
APIEZON PRODUCTS

STILL UNRIVALLED FOR HIGH VACUUM WORK

GREASES with vapour pressures as low as 10^{-11} mm Hg.

OILS that make possible vacua of 10^{-9} mm Hg.

APIEZON products were the first to offer a practicable means of securing pressures lower than the vapour pressure of mercury (10^{-3} mm Hg). They have been steadily improved over the past twenty years and now, as always, represent the latest developments in high vacuum technique.

The APIEZON range is distributed through the world-wide Shell organisation. It includes oils, waxes, greases and sealing compounds designed to produce and maintain vacua down to 1×10^{-8} mm Hg, without decomposition and without 'bumping' under a wide range of temperatures and backing pressures.

Industrial users are now specially catered for with the introduction of APIEZON Oil G, developed particularly for the operation of large industrial condensation pumps.

'APIEZON' is a Registered Trade Mark of Apiezon Products Ltd.

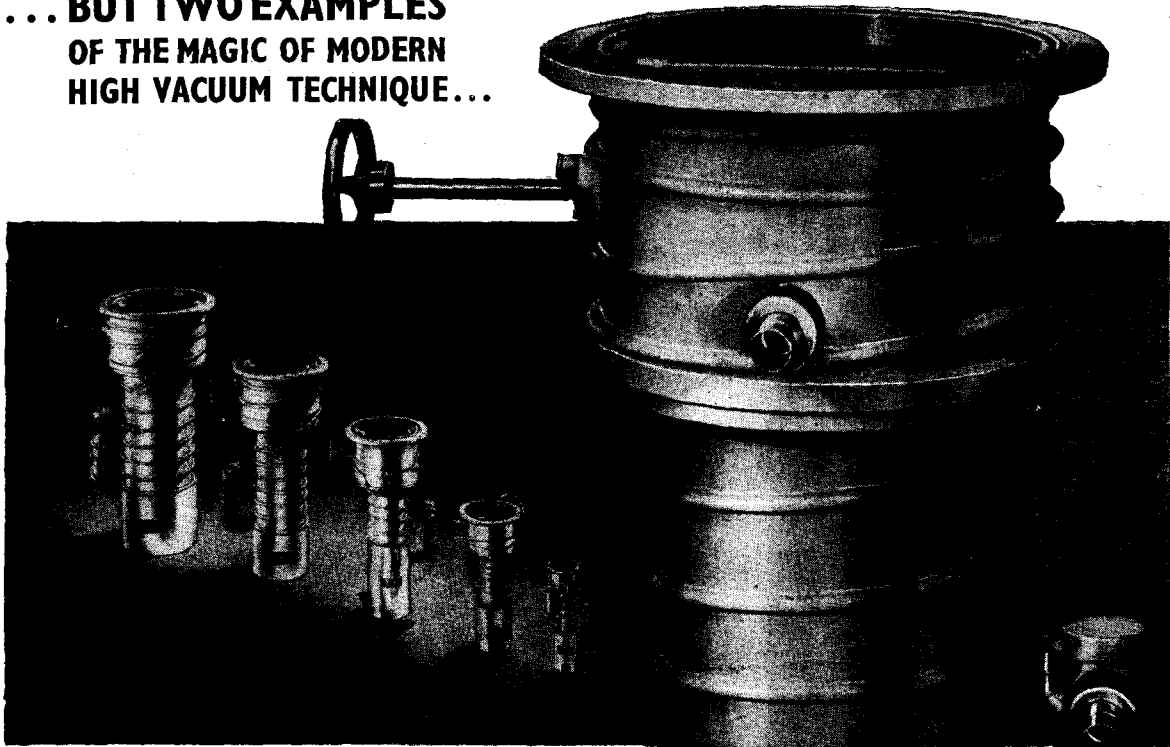


Write to your local Shell
Company for a new booklet
which describes Apiezon
products in detail.

**'APIEZON' Products are available throughout the world from
local Shell Companies or their appointed agents.**

Longer-life Metals and Life-like Pictures...

**... BUT TWO EXAMPLES
OF THE MAGIC OF MODERN
HIGH VACUUM TECHNIQUE...**



Illustrated is the vital component of the modern vacuum system in which the molecular diffusion principle is harnessed to pump enormous volumes of rarified gases to make possible the many wonderful achievements of modern vacuum technique . . . New Metals, products of the vacuum furnace, remain stable under extreme stresses and temperatures. . . . Television Tubes perform better and serve longer because a higher vacuum can be achieved in them. . . .

Precision Optics, Insulating Papers, Plastics, Metal Castings can be beautifully and inexpensively coated by vaporised metals.

Reliable vacuum equipment improves standard processes and makes new ideas possible.

**'SPEEDIVAC'
DIFFUSION
PUMPS**
FOR EVERY PHASE OF HIGH
VACUUM TECHNIQUE

MAY WE HELP YOU?

for better vacuum service . . .

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& CO. (LONDON) LTD., LONDON, S.E.26
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- . . . of scientific optics of every type
 - . . . tarnish-free aluminised surface mirrors up to 36" square
 - . . . plain and spherical television surface mirrors
 - . . . anti-reflection optics of every type
 - . . . plastics sheets and mouldings
 - . . . and the remarkable 'PEERGLASS' see-through mirror, a high vacuum coating product specially developed for security and observation purposes . . .
- . . . are examples of the many projects we can now undertake since installing the latest and largest vacuum coating plant in our new factory.

As specialists in scientific glass production and mirror manufacturing we shall be glad to advise on your special requirements.

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MUREX LIMITED, (Powder Metallurgy Division), **RAINHAM, ESSEX.** Rainham, Essex 3322
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DOW CORNING HIGH VACUUM GREASE

A STABLE SILICONE LUBRICANT AND SEAL FOR HIGH VACUUM SYSTEMS



Dow Corning High Vacuum Grease forms a remarkably cohesive film that retains its continuity even in systems operating under extremely high vacuum. It serves both as a lubricant and seal for stopcocks and for demountable or movable ground glass joints.

Easily applied and easily removed, Dow Corning High Vacuum Grease simplifies the construction, operation and dis-assembly of glass high vacuum systems.

Characterized by excellent heat stability, low vapour pressure and relative inertness, this silicone grease is insoluble in water and resistant to oxidation. It retains a petrolatum-

like consistency at temperatures ranging from less than -40° to over 400°F.

Lowest pressures at which this film is an effective seal have not yet been established.

Experience shows a ready maintenance of pressures below 10⁻⁶ mm. in systems sealed with Dow Corning High Vacuum Grease.

DISTRIBUTOR FOR:
 United Kingdom - W. Edwards & Co. (London) Ltd.
 Canada - Fiberglas Ltd., Toronto
 France - St. Gobain, Chauny et Cirey, Paris
 Also available through distributors of Dow Corning products in principal countries of the world.

DOW CORNING

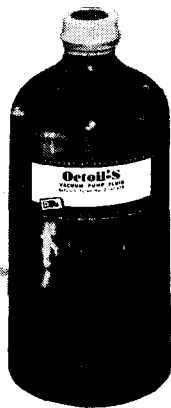


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of pump fluid...**



**... or a complete
picture-tube
exhaust system**

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In Vacuum Metallization: for plastics, paper, metals, and glass—for beauty as in jewelry and for service as in condenser paper—DPi equipment takes you every step of the way.

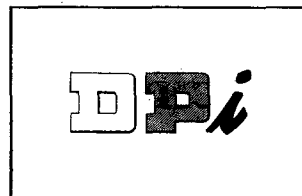
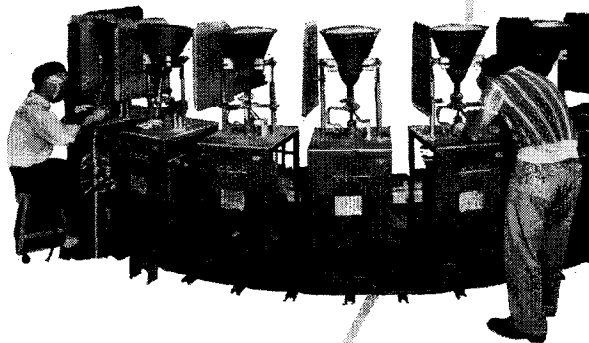
In Electronics Manufacture: for exhausting large and small tubes of every kind, for sealing sensitive relays, for coating frequency-control crystals, DPi equipment is designed and built from the production man's viewpoint.

In Metallurgy and Chemical Processing: DPi's unique oil ejector pumps and other equipment to handle vast volumes of gas at low pressures and high speeds make it economically practical to utilize the wondrous properties of newly important materials.

In Dehydration: whether of biologicals, refrigeration units, or machined steel surfaces, DPi high vacuum equipment is based on sound working knowledge of the principles which speed production rates and raise the quality of product.

In Research and Development: efficient DPi glass and metal vacuum pumps, gauges, and accessory equipment and supplies save the time of trained people for productive work.

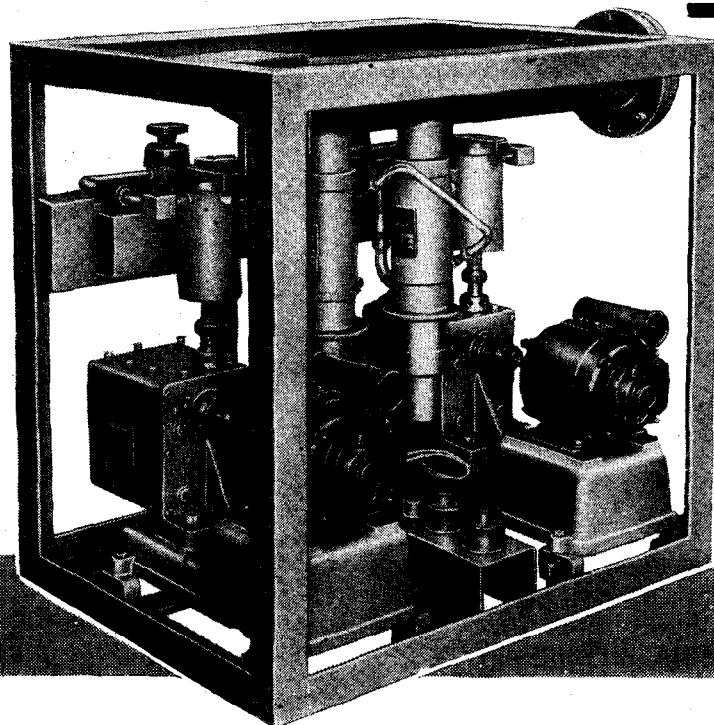
For information on equipment for any phase of high vacuum, write *Distillation Products Industries*, Vacuum Equipment Department, 633 Ridge Road West, Rochester 3, N. Y., U. S. A. (Division of Eastman Kodak Company). Cable address: "Distillation, Rochester, N. Y."



high vacuum research and engineering

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High vacuum equipment



This photograph shows the pumping equipment of a Metrovick vacuum furnace for a University laboratory.

As high vacuum technique becomes more widely employed in industrial processes, research work involving the use of high vacuum equipment assumes an importance even greater than it has had up to the present. Metropolitan-Vickers has always occupied a leading position in the research and development of apparatus dependent in some degree on high vacuum technique, *e.g.* X-ray apparatus, electron microscopes, vacuum coating plant, linear accelerators, cyclotrons, vacuum furnaces, etc.

The Company manufactures complete vacuum equipments for the laboratory or the factory, as well as individual items such as vacuum pumps, valves, gauges, etc.

METROPOLITAN - VICKERS ELECTRICAL CO. LTD.,
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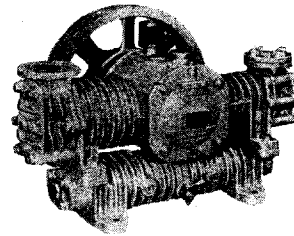
METROVICK scientific equipment for research and industry

"BOREAS" VACUUM PUMPS

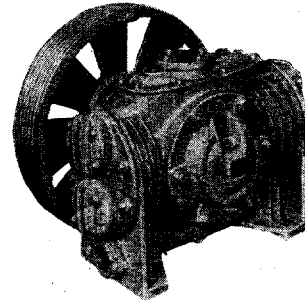
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Enquiries are welcomed for all classes of pneumatic equipment. Our staff of pneumatic engineers will advise on the choice of machines, types of drive, prime movers and their installation.



**"BOREAS" CXB TWO STAGE
VACUUM PUMP**
for Vacua up to 29".5 Hg.



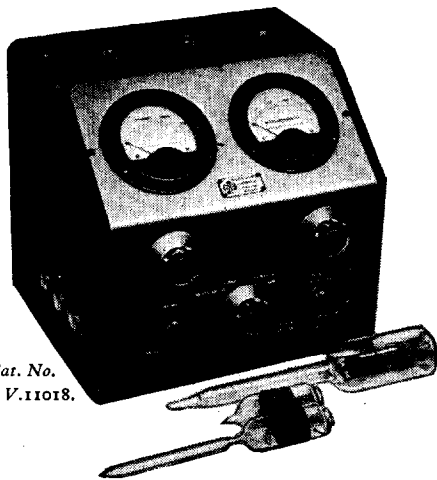
**"BOREAS" XB SINGLE STAGE
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PIRANI and IONISATION GAUGE FOR RESEARCH AND INDUSTRY

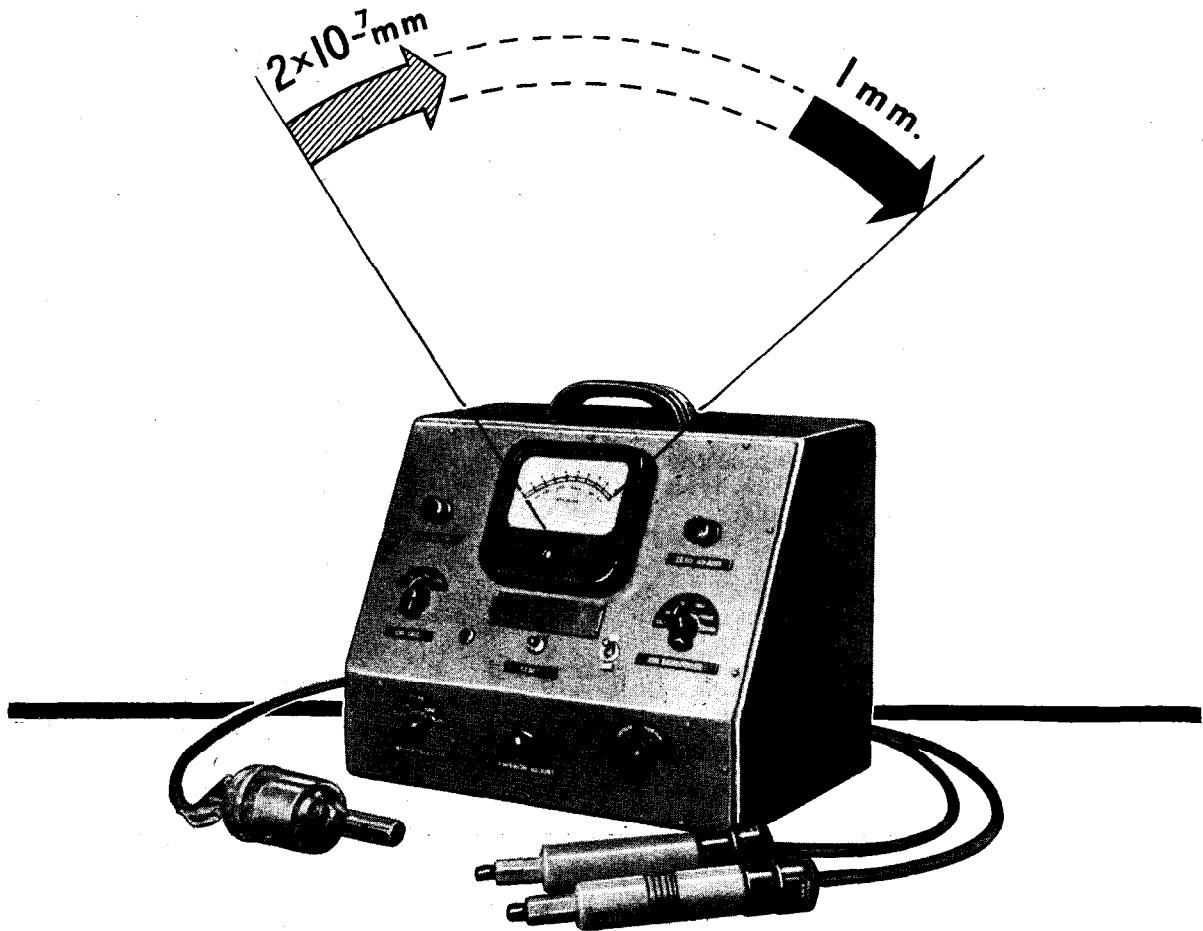
"CATHODEON" COMBINED PIRANI AND IONISATION GAUGE. A compact, self-contained, mains-operated unit for measuring pressure over the very wide range of 1 mm. to 10^{-6} mm., or less of mercury. A Pirani gauge is used over the range of 1 mm. to 10^{-3} mm. Below 10^{-3} mm. a selector switch brings in an ionisation gauge indicating down to 10^{-6} mm. or less. Occluded gases in this gauge may be removed by a built-in "Bombard" feature. Indicator lamps show whether the instrument is set to "Pirani," "Ionisation," or "Bombard." Complete with Pirani and Ionisation gauge heads which are normally supplied in hard or soft glass of 12 mm. bore, but are available in special glasses, bores or connectors to suit customers' requirements. Descriptive leaflet available on request.

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Measure the whole useful
High Vacuum range on one
B.A.R. 710 GAUGE

Instantaneous comparative measurements of high vacuum and fore pressure on one meter.

B.A.R. Ionisation gauges are so constructed that degassing does not harm their filaments. Whereas the orthodox method damages the filament by heating it to a high temperature and applying a high voltage to the anode, B.A.R. degassing uses the tungsten spiral grid as a "furnace winding", current being passed through it to raise its temperature to 800°C. The filament is not switched on before a vacuum of 1μ is reached ; it is never overheated.

For full details of all B.A.R. products please write to

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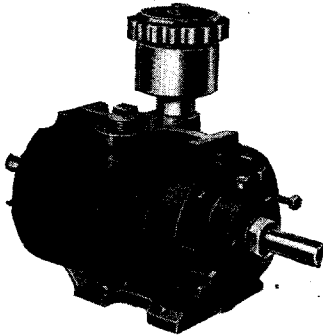
High Vacuum Engineering
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MEDIUM PRESSURE/VACUUM PUMPS



| MODEL | H.P. | MAX. VAC., " MERCURY | CU. FT. FREE AIR PER. MIN. | CU. FT. AIR AT 14" MERCURY |
|-------|----------------|-------------------------|-------------------------------|-------------------------------|
| J | $\frac{1}{2}$ | $27\frac{1}{2}$ | $12\frac{1}{2}$ | $6\frac{1}{2}$ |
| A | 1 | 28 | 21 | 11 |
| B | $1\frac{1}{4}$ | 28 | $26\frac{1}{2}$ | 13 |
| C | 2 | 28 | 40 | $19\frac{1}{2}$ |

Designed for continuous operation with minimum maintenance.

The above figures are for a speed of 1500 r.p.m. Pumps will work from 1100 r.p.m. to the above figure.

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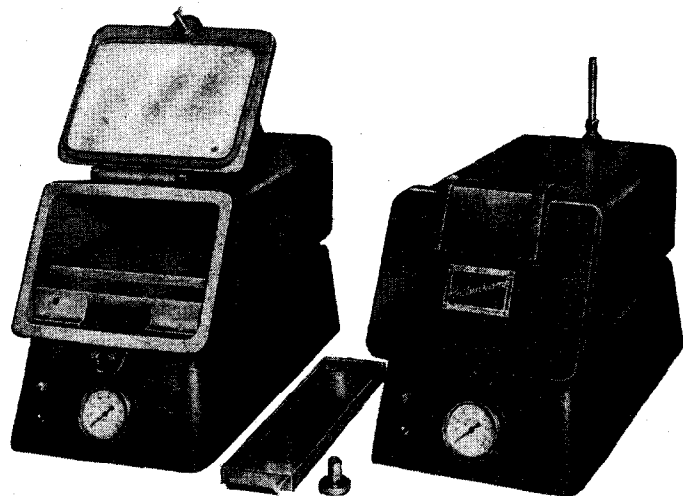
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VACUUM OVEN

offers many advantages

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- Less risk of aerobic oxidation due to prolonged heating in air.
- Lower temperatures may be employed, thereby reducing the dangers of possible thermal decomposition.
- The effects of varying conditions of humidity are reduced to a minimum.
- The liberated moisture is removed speedily from the heating chamber.

Maximum temperature 140°C



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