heart of the matter is this... files 45% more!

because every inch is a filing inch

one 19” x 19” Lab-aid unit section holds up to 6500 1” microslides

other bulky files need this much more space to hold as many slides

There’s no waste space inside a Lab-aid filing cabinet... no thick bulkheads, no massive tracking guides; every inside inch is a hard-working filing inch. Thanks to patented Lab-aid construction, drawers are freely interchangeable, too... you can file 1” and 2” microslides, even 4” lantern slides or index cards, in the same section if need be.

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TECHNICON Lab-aid® laboratory filing systems

Write for Brochure L-54 describing these uniquely efficient filing aids.

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Adaptable for volumes of 1 ml to 500 ml. Can be used in single or multiple units. It is especially advantageous with solvents such as water, dimethylformamide, etc.; e.g., at 20°C 30 ml of water will be evaporated in 30 minutes. Although especially useful with biological extracts or heat sensitive compounds, as no temperature increases are necessary, the instrument will, of course, operate satisfactory with higher evaporation rates with increased temperature, where characteristics of sample permit. Consists of stainless steel shaft with a ST 19/38 at the lower end. Shaft rotates on oilite bronze bearings within a stainless steel housing having a ST 12/30 take-off leading to a pump. Although the instrument can be used with a standard aspirator, a standard pump and trap are recommended for superior results. Flasks held with the ST joint at end of shaft are rotated at 50 r.p.m. by means of a special motor. Provided with a ST 19/38 joint to accommodate smaller capacity flasks; e.g., 50 ml. With the addition of No. L80820D “Pyrex” brand adapter, the instrument will handle larger flasks having a ST 24/40 joint. For use on 110-115 volts, 60 cycle, A.C. Complete with motor, cord, ST 19/38 joint, but without No. L80820D, ST 20/40-19/38 adapter. Key to Sketch: (A) Stainless steel shaft with machined ST 19/38 joint at lower end. (B) Collar, with set screw. (C) Oilite bronze bearings. (D) ½-inch I.D. neoprene “O” ring(s). (E) Stainless steel housing equipped with ST 12/30 take-off for pump. (F) Flask.

L39474—Rinco Rotating Vacuum-type Evaporator, each $96.50
L80820D—Adapter—“Pyrex” Brand, for adapting ST 19/38 joint of Rinco Evaporator to larger flasks, each.............$ 1.70

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LOS ANGELES SAN FRANCISCO SEATTLE MINNEAPOLIS KANSAS CITY
DALLAS NEW ORLEANS ATLANTA WASHINGTON, D. C.
P.E. Analytical News

Analyzing for Impurities in Liquid Chlorine

Estimating impurities in liquid chlorine is no picnic. Although contaminants are present in only a few parts per million, it's important for commercial chlorine makers to know how much and of what.

The analytical obstacles are enough to make the stalwart chemist blanch. Several liters of sample are required. Conventional analytical methods eat up loads of time. And if you use the most reliable method, distillation, you may wind up with a different impurity than the one with which you started.

But recently researcher A. W. Pross of the Central Research Laboratories, Canadian Industries, Limited has worked up an infrared analytical procedure—and now, with an assist, we are proud to say, from Perkin-Elmer, infrared analysis is eminently practical for routine commercial estimation of liquid chlorine impurities.

It seems that liquid chlorine is extremely transparent to infrared radiation. Which means you can use a cell path-length some 2000 times greater than is usual for most organic liquids. And long path length means high sensitivity to absorbing substances—on the order of a few ppm which is just what we're shooting for.

The special long path cell, designed here at P-E, is fitted to a stainless steel reservoir and needle valve system. This makes it possible to fill the cell with liquid chlorine directly from an inverted commercial cylinder. When filled, the reservoir and cell are supported in front of the business end of a Perkin-Elmer Model 12-C single beam spectrometer, with a calcium fluoride prism. Calcium fluoride prisms give higher resolution than rock salt, and high resolution is a sine qua non in this type of analysis.

Quan and Qual Made Easy!

Awhile back P-E heard rumors that many chemists, asked to analyze particularly stubborn mixtures of gases or volatile liquids, become prone in a short time to aspirin addiction in its more severe forms. They complain of long, hard labor operating distillation columns or mass spectrometers, with only fair results. And they feel guilty using expensive equipment and giving little return on the investment.

Now at that time P-E was working with gas chromatography, a perfect solution for this very problem. The Vapor Fractometer was the result. This new tool, for analyzing gases and volatile liquids boiling below 300°C, takes advantage of the different affinities which materials have for one another to separate a mixture into its component parts.

Both equipment and analytical procedures are extremely simple, yet results in most cases equal or surpass those obtained from other methods. Fast, clean separations are made, and sensitivity of the detector plus recorder makes accurate quantitative determinations a breeze. Yet the Vapor Fractometer, with all these advantages, costs from 5 to 20 times less than old standby instruments.

Take LPG analysis, where most components cannot be cleanly separated by ordinary techniques. In operation, a metered sample of gas is blown through a column. The various components of the sample move through at different rates, depending on their affinity for the material in the column. Each arrives at the column end at a slightly different time to pass through a detector.

In a few minutes a series of peaks appears on a recorder, the first for the fastest moving component, and so on down the line. Area under each peak is proportional to the amount of the component present in the mixture. Analysis shown took 23 minutes. Not only are compounds separated cleanly, but perfect shape of recorder bands makes quantitative analysis very accurate.

We'd be glad to work out applications to particular problems with those chemists who prefer the quick, easy approach, and those management men who hate to spend unnecessarily.

"NMR" — A New Analytical Tool

The phrase "Nuclear Magnetic Resonance" probably sounds completely foreign to the average chemist today, but it may well be in common usage in the laboratory of tomorrow. This recently discovered phenomenon has the look of a powerful new analytical tool. Essentially, this is it:

Most atomic nuclei behave as if they were spinning about an axis like tops, and seem to have small magnets parallel to the magnetic field. For a given magnetic field, the frequency of resonance for each isotope is a discrete value. The ratio of the magnet strength or magnetic moment value to spin value for a given nucleus, the "gyro magnetic ratio," is a constant. Since these ratios are different for different nuclei, the gyro magnetic ratio provides a means for identifying nuclei.

If a group of nuclei are placed in a magnetic field, they will tend to line up according to the specific orientations (spins) permitted them. If, in addition, a varying r.f. signal of the correct frequency is applied, the nuclei will precess. In essence, the nuclei resonate at this frequency and, in so doing, absorb some of the r.f. energy. Resonance frequency for a given nucleus is a function of strength of magnetic field and the gyromagnetic ratio of the nuclei involved.

In its simplest form, then, a nuclear magnetic spectrometer consists of a magnet, an r.f. generator, a simple coil and r.f. detector. A plot of r.f. energy absorption versus frequency constitutes a nuclear magnetic resonance spectrum.

P-E has set up a subsidiary to develop instruments based on this phenomenon. Now available: a broad band spectrometer and a magnetic field control system. Available soon: a fluxmeter and a high resolution spectrometer.

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Designed for the ultimate in versatility, the Silge & Kuhne ORTHOPHOT provides all the facilities for still and cine photomicrography (using any standard microscope), photomacrography, photocopying, microfilming, X-ray copying, and general laboratory and clinical photography.

Accessory units not shown include: microprojection viewer with 8" x 8" vertical ground glass, alternative electronic exposure meters approximately 20 and 2000 times as sensitive as standard commercial types, and bellows-extension adapters to increase magnification or establish fixed ratios.

This versatile equipment is supplied either in complete assemblies, or in separate sections to coordinate with existing laboratory facilities.

PHOTOGRAPHY OF GROSS OBJECTS
Object table, oblique extension arm, and standard photolens convert the ORTHOPHOT for photographing of gross objects, photocopying of papers, drawings, etc. Special table used for trans-illumination, X-ray copying, etc.

LOW-POWER PHOTOMICROGRAPHY
(1.5 - 35 x)
In seconds, the ORTHOPHOT converts for low-power photomicrography. Adjustable stand replaces microscope. Same built-in illumination and SPLIT-MICRON focusing used.

GENERAL, CLINICAL PHOTOGRAPHY, Etc.
The ORTHO-CAMERA, detached from column, serves efficiently for all-around laboratory, clinical, as well as outdoor photography. Object distances from one inch to infinity. Any ratio of reduction; magnification up to 35X for close-ups.

CINE-PHOTOMICROGRAPHY
Almost all 8 and 16-mm cine cameras can be attached to standard column, or interchangeable simplified column on ORTHOPHOT (illustrated), as can many types of standard still cameras, 35-mm to 4" x 5".

— NEW —
ORTHO-ILLUMINATOR B
OPTIMUM RESOLVING POWER . . . HIGHEST USEFUL MAGNIFICATION
The new ORTHO-ILLUMINATOR B (illustrated), converts any make or model microscope into an integrated unit, with built-in illumination on the Koehler principle. Designed primarily for visual microscopy, or for use with existing photomicrography equipment, the new unit offers unequalled versatility for instant command of proper illumination, for brightfield, darkfield, phase contrast, polarizing or fluorescent accessories.

— Write for descriptive data —

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OPTICAL COLLIMATOR
This instrument, an item of war surplus, was originally designed to check navigational instruments. It is being used by industry as a collimator for optical instruments, for testing lenses for definition, as a source of infinite light, and for photographing reticles at infinity. It is also being purchased by many firms as a source for the fine line testing parts it contains. Consists of a large cemented achromat, 5" in diameter, with a focal length of 25", a physical shape calculated so as to provide lighting by a 6-8 volt bulb (to represent a star), a first surface mirror to reflect the light from the cradle 7½°, slightly built, but guaranteed in good working order. Shipping wt. 15 lbs. $95.00 f.o.b. Barrington, N. J.

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The system offered here will give you the same working distance and image quality as our 60X objective under the microscope—from objective to specimen, actually 12.5mm. Especially needed where some operation is to be performed. Also possible, that view specimen at high temperatures...where view is required through thickness of transparent material. System operates at focal distances, so is of utmost importance—opens up a large field of potential uses particularly in classes. With this attachment image reversal is eliminated. Made with standard threads. Height 1-23/32", diameter 1½".

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FULLY-AUTOMATIC features make the Spinco Model L Preparative Ultracentrifuge operationally self-supervising. Simple speed- and time-controls are preset by operator and electronic unit brings rotor to speed, times run, and decelerates with smoothly operating automatic brake.

Various sizes and types of interchangeable rotors mount in operating chamber with instantaneous coupling. Time between runs, using pre-loaded rotors, is less than a minute. Speed and vacuum are established almost simultaneously. Acceleration time for the 40,000-rpm rotor is only four minutes.

SAFETY FEATURES include automatic overspeed cutout; interlocks to prevent running at high speeds without vacuum in chamber and prevent breaking vacuum or opening chamber while running at high speeds. Rotor chamber is encased in thick double steel guard.

UNIT IS SELF-CONTAINED, of worktable height, and requires only electric connection for installation. Spinco electric drive and gearing system are of types proved in more than 100,000 hours of actual field operation. Self-balancing feature eliminates weighing of loaded tubes. Controllable refrigeration holds rotors and contents at any temperature down to -5 C.

In operation, the Model L applies forces up to 144,000 times gravity on 162 ml of material at a maximum speed of 40,000 rpm. Individual rotor tubes have sealing caps—are available in plastic or metal. Rotors provide second vacuum seal in quickly-detachable cover with integral lifting device. Wide selection of rotors is available with largest holding 1700 ml—

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- **Auto-Burettes** — Also available with TEFLOn Stopcock Plugs.

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**Table: Auto-Burette Without Support Stand**

<table>
<thead>
<tr>
<th>Reservoir Cap., ml.</th>
<th>Burette Cap., ml.</th>
<th>Subdivisions</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>2</td>
<td>0.01</td>
<td>$21.50</td>
</tr>
<tr>
<td>1000</td>
<td>5</td>
<td>0.02</td>
<td>23.00</td>
</tr>
<tr>
<td>1000</td>
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<td>0.05</td>
<td>22.00</td>
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<tr>
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<td>10</td>
<td>0.05</td>
<td>24.50</td>
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<tr>
<td>2000</td>
<td>25</td>
<td>0.10</td>
<td>27.00</td>
</tr>
<tr>
<td>2000</td>
<td>30</td>
<td>0.10</td>
<td>28.75</td>
</tr>
</tbody>
</table>

**Table: Auto-Pipette Without Support Stand**

<table>
<thead>
<tr>
<th>Reservoir Cap., ml.</th>
<th>Pipette Cap., ml.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>5</td>
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<tr>
<td>1000</td>
<td>10</td>
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<td>2000</td>
<td>25</td>
<td>22.00</td>
</tr>
<tr>
<td>2000</td>
<td>50</td>
<td>23.75</td>
</tr>
</tbody>
</table>

Support stand, clamp and ring ............... $7.50

Prices F.O.B. New York, N.Y.

Both Pipette and Burette are available in amberized glass at slightly increased price. Burette is also available in Schellbach Type tubing at slightly increased price.

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