

BENEDICT-ROTH

METABOLISM APPARATUS

WARREN E. COLLINS, INC., 555 HUNTINGTON AVE., BOSTON 15, MASS.

BENEDICT-ROTH METABOLISM APPARATUS

Developed Through Scientific Research

★ More than thirty years ago the foundations were laid for modern clinical metabolimetry. In this field, Dr. Francis G. Benedict, director of the Carnegie Nutrition Laboratory in Boston, was the acknowledged leader. Thus, the scientific discoveries made by Dr. Benedict and his associates became the basis of the first clinical metabolism that was practical.

Closely collaborating with Dr. Benedict, Dr. Paul Roth of the Battle Creek Sanitarium, contributed important improvements, including the use of flutter valves and graphic recordings. The resulting apparatus, the Benedict-Roth, rapidly became the standard used by leading specialists for scientific research. It became equally popular for use in hospitals and doctors' offices because of its simplicity.

As instrument maker at the Carnegie Nutrition Laboratory from 1908, Warren E. Collins, Sr., founder of this company, participated in the Benedict-Roth's development and construction.

The benefit of that association and experience has been passed on to the medical profession in an apparatus which has always been held to the highest standards of accuracy and mechanical perfection.

EMBODIES TIME PROVEN PRINCIPLES

★ The only changes necessary in the Benedict-Roth in the course of years have been merely of a mechanical nature for the sake of improved appearance and ease of handling, so sound and well established were its basic principles.

While the Benedict-Roth of today is more attractive and desirable, many thirty-year-old machines are still in use and are just as accurate.

Obsolescence caused by frequent changes in design has never been a Benedict-Roth owner's problem.

Because it is the most accurate, simple means of measuring gas volumes that has been devised, the Benedict-Roth uses a water-sealed spirometer. This principle, by which the accuracy of all types of gas measuring devices is checked, is used in the most expensive of precision gas measuring apparatus.

DESIGN ASSURES EASY BREATHING

★ The elimination of all possible friction in the counter-balancing and recording system and proper design of the breathing circuit assures easy breathing in the Benedict-Roth. Since small tubing sets up a back pressure and makes even normal breathing difficult, the Benedict-Roth employs large bore air passages to eliminate resistance.

Correct proportioning of the soda-lime container enables the use of coarser mesh lime, minimizing resistance, yet providing complete carbon dioxide absorption. The soda-lime can may be removed in a moment so that recharging with new lime is simplified.

VALVES ELIMINATE MOTOR BLOWER

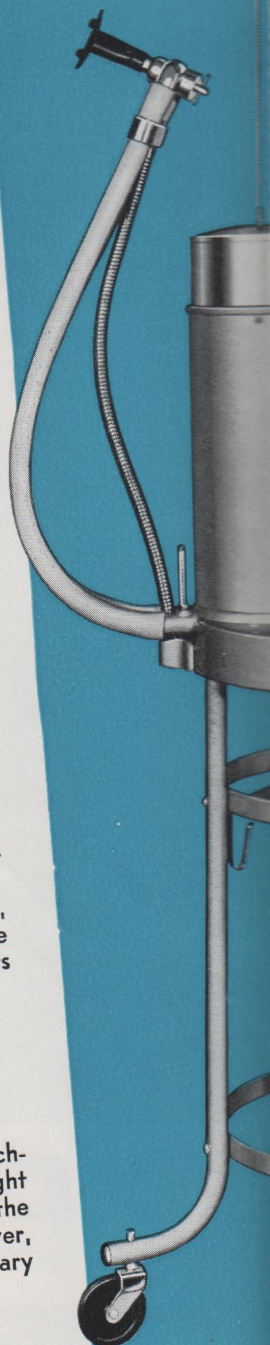
★ The necessary one-way circulation, directing all exhaled air through the soda lime, is maintained by low resistance flutter valves. This is the type developed for use in army gas masks and has been used in many types of respiration apparatus for more than two decades with perfect satisfaction.

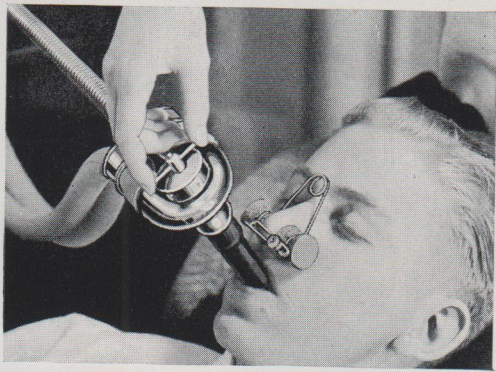
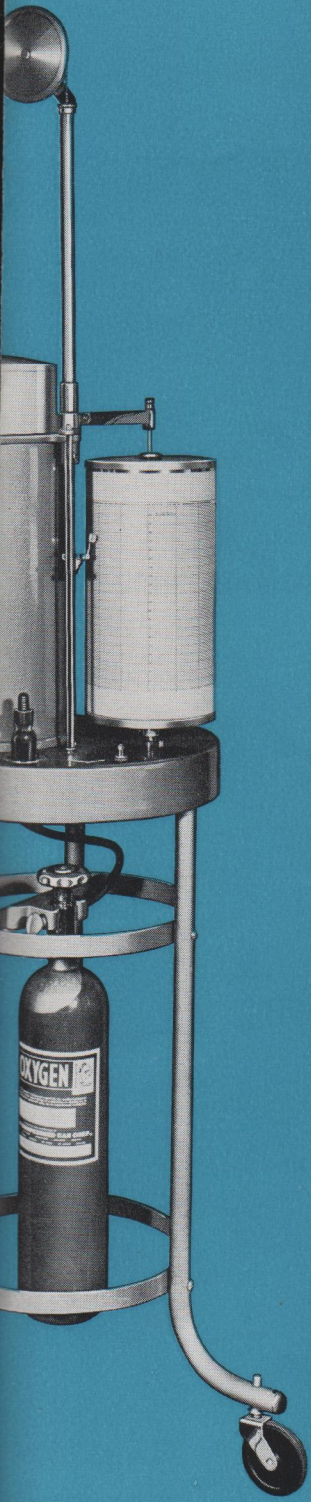
An inaccurate test, due to the presence of a leak, is guarded against by the provision for a positive graphic test. Each chart, when completed, bears its own evidence of careful technique.

ADAPTS TO ALL PATIENTS

★ With the Benedict-Roth you can adapt the technique to the patient. A period of seven to eight minutes may be used with those who breathe smoothly. The design of the apparatus, however, allows for a longer test when this seems necessary for greater accuracy.

Claims of "greater economy of operation" because an apparatus uses shorter tests periods are really unimportant. At the most, it would only amount to a few cents a test. No doctor would want to put a few pennies saving ahead of his patient's welfare. If metabolism testing is worth doing at all, it is worth doing well.





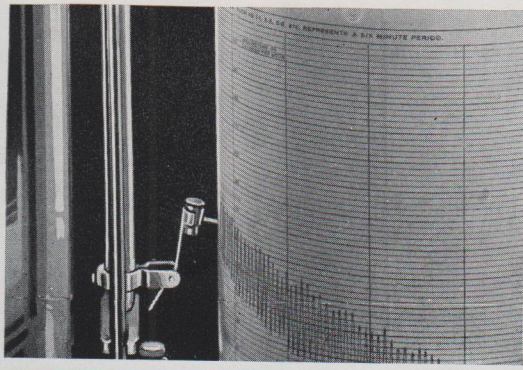
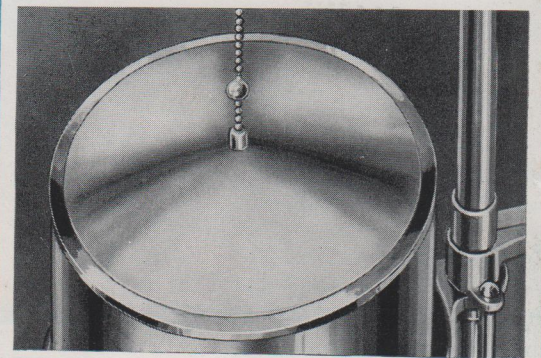
FREE BREATHING VALVE

By allowing the patient to breathe room air until he has become accustomed to the noseclip and mouthpiece, this free breathing valve saves oxygen. Locating this valve near the mouthpiece assures normal breathing prior to start of test.

The valve is easy to service and keep free from leaks which might affect accuracy of test. Just a gentle turning of the valve and the patient is switched from room air to oxygen.

PRECISION CALIBRATED BELL

The Spirometer bell is the heart of the apparatus. Each bell is fabricated on a precision steel form giving the Benedict-Roth its most noted feature — exact calibration. Since the Benedict-Roth contains no volume measuring element subject to swelling or shrinkage due to age or atmospheric change or to undetected damage due to excessive gas pressure, no "hidden shifts" in calibration can occur. Only physical damage immediately evident can change its accuracy.



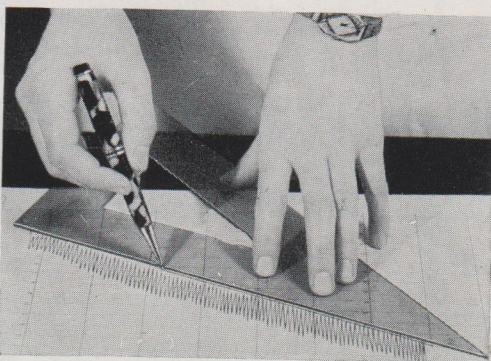
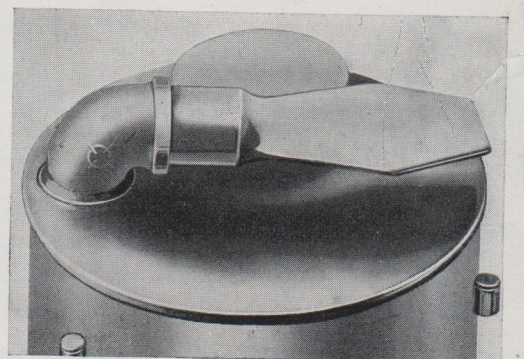
LONGER TEST PERIODS

A most important feature of the Benedict-Roth is its capacity for tests of any desired length up to fifteen minutes. Its ample spirometer capacity (nearly 6 liters) plus large size kymograph chart make longer testing possible. The Benedict-Roth can also be used as a vital capacity tester and a special section on the chart paper has a vital capacity scale for graphic registration of this function.

FLUTTER VALVES—SODA LIME

This type of valve is simple, safe, sure, and silent. It performs the only important function of a motor blower—without moving parts—without vibration or possible leakage or without requiring electrical connections.

Further, in a valve type apparatus, each exhaled breath instead of being whisked through the lime into the spirometer remains in the soda lime during the next inhalation. Because it stays in longer contact with the soda lime, more CO_2 is removed.

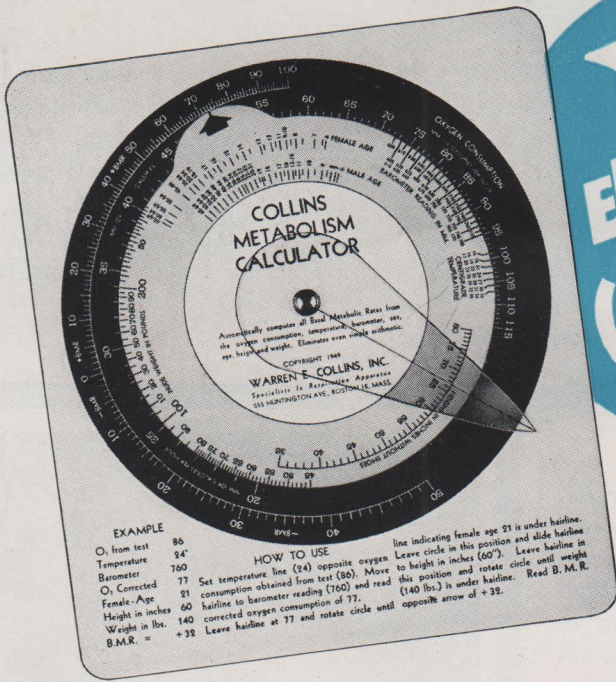


CALCULATIONS ELIMINATED

After you draw the slope line and get the actual oxygen consumption, you need not do another bit of mathematics. A new circular slide rule called the Collins Metabolism Calculator figures everything out for you. Instead of taking three minutes or more to get the final B. M. R., it now takes less than thirty seconds, and requires no multiplication or other figuring. All chance of mathematical error is eliminated.



Benedict-Roth Metabolism bears the stamp of the Council on Physical Medicine and Rehabilitation American Medical Association



★
ELIMINATES COMPUTATIONS

COLLINS METABOLISM CALCULATOR

If you dislike figuring, like to save time and want to make your metabolism work easier and simpler, then you'll really appreciate the new Collins B. M. R. Calculator. For the first time one calculator does ALL figuring for you. It even corrects

oxygen consumption for effects of temperature and pressure. No other device has this exclusive feature.

You do not consult a single table. Just take the actual oxygen consumption from the Kymograph chart and the calculator does all the rest. It's simple, easy, quick, and accurate.

ENABLES IMPROVED, FLEXIBLE TECHNIC

Although a test period of 7 to 8 minutes has long been generally used, a growing number of authorities now state that many cases require longer periods for accurate results. Many patients, because of involuntary and unavoidable irregularity in breathing, require from 10 to 14 minutes.

"Ten minutes is a good average" one authority has recently stated. Another has pointed out that the reliability of any metabolism test is essentially proportional to its length, up to the point of "diminishing returns" at about 15 minutes.

HAS CRITICAL ACCEPTANCE

The first requisite for accurate metabolism testing is a reliable apparatus. It must meet all the requirements that might reasonably be imposed upon it. The Benedict-Roth is such an apparatus. Its scientific background cannot be matched by any other. It has the acceptance of the most critical specialists in the profession.

It bears the approval of the American Medical Association.

The Benedict-Roth is mechanically designed and built to the highest standards by skilled craftsmen. In a real sense, it is "custom built," for each apparatus is fabricated, assembled, and tested, just as carefully as though it were being made to order for the most exacting physiological laboratory.

You can rely on your Benedict-Roth with the same confidence accorded it by the leaders in the medical profession. Carefully used as it should be, it will prove a worth while addition to your diagnostic facilities.

BENEDICT-ROTH SPECIFICATIONS

CONSTRUCTION: Built of durable, non-rusting materials throughout. Spirometer has cast bronze base, copper walls, copper, brass and bronze fittings. Flexible mouthpiece support. Telescoping pulley arm. Heavy, large-bore breathing tubes of pure gum rubber.

FINISH: Spirometer finished in handsome, durable, grey hammertone baked enamel. Spirometer bell and other trim finished in polished chrome. Easy to keep clean and attractive.

KYMOGRAPH: Large aluminum drum, driven by special precision spring-driven timing movement, or synchronous electric motor (optional). Former makes apparatus self-contained. Latter requires controlled-frequency, alternating current supply.

COMPUTATIONS: Although a Collins Calculator is provided with each machine, the chart paper is still provided with a space for computations for those who prefer to figure the B. M. R. mathematically.

EQUIPMENT: Each apparatus shipped complete with one filling of soda lime; 100 kymograph charts; extra pen; dropper-bottle of ink; 3 mouthpieces; noseclip; vital capacity mouthpiece; leak tester weight; oxygen tank fittings and tubing; instruction manual.

PRICE: \$285.00 fob Boston.
(Metabolism barometer and oxygen extra)

Accepted by the Council on Physical Medicine and Rehabilitation of the American Medical Association

Precision-Made and Guaranteed by

WARREN E. COLLINS, INC.
"Specialists in Respiration Apparatus Since 1908"
555 Huntington Ave., Boston 15, Mass.

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