

case and it appears that there is a cross correlation that is dependent on time, it has been shown that the factors of progeny and barometric pressure do not depend on time; therefore the statistics we used were appropriate.

After discussing Fig. 1 Barnothy states that it is obvious that other series mentioned in the report were treated in the "same way." Although the same method of applying the correlation coefficients was used, they were not treated in the same way experimentally. In our report we pointed out, after discussing Fig. 1, that a greater degree of correlation was obtained by using repeated filial generation crosses and the barometric pressure reading for the 72-hour period covering the day before the day of, and the day after the initial mating. Since publication of the report we have continued with this procedure and have repeatedly found the correlation between the progeny yield and the barometric pressure. It was also shown in our report that growth in an electric field reduced the correlation with barometric pressure and produced greater progeny yields than growth of control cultures out of the field. In a later discussion [*Science* **133**, 115 (1961)] it was pointed out that the electric-field effect (35-percent greater yield) may possibly be attributable to variations in air ion densities.

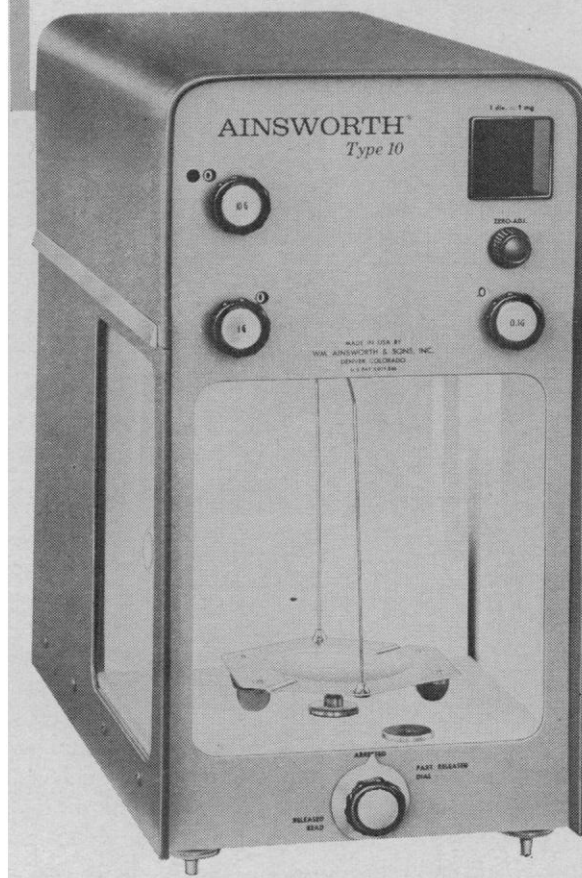
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Research Costs

The recent editorial "Wrong question" [*Science* **136**, 291 (27 Apr. 1962)] is of particular interest. It caused me to recall the period in the 1940's when I served on the "Advisory Committee on Research to the Quartermaster Corps" and found that the colleges and universities almost always underbid commercial organizations and either profit-making or nonprofit research groups who submitted proposals for Army research contracts. I have been concerned for a number of years with the costs of doing research, and I had the feeling then that the colleges and universities did not really know how to calculate their research costs, especially in regard to such factors as heat, light, power, rent, depreciation of equipment, library services, machine shop, administrative expense, and other indirect costs.

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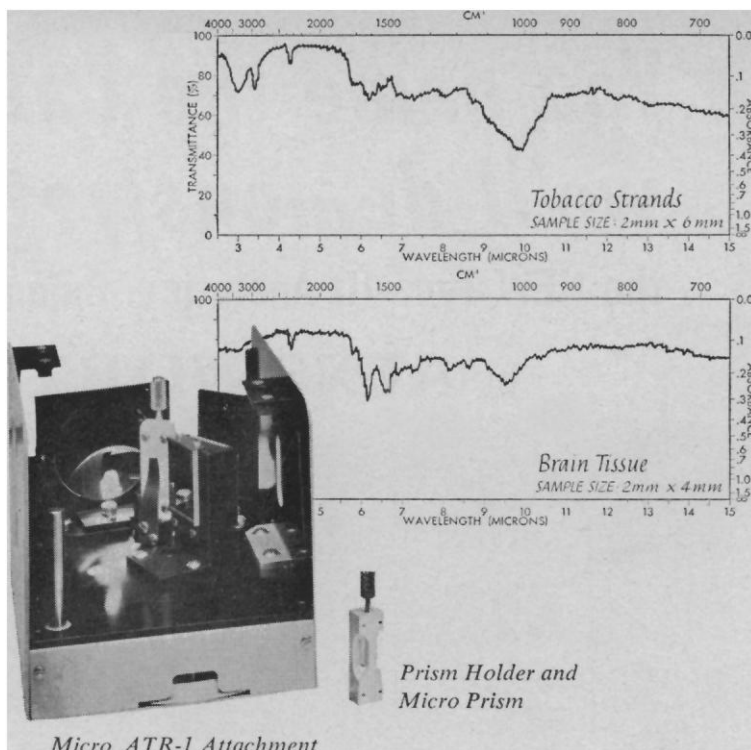
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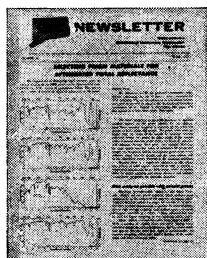
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According to my line of reasoning, this gave the universities more and more to do in the way of government research but at the same time it reduced the number of hours available to the staff for teaching purposes and, since this research was done at an unrealistically low cost, caused the colleges and universities to become financially hard pressed. Consequently, tuition costs have risen drastically over the past 10 to 15 years, and a plea for funds has gone out not only to the college alumni but also to the country at large and to the federal government. On the basis of what I know of the cost of doing research in an industrial organization, I have a feeling that even the 28- or 32-percent burden for indirect costs given in the National Science Foundation study is also far too low. On the other side of the coin, however, is the possibility that fixing the indirect costs of research grants at 15 percent may cause the colleges and universities to become realistic, withdraw from this type of research activity, and return their full professors to the undergraduate classrooms.

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Ethical Issues

May I comment briefly on Haybittle's thoughtful remarks [*Science* 136, 917 (1962)] concerning my recent letter "Standards of ethical conduct" [*ibid.* 135, 997 (1962)].

I could not agree more with his statement that "the problem of introducing ethical judgments into the practice of science is by no means simple." But it does not follow, I believe, that this problem should be left entirely to the conscience of the individual scientist. In particular, this would amount to giving a blank check to the unscrupulous. There are other professions, scientific and otherwise, where ethical problems arise, and where Haybittle's remark applies—for instance, medicine, or the practice of law. In those fields, professional associations have long had committees on ethics, of the highest standing, whose task it is to define standards of professional ethics and, when necessary, to pass judgment on their peers. This has powerfully contributed to a continuing awareness, on the part of the members of the professions concerned, that ethical issues are