

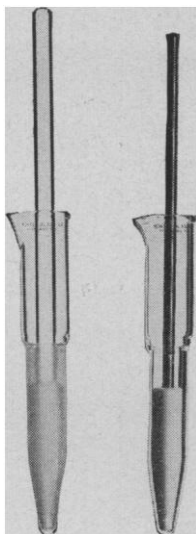
#### To Dispense Aseptically . . .

K-88298 Dispensing Funnel reduces contamination from air-borne organisms. Teflon stopcock plug and bell shaped housing protect openings of culture tubes or flasks during filling. Lock nut prevents accidental dislodging of the plug. In 125, 250, and 500 ml. sizes. 125 ml. size—\$17.50.



#### To Grind Tough Materials . . .

K-88545 Dual Tissue Grinder homogenizes in two different areas. The initial grinding takes place in the conical section. The material is then forced past the cylindrical surface for further homogenization. 5 ml. capacity, complete—\$9.50. Also available with Teflon pestles, and in other sizes.



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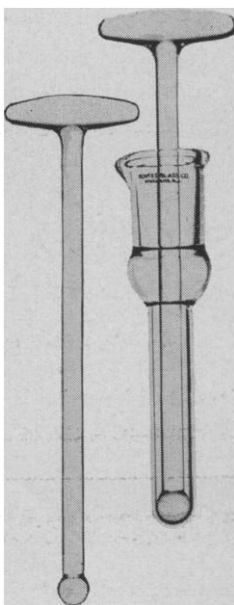
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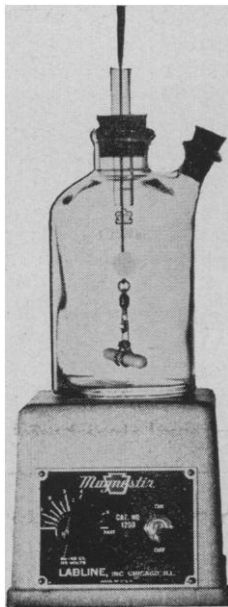
#### To Grind Finely . . . Gently

K-88530 Dounce Tissue Grinder gives fine particle size with minimal damage to cell nuclei. Two precise glass ball-shaped pestles fit the same unground tube for large and small clearances. In 7, 15 and 40 ml. sizes. 7 ml. size complete—\$9.50.



#### To Grow Cells in Suspension . . .

K-88295 Spinner Flask keeps cells suspended by the action of a Teflon covered magnetic stirring bar. Stoppers are silicone; all other parts stainless steel or glass. In 250, 500 and 1000 ml. sizes. 1000 ml. size complete (but without magnetic stirrer motor) \$20.65.



6 are much less relevant) is due to the fact that it dealt with different aspects of folic acid (the title is "Some biological and chemical properties of the citrovorum factor") and therefore slipped my attention. I learned about the synergistic effect of folinic acid and thymidine from the recent review of Girdwood (2). This was, however, after our article had already been printed.

In retrospect I feel that our "rediscovery" of the sparing of folinic acid by thymidine served a good purpose, as many workers, like ourselves, did not know about the previous publication. I base this statement on the fact that there is quite a demand for reprints of our article. Thus, in spite of oversight on my part, our paper served to disseminate useful scientific information.

I feel that if *Science* as well as other journals would put more emphasis on the importance of identifying articles by proper headings, a slip of this sort would become a rarity.

With regard to the information presented in our report I would like to emphasize that in addition to the phenomenon of synergism, our findings demonstrate for the first time the quantitative aspects of the effect with pure compounds (the chemical authenticity of "folinic acid" was not established in the articles of Broquist *et al.* and the others). Moreover, in our system thymidine alone is ineffective, while it produced growth in their experiments (Bolinder's references 2 and 3).

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#### References

1. H. P. Broquist, E. L. R. Stokstad, T. H. Jukes, *J. Biol. Chem.* **185**, 399 (1950).
2. R. H. Girdwood, in *Advances in Clinical Chemistry*, H. Sobotka and C. P. Stewart, Eds. (Academic Press, New York, 1960), vol. 3, p. 235.

#### Migrant Asian Students

The influx in recent years of Asian students in our universities has often presented problems of adjustment, owing perhaps as much to inadequately informed advisers as to the radically new cultural and academic patterns facing many of these students. Counselors of graduate students and, more especially, faculty members involved in educational exchange programs may on rare occasions have failed to notice

the very wide discrepancies in academic preparation or in scholastic and social adaptabilities among visiting students, and awkward situations may have arisen from this circumstance.

Because the great majority of these students eventually return home as teachers and professionals to environments where readaptation is frequently equally difficult, it seems to me important that our university faculties should consider certain sociological aspects of these student migrations. Their complex repercussions may not be more than superficially apparent to many scientists in the United States. Yet these are problems which in the long run are bound to produce far-reaching effects in countries in the throes of rapid social change, and in ways now difficult to foresee.

The problems facing the universities and university students in one such underdeveloped country of crucial importance, India, have been succinctly and, in my opinion, ably and sympathetically discussed in a recent issue of a periodical which my colleagues in the sciences are apt to overlook. I should like to urge those interested in the potentially wider results of their teaching and counseling efforts to read "Indian students," by Edward Shils, in the British journal *Encounter* [17, No. 3, 12 (1961)].

BALAJI MUNDKUR

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### Exasperating Method

To induce a reader to \_\_\_\_\_ a book [see *Science* 134, 531 (1961)], give him some \_\_\_\_\_ what it is about.

(buy, idea) J.T.'s recent \_\_\_\_\_ of Holland and Skinner's *The Analysis of Behavior* left this reader wholly in the \_\_\_\_\_.

(review, dark) Through this \_\_\_\_\_ method, does the book instruct us in how to \_\_\_\_\_ our own behavior, or in how to instruct others to \_\_\_\_\_ theirs, or is it a handbook for \_\_\_\_\_ ethologists, laboratory psychologists, or \_\_\_\_\_?

(exasperating, analyze, analyze, budding, what) If in an earlier issue of your \_\_\_\_\_ I missed a \_\_\_\_\_ straightforward report on this same book, kindly \_\_\_\_\_.

(journal, more, forgive) Yours \_\_\_\_\_,  
(sincerely) C. M. FAIR  
Shushan, New York

8 DECEMBER 1961



# NO. 2

DATA SERIES

Evaluating Spectrophotometer Performance

## WAVELENGTH accuracy and reproducibility:

The precision with which the indicated wavelength corresponds to the true wavelength of dispersed radiation (accuracy) and repeats this indication (reproducibility).

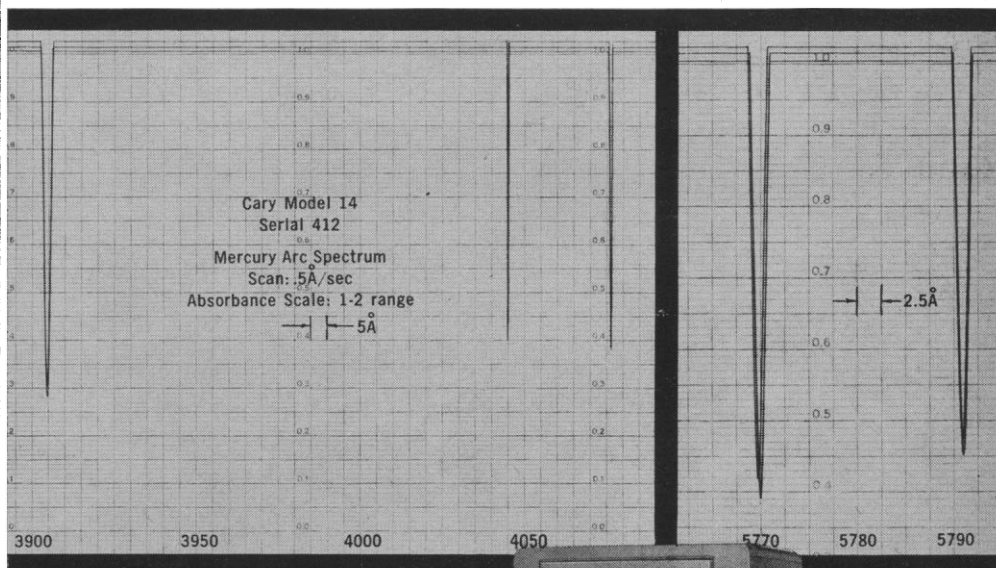


FIGURE 1

**Cary Model 14  
records spectra  
accurate to 4 Å,  
reproducible  
to 0.5 Å over its 28,000 Å range**

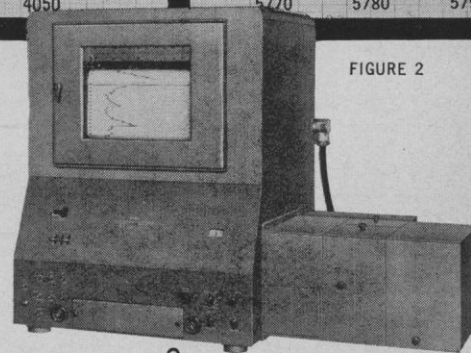


FIGURE 2

*High wavelength accuracy* assures recording of absorption peaks at their true wavelength. This is essential for differentiation of similar samples or identification of unknowns. It is equally important for quantitative measurements on mixtures where overlapping bands may distort band contours. The high wavelength accuracy of the Cary Model 14 is shown in the spectrum of mercury emission lines which appear at 3906.4, 4046.6, and 4077.8 angstroms. As shown in Figure 1, these are recorded to within 2 Å absolute or better.

Since sample absorbance is a function of wavelength, *high wavelength reproducibility* is essential to insure reliable quantitative results. The excellent reproducibility of the Cary Model 14 is illustrated in both Figures 1 and 2 which show three superimposed records (with the baselines arbitrarily shifted after each record). The two peaks (5790.7 Å and 5769.6 Å) shown in Figure 2 were recorded on a greatly expanded wavelength scale in order to observe any small error. (It is interesting to note that the scale expansion used would require a chart over 300 feet long to record the entire wavelength range of the Model 14). *The maximum deviation between the three records is only about 0.35 Å.*

Wavelength accuracy and reproducibility are just two of several important criteria on which spectrophotometer performance should be based. Others include: Resolution; photometric accuracy and reproducibility; stray light. Because the Cary Model 14 excels in each of these performance criteria, it is regarded as the finest instrument of its kind. A descriptive brochure is yours for the asking. Write for data file E22-121



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