eliminated by giving the students the entire bones, and so the second time an assistant holds a watch and each one is given but a very limited time in which to identify the bone. This will eliminate a few more and then we have permitted the contestants to feel only a limited part of each bone and as a final test we have taken bones from the comparative anatomy laboratory and this usually floors more of them, as most of the men have not had a course in comparative osteology. Students who have passed the test are permitted to turn around and thus see what bone is being given to those farther down the line and this makes the test more interesting for all.

This may or may not contribute much in teaching gross anatomy, but it does help to teach the freshman that anatomy and its application in medicine and dentistry requires the training of the fingers as well as the eye. It also helps to stimulate interest in the history of anatomy.

H. B. LATIMER

THE UNIVERSITY OF NEBRASKA

HOW MANY FIGURES ARE SIGNIFICANT?

THE discussion of this subject ought to prove interesting to all research workers, teachers and students. It is one of the hard subjects to teach and a harder subject to follow out in practice. The ordinary school boy and girl is usually driven by the teacher to carry out all his calculations in science to an unwarranted extent, the only deciding factor apparently being the number of decimal places. The teacher thinks more of the accuracy of the arithmetic than of the truth of the statement. It takes a long time in the university to replace these ideas (or lack of ideas) in the student's head by a little of the common sense of the theory of measurements. The research worker trained without a course in this subject often wastes his own time and wearies the patience of his readers with an absurd number of "significant" figures in his numerical work. Professor Kelley has done well in calling for a statement on definite and uniform practice. As a mere tyro in this subject and one whose experience lies largely with elementary students I should be inclined to use less significant figures than Professor Kelley. Unless the variates follow the Gaussian Law of Error, and in practice this is rarely the case even when a large number of variates are used, I do not like to quote results with more than a two figure probable error or standard deviation. I don't think the results warrant a greater accuracy than this. In Professor Kelley's first case (SCIENCE, Dec. 5, 1924, p. 524) I should say Mean = 82 and standard deviation 13; in the second case, Correlation coefficient .75 and its probable error .02. In the second case I give only one significant figure to the probable error because of the variation likely to occur in another independent calculation of the correlation coefficient from a different but equally reliable set of data.

JOHN SATTERLY

UNIVERSITY OF TORONTO

LABORATORY APPARATUS AND METHODS

STAINING PARAMECIUM IN THE CLASS-ROOM

A VERY simple, inexpensive and practical method of showing trichocysts, cilia and nucleus of Paramecium was recently demonstrated to students of general biology by the writer, through the application of two different colored inks to the slide of living material.

One or two drops of solution containing the culture is placed on each student's slide, and time is allowed for the study of specimens in their usual activities. When the trichocysts and cilia are to be observed and compared the cover-slip is removed, and a dab or two of Sanford's red ink is carefully stirred into the culture by means of a tooth-pick or pin-head. The slip is then replaced. The swimming and "tumbling" of the slightly opalescent specimens are more pronounced. In about four minutes a fountain-pen containing Waterman's blue ink is applied to the edge of the cover-slip. One can see the expulsion of the trichocysts when the animal plunges into the encroaching wave of blue. In a flash the cytoplasm turns a deep red with purplish tinge, the cilia a flame color and the trichocysts a deep blue—without disruption of the specimen. Various shades may be obtained by the students, depending upon the amount of inks used, and the length of time allowed before applying the blue. Incidentally, the nucleus takes on a more concentrated hue than does the surrounding cytoplasm.

This method can be employed by the students themselves and can be repeated several times during the laboratory period with generally uniform success.

C. R. HALTER

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY

SPECIAL ARTICLES

TRYPARSAMIDE TREATMENT OF AFRICAN SLEEPING SICKNESS[1]

THE problem of sleeping sickness in tropical Africa is a source of great concern. The disease is be-

[1] From the laboratories of the Rockefeller Institute for Medical Research, New York.