnegie Museum, Pittsburgh, and more recently paleontologist to the Geological Survey of Canada, has been appointed assistant professor of paleontology at Harvard University, and curator of invertebrate paleontology in the Museum of Comparative Zoology.

DISCUSSION AND CORRESPONDENCE

NUMBER OF STUDENTS PER TEACHER

To the Editor of Science: In the January 26 number of Science is a note on the "Number of Students per Teacher," by Professor A. S. Hathaway, in which he says:

> It appears to me that the only correct way to determine the average number of students handled per teacher in any school is to divide the number of student hours per week by the number of teacher hours per week.

This formula might simplify the *mere* mathematics of the situation, but it would most certainly fail to give just the information desired—the strength of the teaching force in an institution, or, in the words of Professor Hathaway, "the average number of students handled per teacher." It is then far from being *a* correct way, to say nothing of *the only* correct way.

The following illustration will show how the method suggested would miss the very purpose of our calculations. Suppose that a college of 300 students, averaging 15 hours recitation per week each, has 5 instructors, each teaching 20 hours per week; then the result would be, according to the formula suggested,

$$300 \times 15 \div 5 \times 20 = 45 \text{ ''students handled per teacher.''}$$

Now, another college with the same number of students, each reciting also on the average 15 hours per week, but with 10 teachers, each meeting classes 10 hours per week, would show the same result; or a college of 225 students, averaging 20 recitations per week, with 10 teachers, each having 10 classes per week, would show 45 "students handled per teacher." Certainly the teaching forces of these schools would not be equally strong.

It is not particularly the average number of students per class, or recitation, that we are after. Even if this were our object we should find the matter more complicated than Professor Hathaway has supposed. Some "courses" require a proportionately larger number of recitations per hour's credit than others. And how should we treat laboratory work, which can not with fairness be classed with recitations? Some laboratory courses require very little outside work, but more work in the laboratory, while others require a considerable amount. What complicates the matter still more, is the fact that in many cases student assistants direct such courses in large part while in others professors attend to the work themselves. These are only a few of the complications one actually finds.

The class work does not afford the only opportunity for the teacher to assist and stimulate the student; and any scheme based upon class work alone would not only do an injustice to some of the very best of our educational institutions, but would also tend to emphasize unduly a practise that is doubtless already carried too far.

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ARE TEACHERS ENTITLED TO COMPLIMENTARY DESK COPIES OF TECHNICAL BOOKS?

Here is the teacher's point of view:

The texts which I am using are of no personal benefit to me. I am supposed to use the latest edition, and to change the text once in a while. I do not see how I can well afford to buy them. The publishers get big profits out of the students and can well afford to give a copy to the teacher, while, on the other hand, the teachers' salaries are meager. And as to new reference books and practical engineering books, I can not always order them