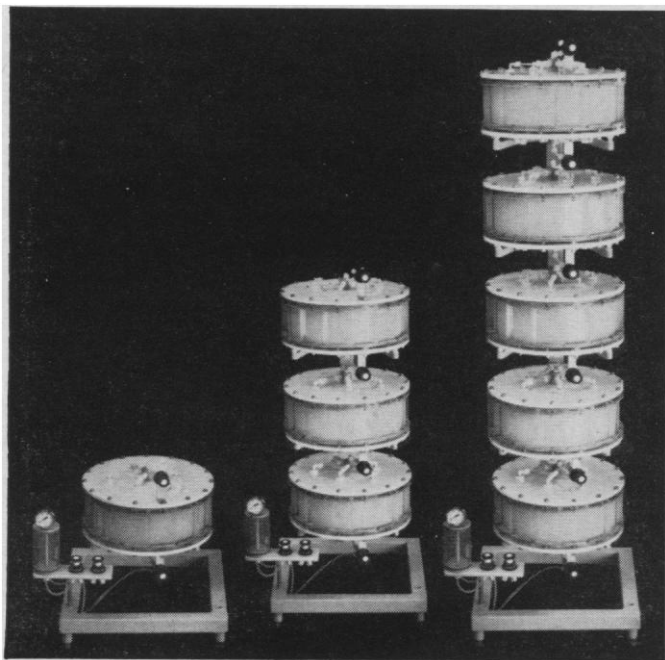


# SCALE UP



## GEL FILTRATION WITH THE PHARMACIA SECTIONAL COLUMN KS 370 USE ANY KIND OF GEL

The Pharmacia Sectional Column opens up completely new possibilities for large scale chromatography. It offers a unique combination of high resolution and high output.

**ANALYTICAL QUALITY SEPARATIONS.** Production scale fractionation of proteins, enzymes, etc. are now possible.

**FOR ALL TYPES OF SEPHADEX® AND SEPHA-ROSE®.** Now even the soft gels can be used in 100 litre columns.

**HIGH OUTPUT AND VERSATILITY.** The capacity of the column is increased simply by adding more sections (section volume=16 litres). Fractions can be removed between any of the sections which can be replaced without disturbing the production sequence.

**HIGH FLOW RATES.** Obtained on all gel types even with a large number of sections in the column.

**STERILIZABLE.** A sterilizable version is available.

**For additional information, including the booklet Pharmacia Sectional Column KS 370, the "Stack" write to:**

Pharmacia Fine Chemicals Inc.  
800 Centennial Avenue  
PISCATAWAY  
New Jersey 08854



Pharmacia (Canada) Ltd. 110 Place Crémazie, Suite 412, Montreal 11, P. Q.  
(Inquiries outside U.S.A. and Canada should be directed to PHARMACIA FINE CHEMICALS, Uppsala, Sweden.)  
Circle No. 30 on Readers' Service Card

low-sulfur fuel toward the smaller low-level sources. The best short-run strategy for reducing community exposure to episodic or localized occurrences of high SO<sub>2</sub> levels seems to be still an open question.

If our conclusions were misapplied by a utility or by anyone else, we are sorry. Facts can be misused. To their chagrin, scientists have had ample opportunity to learn this in the last few years.

T. R. MONGAN

*Sydney Area Transportation Study,  
7 West Street, North Sydney,  
New South Wales, Australia*

J. GOLDEN

*7716 Iroquois Court,  
Falls Church, Virginia 22043*

### Alas

Hamlet spoke of a single skull. McMahon was referring to a single scull (see 23 July, p. 350, table 1).

ANNE SYMINGTON

*745 Cella Road,  
St. Louis, Missouri 63124*

### Climate Change

The report by Rasool and Schneider (9 July, p. 138) presents quantitative relationships between atmospheric carbon dioxide and aerosol concentrations which may be useful. However, two of their conclusions with respect to the effects of aerosols may be misleading.

Their statement that "the surface temperature falls precipitously with increasing opacity" is a consequence of the use of a logarithmic scale in presentation of the results. A replot of their figure 2b, using linear scales, indicates that the decline in surface temperature is linear with optical thickness and hence with aerosol concentration, at least to the accuracy with which I was able to read their curves.

In the projection of possible future events, they appear to neglect the effect of naturally produced aerosols. The authors of the SCEP report (1), which Rasool and Schneider cite as their first reference, concluded that, at present, the man-made tropospheric particulate component averaged over the globe amounts to about one part in five by weight and by number. Thus, the projected increase in the next 50

years would amount to a factor closer to 2 than to 4 and a temperature change more like 1°K than 3.5°K. When combined with the effects of carbon dioxide, the net change would be less than 1°K.

Increased particulate production rates are not an inescapable consequence of increased energy production even from fossil fuels, since emission cleanups are within the range of known technology and probably also within the range of costs which could be accepted by the economies of those highly developed countries which are the major power producers.

PAUL F. GAST

Argonne National Laboratory,  
Argonne, Illinois 60439

#### Reference

1. Report of the Study of Critical Environmental Problems (SCEP), *Man's Impact on the Global Environment* (M.I.T. Press, Cambridge, Mass., 1970).

The report by Rasool and Schneider (9 July, p. 138) on potential climatic effects of atmospheric particulate matter was of great interest to me but has also caused me considerable distress. I have studied this same problem, using a somewhat different mathematical model, and have obtained results which are in good agreement with those of Rasool and Schneider; I find that the present particulate loading would have to be increased by a factor of 5 to produce a 3°C drop in mean planetary surface temperature. This work was done in November and December of 1969 and was presented before the International Solar Energy Society in Melbourne, Australia, on 4 March 1970. At the request of the editor of that society's journal, *Solar Energy*, the paper was submitted for publication and accepted, with minor revisions, in September 1970. However, because of unexpected delays, it will not appear until later this year.

A partial publication of my results appears in a Department of Commerce publication (1).

EARL W. BARRETT

Atmospheric Physics and Chemistry  
Laboratory, Environmental Research  
Laboratories, National Oceanic and  
Atmospheric Administration,  
Boulder, Colorado 80302

#### Reference

1. E. W. Barrett, R. F. Pueschel, H. K. Weickmann, P. M. Kuhn, *Inadvertent Modification of Weather and Climate by Atmospheric Pollutants* (Technical Report ERL 185 APCL-15, Environmental Science Services Administration, Research Laboratories, Government Printing Office, Washington, D.C., 1970), pp. 30-35.

10 SEPTEMBER 1971



MILLIPORE

## the technology that separates microorganisms from critical solutions

There's a trend in advertising to speak with disarming modesty, to lay off inflated claims and excessive promises, to talk to the consumer as if he were a grown-up human being.

We applaud the trend, especially since whatever claims and promises we make here will have to be at the expense of our own products.

We begin with this statement: membrane filtration is officially approved by the U. S. Pharmacopeia and the FDA for the preparation of sterile solutions; and this claim: most people use Millipore filters for sterilizing filtration (we think that's quite modest).

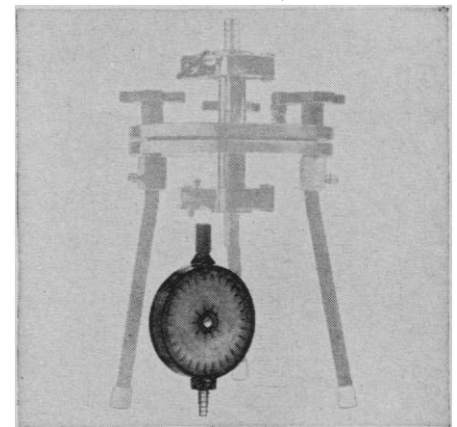
Now, in the 1-100 liter range, most sterilizing filtration is carried out by pushing solutions through a Millipore filter disc with a pore size of 0.22  $\mu$ m and a diameter of 5½ inches (142 mm). The disc is clamped in a filter holder like the one shown ghosted in the photo, which we designate as the "142" (for size). The clear object in the foreground is the subject of this message — our new Twin-90 Filter Unit.

In spite of the fact that the Twin-90 is obviously much smaller than the 142 mm holder (it can just about fit in the palm of your hand), it has the same filtration area so it can do the same job. We've managed this by sealing two 90 mm, 0.22  $\mu$ m Millipore filter discs in one compact, plastic housing. No bugs can ever beat this seal. One side of the housing is ultrasonically welded directly through the filter to the other side, forming a solid plastic barrier near the periphery of each disc (we quickly patented that).

More important, the Twin-90 is presterilized, pretested and disposable. You simply hook it up and begin filtering; and when you need a new filter, you throw the unit away

and hook up another one. In contrast, changing a filter disc in a 142 mm holder means disassembling, cleaning, drying, filter loading, equipment sterilization and testing. That's a lot of labor and about an hour's time. You can save it all by using the Twin-90 to sterilize aqueous solutions, vegetable oils, protein solutions, culture media, serum and blood fractions, etc.

Of course, a Twin-90 Filter Unit costs more than a single 142 mm filter disc. But that doesn't take into account the savings in time and



labor and the considerable investment in a filter holder. But then again, the shiny, plastic, leak-proof marvel of Millipore technology doesn't have much personality and we suppose there are those who prefer the old familiar feel of solid metal hardware and derive personal satisfaction from taking things apart and putting them back together again. Who knows — some may even dig auoclaves.

We won't take sides. But we will help you make a decision by offering detailed information on the Twin-90. Only. To receive a copy of the Twin-90 Bulletin, write or use the reader service card. For immediate service, dial 800-225-1380 (toll-free).

## .. can solve many fluid quality problems.

A wide variety of Millipore tools and techniques are available for making precision separations in laboratory and industrial process fluids. To receive a brochure outlining the scope of the technology, write, or use the reader service card, Millipore Corporation, Bedford, Massachusetts 01730.

For Twin-90 information, circle No. 34 on Reader Service Card  
For technology brochure, circle No. 36 on Reader Service Card