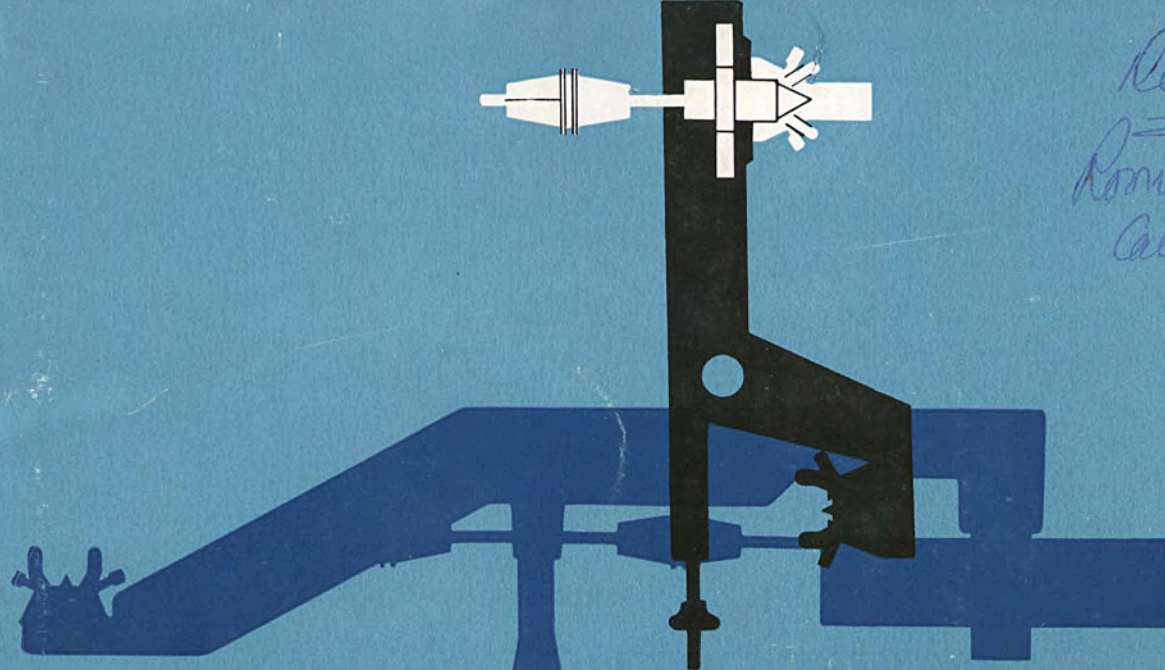
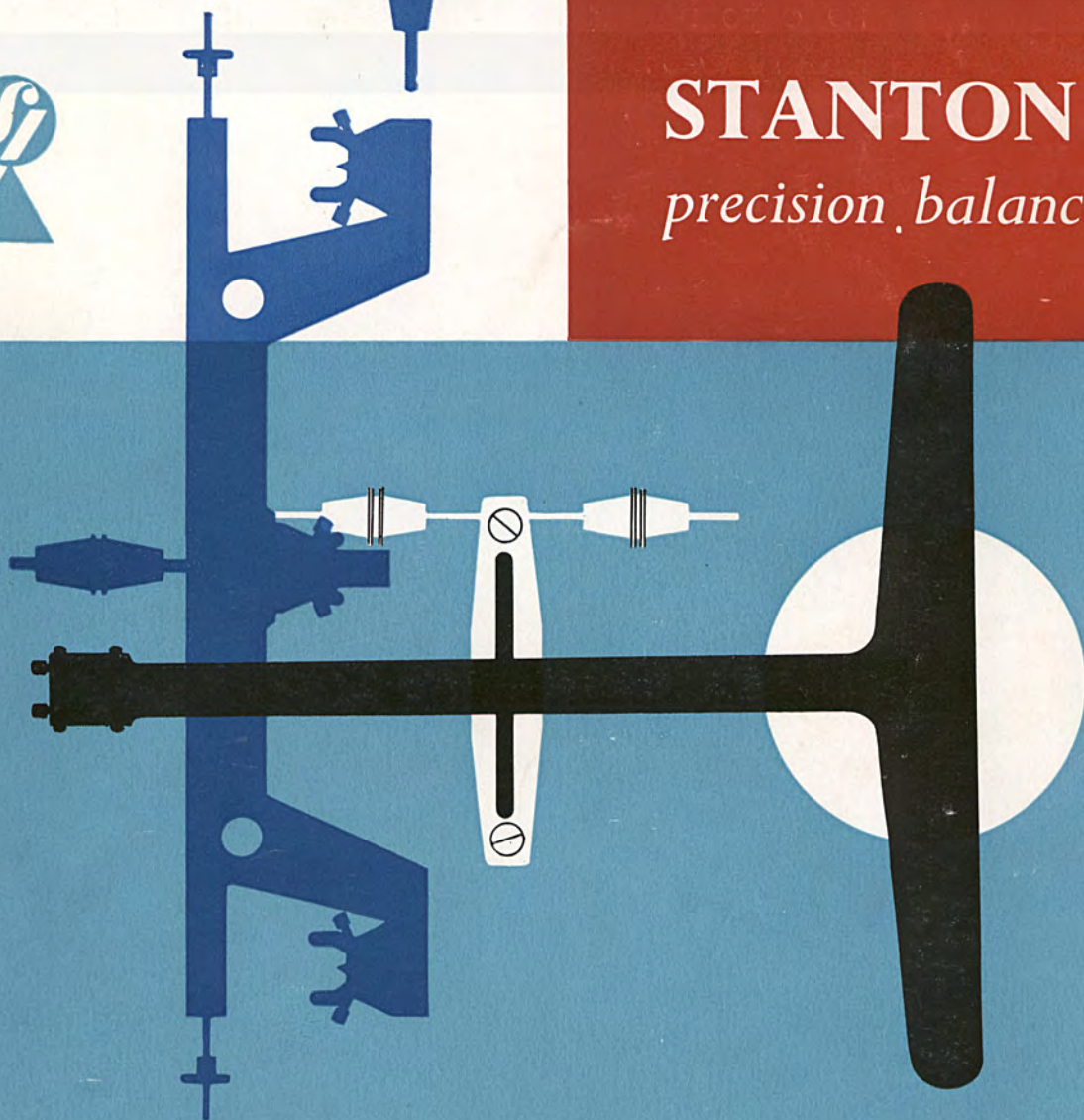


*Dec 1960*  
*Room 8*  
*Catalogue file*



**STANTON**  
*precision balances*



STANTON INSTRUMENTS LTD.,

119 OXFORD STREET - - LONDON, W.1

Telephone: GERRARD 7533

Cables: STANBAL, LONDON

October, 1960



*The policy of "STANTON" is to concentrate all our efforts, energy and skill to produce instruments of the very highest order and to establish ourselves as being worthy of the finest traditions of British craftsmanship.*

*Modern machinery and expert tooling enable us to produce components of the highest accuracy, reducing labour costs yet retaining the supreme standard of finish essential to precision balances and weights.*

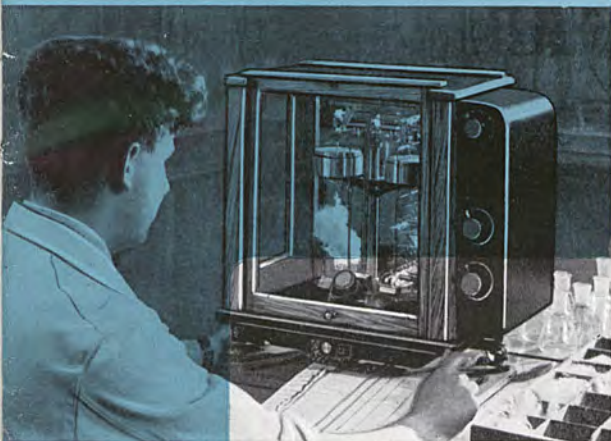
*Our aim for perfection, unsatisfied though it must always be, has helped to carry our instruments to nearly every country of the world. The prestige gained by supplying many National Standard laboratories, and world famous institutions encourages us still more to make every "STANTON" production one of which we, and the customer, can be truly proud.*

# INDEX

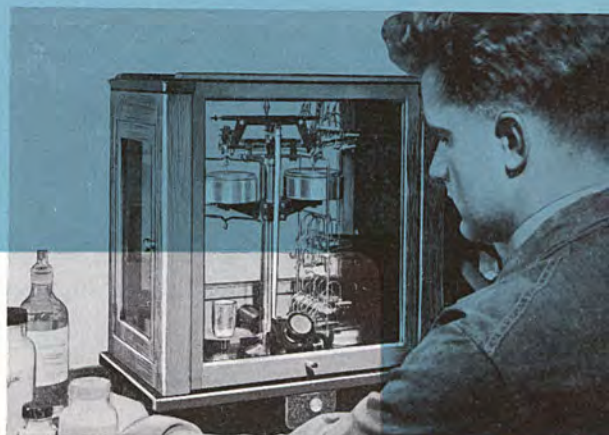
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|------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| Widespread Applications of Stanton Balances                                                    | ... | ... | ... | ... | ... | ... | ... | ... | ... | Page         |
| Features of Stanton Balances                                                                   | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3            |
| <b>FREE SWINGING BALANCES</b>                                                                  | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4, 5         |
| Models C.26, C.27, C.28                                                                        | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6, 7         |
| Illustrations: Models C.26, C.28                                                               | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6            |
| <b>SINGLE PAN BALANCES</b>                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7            |
| Models C.L.1, C.L.2, C.L.3                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8, 9, 10, 11 |
| Illustration: C.L.1                                                                            | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8, 9         |
| Models U.M.3, U.M.4, U.M.5, U.M.10                                                             | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8            |
| Illustration: Model U.M.3                                                                      | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10, 11       |
| <b>APERIODIC BALANCES</b>                                                                      | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10           |
| Models A.43, A.45, A.47                                                                        | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12, 13       |
| Illustration: Model A.43                                                                       | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12           |
| Models A.48, A.49, A.50                                                                        | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12           |
| Illustration: Model A.49                                                                       | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13           |
| <b>APERIODIC BALANCES, AUTO-LOADING</b>                                                        | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13           |
| Models B.20, B.21                                                                              | ... | ... | ... | ... | ... | ... | ... | ... | ... | 14, 15       |
| Illustration: Model B.20                                                                       | ... | ... | ... | ... | ... | ... | ... | ... | ... | 14           |
| <b>MICRO-BALANCES</b>                                                                          | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15           |
| Model M.C.5 (illustrated)                                                                      | ... | ... | ... | ... | ... | ... | ... | ... | ... | 16, 17       |
| Model M.C.6 (illustrated), M.C.8, M.C.3 (Riderless Micro-balance)                              | ... | ... | ... | ... | ... | ... | ... | ... | ... | 16           |
| <b>SEMI-MICRO BALANCES</b>                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 17           |
| Model S.M.12 (illustrated)                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 18           |
| <b>ASSAY BALANCES</b>                                                                          | ... | ... | ... | ... | ... | ... | ... | ... | ... | 18           |
| Models S.A.10, S.A.20, S.A.30 (illustrated)                                                    | ... | ... | ... | ... | ... | ... | ... | ... | ... | 19           |
| Illustrations: Models S.A.10, S.A.20                                                           | ... | ... | ... | ... | ... | ... | ... | ... | ... | 19           |
| <b>THERMO-RECORDING BALANCES</b>                                                               | ... | ... | ... | ... | ... | ... | ... | ... | ... | 19           |
| Models TR-1, TR-01, HT-M, HT-D, HT-SM, OS-2, OS-3A, OS-4A, OS-6, OS-5, OS-7, OS-8, OS-9, OS-10 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 20-33        |
| Recording Balances                                                                             | ... | ... | ... | ... | ... | ... | ... | ... | ... | 30, 31       |
| Models OS-1, OS-2, OS-3A, OS-4A, OS-6, OS-8                                                    | ... | ... | ... | ... | ... | ... | ... | ... | ... | 31, 33       |
| <b>BULLION BALANCES</b>                                                                        | ... | ... | ... | ... | ... | ... | ... | ... | ... | 33           |
| Models H.D.6, H.D.7 (both illustrated)                                                         | ... | ... | ... | ... | ... | ... | ... | ... | ... | 34, 35       |
| Models H.D.8, H.D.9 (both illustrated)                                                         | ... | ... | ... | ... | ... | ... | ... | ... | ... | 34           |
| <b>HEAVY DUTY BALANCES</b>                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 35           |
| Models H.D.1, H.D.2                                                                            | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36           |
| Illustrations: H.D.1 (without case)                                                            | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36           |
| H.D.1 (in case)                                                                                | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36           |
| <b>ANALYTICAL WEIGHTS</b>                                                                      | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36           |
| <b>STANTON MAINTENANCE</b>                                                                     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 37           |
| <b>SYNTHETIC SAPPHIRE PLANES</b>                                                               | ... | ... | ... | ... | ... | ... | ... | ... | ... | 38           |
| <b>LIST OF OVERSEAS AGENTS</b>                                                                 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 39           |
|                                                                                                | ... | ... | ... | ... | ... | ... | ... | ... | ... | 40           |

Stanton policy is one of continuous improvement; the right to change prices, specifications and designs without notice is reserved.

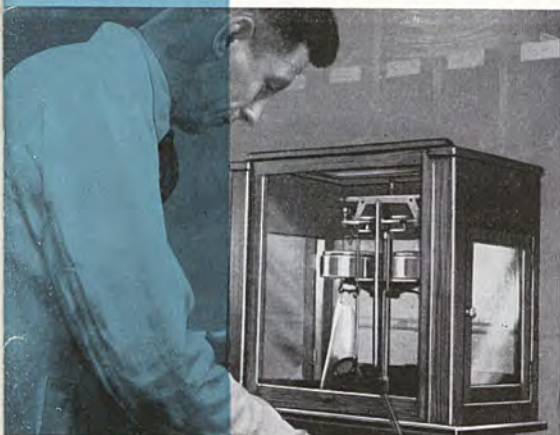
# WIDESPREAD APPLICATIONS OF STANTON PRECISION BALANCES IN INDUSTRY AND RESEARCH



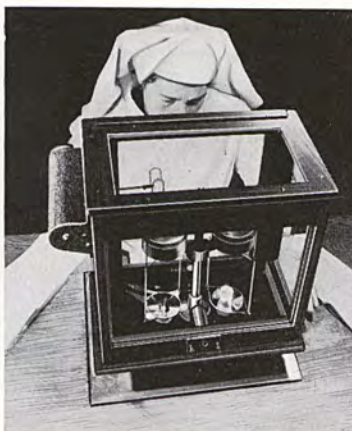
By courtesy of British  
Nylon Spinners Ltd.  
(Left)



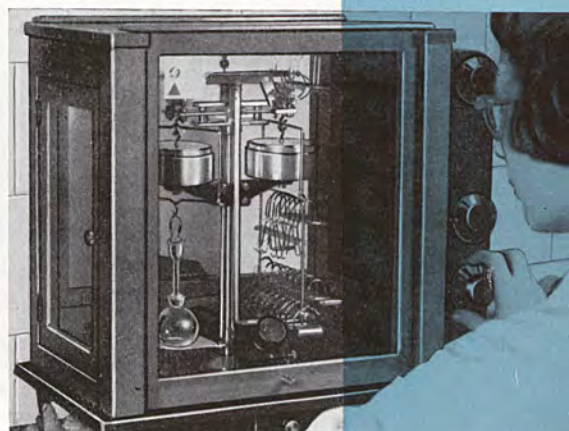
By courtesy of  
Monsanto Chemicals  
Limited.  
(Right)



By courtesy of Albert E. Reed & Co. Ltd.,  
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By courtesy of Glaxo  
Laboratories Ltd., Greenford.



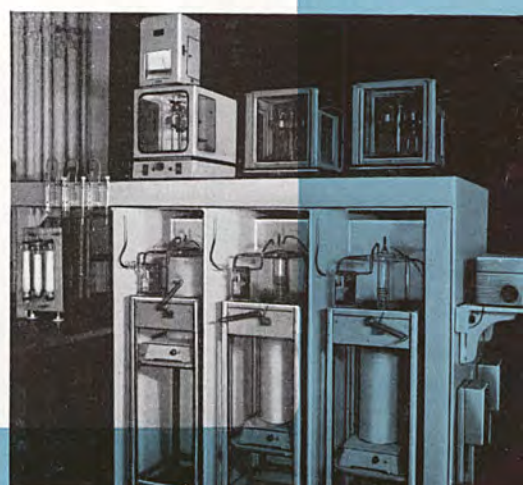
By courtesy of Imperial Chemical  
Industries Ltd., Nobel Division, Ayrshire.



By courtesy of R. P. Scherer Ltd.,  
Slough.



By courtesy of The National  
Physical Laboratory, Teddington.



By courtesy of The Atomic Energy  
Research Establishment, Harwell.

## Features that make **STANTON** the greatest

### Synthetic Sapphire (Corundum) Planes

Stanton were the first balance manufacturers in the world to use this scientifically produced material as standard practice in the construction of their balances. Its introduction represented a fundamental advance in modern balance design, leading to greater accuracy and longer life. Further details of the special merits and characteristics of SYNTHETIC SAPPHIRE may be found on page 39.

### Jewelled Arrestment

Nearly all STANTON balances are fitted with a fall-away type arrestment consisting of agate arrestment points bearing on agate cones fitted to the stirrups and the beam. This ensures smooth release and a "set-off" free from kicks. Furthermore the smooth operation of the arrestment system is unaffected by dust and corrosion.

### Knife Guards

Specially designed guards are fitted to all STANTON balances including Heavy Duty and Micro Models. These virtually eliminate damage to the knife edges through accidental displacement of the beam or stirrups, even if the pans are knocked while the balance is in swing.

### Stainless Steel Pans and Pan Wires

The pans and pan wires are those parts of a balance which most easily become affected by corrosion. STANTON fit stainless steel pans and pan wires to all analytical and most other of their balances. No solder is used on the pan assembly.

### Lighting System

The lighting system on all STANTON projection reading balances is designed for ease of use when the instruments are in continuous use over long periods. The screen is placed in an ideal reading position at the base of the balance. It is large and the figures are clear and bright. A green filter and a heat filter are included and the enclosed lamp unit is fitted outside the balance case thus eliminating the effects of heat upon the beam.

## **name in precision balances**

### **Improved Weight-loading**

The weight-loading on those STANTON Models equipped with this device is of a special design to ensure absolutely smooth operation of the weights, even the heaviest ones. The larger weights are applied symmetrically in pairs to avoid lateral movement of the pan assembly.

### **Stainless Steel Rider Movement**

The stainless steel rider slides fitted on STANTON balances remain unaffected by corrosion. Even after many years of use in corrosive laboratory atmospheres they retain a smooth "new" feel.

### **Stainless Steel Weights**

STANTON balances fitted with weight-loading in any form are also equipped with stainless steel weights. These are made from 25% Chromium, 20% Nickel austenitic stainless steel; a non-magnetic alloy with exceptional corrosion-resisting qualities. All weights are adjusted to well within N.P.L. Class "A" tolerances. They retain their accuracy throughout the life of the balance.

### **Finish**

The metal parts of STANTON balances where not made of stainless steel, are finished in acid-resisting grey stove enamel or cellulose gold or clear lacquer, thus giving the instruments a pleasing and modern appearance. Black ripple finish is used on certain Heavy Duty Models.

### **New Design Cases**

The cases of most Stanton models have been completely re-designed so as to be virtually dent and draught proof. Made from steel aluminium and finished in attractive hammer-tone they are the essence of compactness and durability. Some models are supplied with specially cemented plywood, finished in grey cellulose which is of pleasing appearance and scratch-resisting. Sliding side doors and counterpoised sash-type front slides are fitted. As the projection screen is located in the base of the front of the balances, access to the pans is unobstructed. A shelf can be fitted to most models to form a completely enclosed beam-chamber.

# FREE SWINGING BALANCES

## Model C.26 (Illustrated)

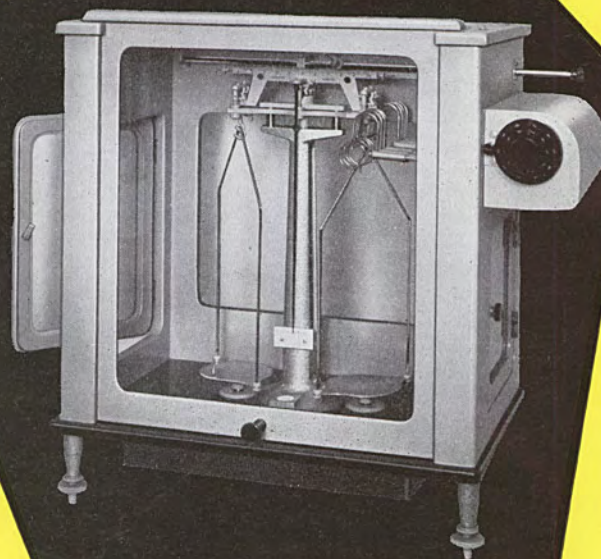
**Capacity:** 200 grammes.  
**Sensitivity:** 0.1 mg deflects pointer  $\frac{1}{2}$  scale division.  
**Pans:** Brass, heavily chromium plated, slightly concave; distance between pan wires 4" (10 cm). Height 9" (22.5 cm).  
**Pan supports:** Fully adjustable.  
**Knife edges:** Selected agate.  
**Planes:** Selected agate.  
**Beam:** Hard brass 5" (12.5 cm) with 100 divisions and left-hand zero for 5 mg rider.  
**Case:** In high quality plywood with counterpoised front slide; fitted with black plastic base; finish in light grey cellulose. Hinged side doors available at additional charge.  
**Other features:** Side action release, black plastic base; circular spirit level; single rod STAINLESS STEEL rider movement.  
**Application:** This balance is specially designed to meet the needs of universities, colleges, works laboratories, etc. for an inexpensive yet robust and accurate precision instrument.

## Model C.27 Similar in appearance to Model C.26 but specification as follows:—

**Capacity:** 200 grammes.  
**Sensitivity:** 0.1 mg deflects pointer  $\frac{1}{2}$  scale division.  
**Pans:** Stainless steel, slightly concave. Pan wires of stainless steel, distance between wires 4" (10 cm). Height 9 $\frac{1}{2}$ " (24 cm), approximately.  
**Pan supports:** Spring loaded, adjustable.  
**Knife edges:** Selected agate.  
**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.  
**Beam:** Hard brass 5" (12.5 cm) graduated with 100 divisions, with left-hand zero for 5 mg rider. (Central zero and/or serrated beam if specially ordered.)  
**Case:** In high quality plywood specially designed to exclude dust and draughts, and finished in a scratch-resisting pleasing light grey cellulose enamel. Fitted black plastic base and hinged side doors.  
**Other features:** Side action release; circular spirit level; fall-away arrestment fully jewelled; knife guards; STAINLESS STEEL single rod rider slide.  
**Application:** A fine quality balance for general analytical work.

## Model C.28 (Illustrated)

**Capacity:** 200 grammes.  
**Sensitivity:** 0.1 mg deflects pointer  $\frac{1}{2}$  scale division.  
**Pans:** Stainless steel, slightly concave. Pan wires of stainless steel, distance between wires 4" (10 cm). Height 9" (23 cm), approximately.  
**Pan supports:** Spring loaded, adjustable.  
**Knife edges:** Selected agate.  
**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.  
**Beam:** Hard brass 5" (12.5 cm) graduated with 100 divisions, left-hand zero for 5 mg rider. (Central zero and/or serrated beam if specially ordered.)  
**Case:** In high quality plywood specially designed to exclude dust and draughts and finished in a scratch-resisting pleasing light grey cellulose enamel. Fitted black plastic base and hinged side doors.  
**Weight-loading:** Multi-weight device for the external application of all weights from 10 mg to 990 mg. Stainless steel weights.  
**Other features:** Side action release; circular spirit level; fully jewelled fall-away arrestment; knife guards; single rod STAINLESS STEEL rider slide.  
**Application:** A high quality balance suitable for advanced analytical or semi-micro work.



## UNIMATIC SINGLE PAN BALANCES

As an alternative to the applied-load system of weighing, Stanton now offers the Unimatic single-pan balances—similar in appearance to the Ultramatic, but constructed on the *constant-load* principle of weighing by substitution. The compact, sturdy aluminium case enclosing the instrument is finished in green and black hammertone. Width 13", depth 16", height 20½"; weight 32 lb. With the introduction of the Unimatic series, the Stanton range of precision balances now provides an unrivalled choice to meet every requirement.



# UNIMATIC

## BALANCES

**Capacity:** CL1/CL2 200 grammes. CL3 100 grammes.

**Sensitivity:** CL1 0.1 mg per Vernier division. CL2 1.0 mg per Vernier division. CL3 0.01 mg per Vernier division.

**Precision:** CL1 Standard deviation 0.025 mg, CL2 0.3 mg and CL3 0.003 mg.

**Weights:** 25/20 Chrome/Nickel Stainless steel fully austenitic.

**Accuracy of Weights:** Within  $\frac{1}{2}$  N.P.L. Class A tolerances.

**Beam:** Pressure Die cast aluminium alloy stress relieved fitted with knife guards.

**Knives and Planes:** Synthetic Sapphire (pure Corundum) faceted and optically flat to within 3 fringes of light.

**Arrestment:** Jewelled, geometrically constrained.

**Taring:** Up to 100 g with a net range of 100 g after taring.

**Optical Scale:** 110 divisions numbered every 10—separately numbered Vernier on all models.

**Illumination:** 6v. 18w. lamp heat filtered, transformer suitable for 100-250v. A.C.

**Damping:** Air.

**Pan:** 4" (10 cm)  $\times$  7" (18 cm) high-stainless steel.

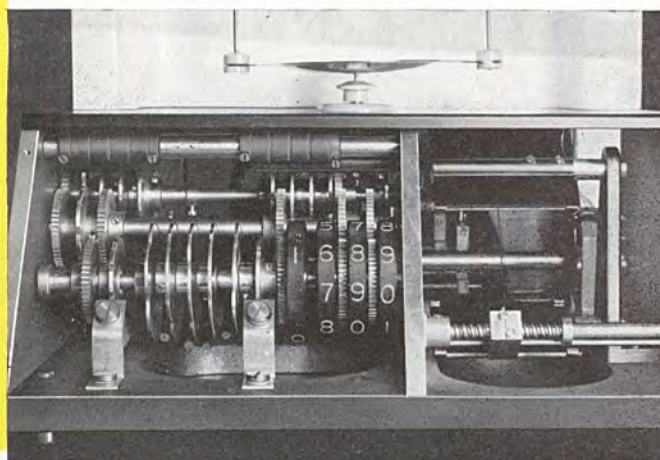
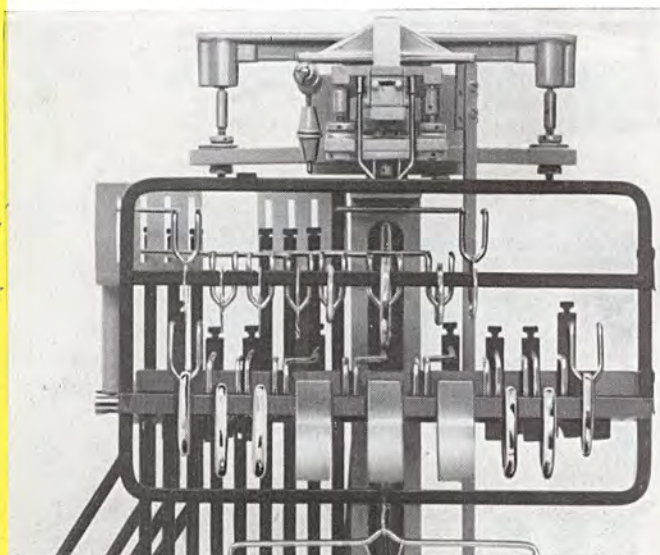
**Case:** Aluminium alloy finished in green and black hammertone.

**Dimensions:** Width 13" (33.0 cm). Depth: 16" (40.5 cm). Height: 20 $\frac{1}{2}$ " (52.0 cm).

**Net Weight:** 32 lbs. (14.5 kg).



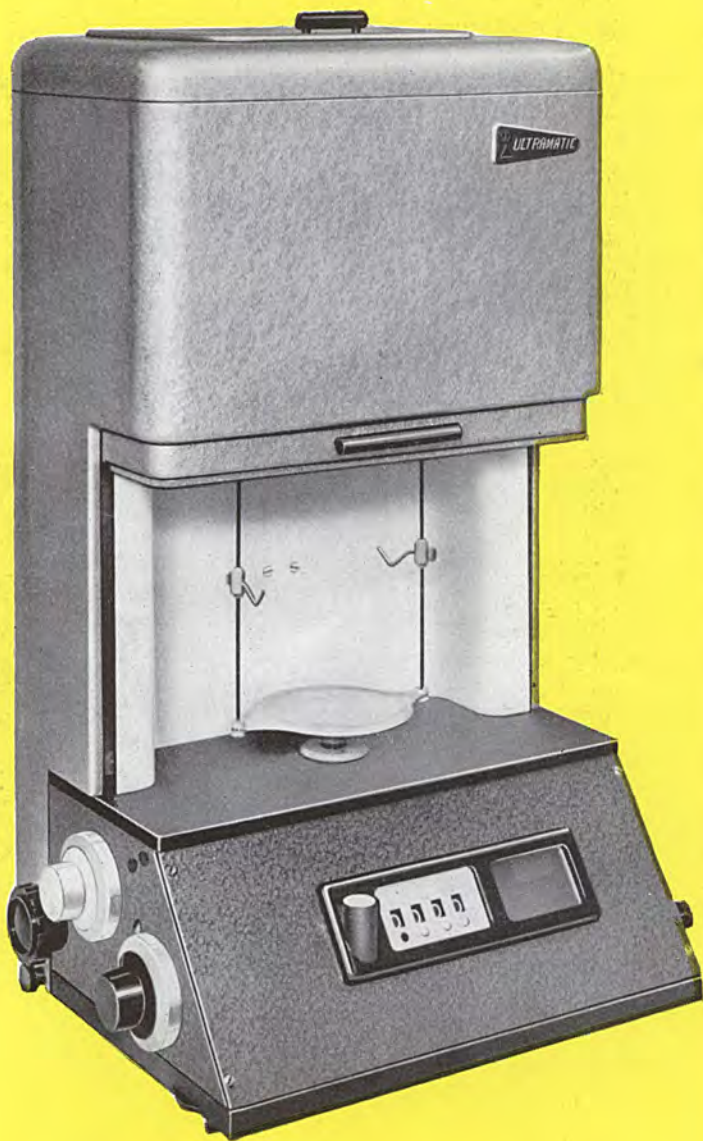
Regd. Trade Mark



| Type<br>Model No.                     | CONSTANT LOAD              |                            |                             |
|---------------------------------------|----------------------------|----------------------------|-----------------------------|
|                                       | C.L.1                      | C.L.2                      | C.L.3                       |
| Capacity                              | 200 g                      | 200 g                      | 100 g                       |
| Sensitivity                           | 0.1 mg per<br>Vernier div. | 1.0 mg per<br>Vernier div. | 0.01 mg per<br>Vernier div. |
| Standard Deviation                    | 0.025 mg                   | 0.3 mg                     | 0.003 mg                    |
| Range of optical scale                | 100 mg                     | 1 g                        | 10 mg                       |
| No. of divisions on scale             | 110                        | 110                        | 110                         |
| Taring (net range after taring) 100 g | up to 100 g                | up to 100 g                | —                           |
| Weight loading                        | 200 g                      | 200 g                      | 100 g                       |
| Accuracy of weights                   | $\pm 0.1$ mg               | $\pm 0.1$ mg               | $\pm 0.05$ mg               |

# ULTRAMATIC SINGLE PAN BALANCES

In the 'Ultramatic' single pan balance, all details of design and construction have been subordinated to the demand for unexampled speed and accuracy in balances of the applied load type. The entire instrument is enclosed in a very compact sturdy aluminium case, hammer finished in a pleasing stove-enamelled silver-grey and black. Width 13½", depth 16", height 21", and weight 32 lb. Here in the 'Ultramatic' is a balance that will fulfil the most stringent demands of service in the laboratories of today and tomorrow.



## Greater efficiency and ease of use

The large pan space is easily accessible behind the sliding glass door. The stainless steel pan having double suspension does not tilt. Dual release controls are at bench level. The counter indicator for weights is conveniently adjacent to the graticule screen and both are at the base of the balance in an ideal reading position.

## Greater speed

With dual release both hands can be used simultaneously for weighing. The partial beam release provides the fastest weighing time of any in this class of instrument with absolute safety. There is no danger whatsoever of increased wear of the knife edges by using this device. Stanton guarantee this. In fact it actually helps to preserve the knife edges as it allows weighings to be made with fewer releases of the beam. A weighing of an unknown object can be completed in less than 30 seconds. Colour markers have been fitted to the weight-loading dials and to the corresponding weight indicators on the front panel; this enables an unskilled person to acquire the correct weighing technique in a very short time.

## Greater reliability

All models fitted with Synthetic Sapphite (Corundum) planes, Stanton were the first balance manufacturer in the world to use this material on production instruments, with agate arrestment bearings, knife guards and stainless steel weights—class "A" adjustment.

★ *Complete weight-loading to full capacity. NO loose weights.*

★ *Taring to 100 grammes with net range of 100 grammes.*

# ULTRAMATIC BALANCES

**Pans:** Stainless steel, pan wires stainless steel; distance between wires 4" (10 cm), weighing height 7" (18 cm).

**Pan support:** Spring loaded fully adjustable.

**Knife edges:** Selected agate.

**Planes:** Synthetic Sapphire (Corundum) optically flat to within 3 fringes of light.

**Beam:** "Applied-load"—hard brass 5" (12.5 cm). Fitted with knife guards to prevent accidental dislocation of beam or suspending pieces.

**Release:** Two-way partial and full release. Two release knobs at bench level, one on each side of balance.

**Counter:** All weights applied are shown on counter mechanism located on base plate at front of balance adjacent to graticule screen. Colour indicators on counter correspond to those on weight-loading dials. Positive indication of taring.

**Illumination:** From 6v. lamp supplied from a transformer, or resistance in case of D.C. supply. External lamp mounting, insulated against head radiation to balance chamber. Transformer suitable for 100-250 volts. (Please state voltage when ordering.)

**Projection reading:** Optical system projects graticule image on ground glass screen mounted adjacent to counter indicator on base panel at front of balance. Built-in green filter.

**Air damping:** Single precision spun damping cylinder fitted below beam. Time for arrestment depends on sensitivity and load as follows:—

U.M.3. 10-13 secs. approximately.

U.M.4. 15-18 secs. "

U.M.10. 3-5 secs. "

**Arrestment:** Fully jewelled points and cups. Stirrups are of compensated pattern.

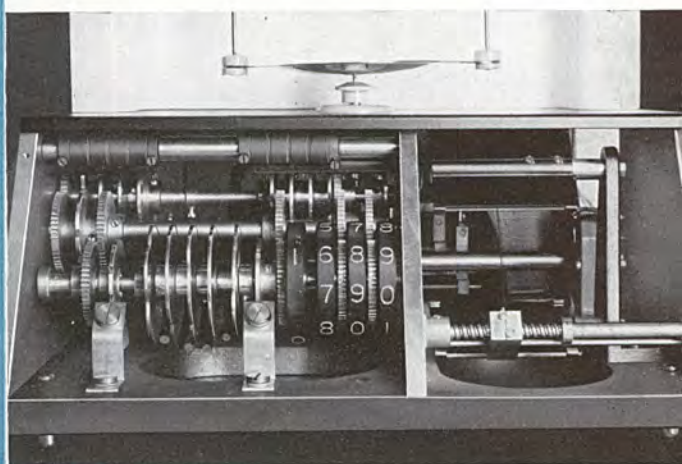
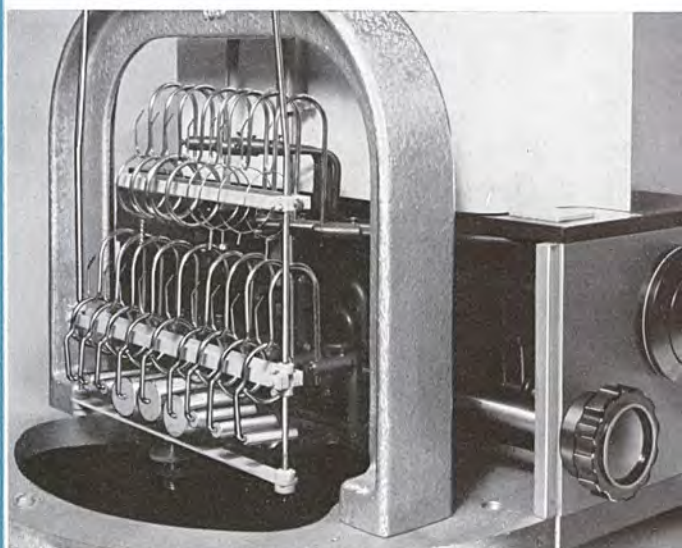
**Case:** Unit design in light alloy with single front counterpoised slide which gives access to pan from front and sides. Adjustable levelling feet, built-in spirit level. Finish in silver-grey and black hammered stove-enamel.

## TARE WEIGHING

A tare weight adjustable over the range 0-100 g is supplied with each balance. Its use allows rapid repeat weighing of charges up to 100 g in any tared vessel to which it has been adjusted with shot. Extra weights in sets of 6 are available for customers who desire to make great use of this feature. When taring, the counter mechanism clearly indicates that the device is in use and no subtraction is required.



Reg. Trade Mark



| Type<br>Model No.                     | APPLIED LOAD               |                            |                            |
|---------------------------------------|----------------------------|----------------------------|----------------------------|
|                                       | U.M.3                      | U.M.4                      | U.M.10                     |
| Capacity                              | 200 g                      | 200 g                      | 200 g                      |
| Sensitivity                           | 0.1 mg per<br>Vernier div. | 0.2 mg per<br>Vernier div. | 1.0 mg per<br>Vernier div. |
| Standard Deviation                    | 0.03 mg                    | 0.05 mg                    | 0.3 mg                     |
| Range of optical scale                | 100 mg                     | 100 mg                     | 1 g                        |
| No. of divisions on scale             | 110                        | 500                        | 110                        |
| Taring (net range after taring) 100 g | up to 100 g                | up to 100 g                | up to 100 g                |
| Weight loading                        | 200 g                      | 200 g                      | 200 g                      |
| Accuracy of weights                   | ±0.1 mg                    | ±0.1 mg                    | ±0.1 mg                    |

# APERIODIC BALANCES



## Model A.43

**Capacity:** 200 grammes.

**Sensitivity:** 0.1 mg per  $\frac{1}{2}$  division of projected graticule image.

**Pans:** Stainless steel slightly concave; pan wires of stainless steel; distance between wires 4" (10 cm). Weighing height  $6\frac{3}{4}$ " (17.0 cm), approximately.

**Pan supports:** Spring loaded fully adjustable.

**Knife edges:** Selected agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.

**Beam:** Hard brass 5" (12.5 cm).

**Release:** Side action, coupled to micro-switch which automatically operates illumination before balance is released.

**Projection reading:** From screen in ideal reading position at the base of the balance leaving unobstructed access to the pans. Graticule reading 0-100 mg in 500 divisions; left-hand zero, each division equivalent to 0.2 mg. Built-in green filter to reduce eye strain.

**Illumination:** 6v lamp with transformer or resistance in case of D.C. supply. Lamp housing at rear outside case to eliminate heat transfer to the balance.

**Aperiodic device:** Precision spun aluminium air-damping cylinders fitted below the beam. Parallel movement between the cups eliminates possibility of sticking. Approximate time for arrestment 12-14 seconds depending upon load.

**Weight-loading:** Multi-weight device for the external application of all weights between 100 mg and 900 mg. Stainless steel ring weights.

**Arrestment:** Fully jewelled with knife guards.

**Case:** In high quality plywood specially designed to exclude dust and draughts and finished in a scratch-resisting pleasing light grey cellulose enamel. Fitted black plastic base and sliding side doors. A beam shelf can be supplied as an optional addition.

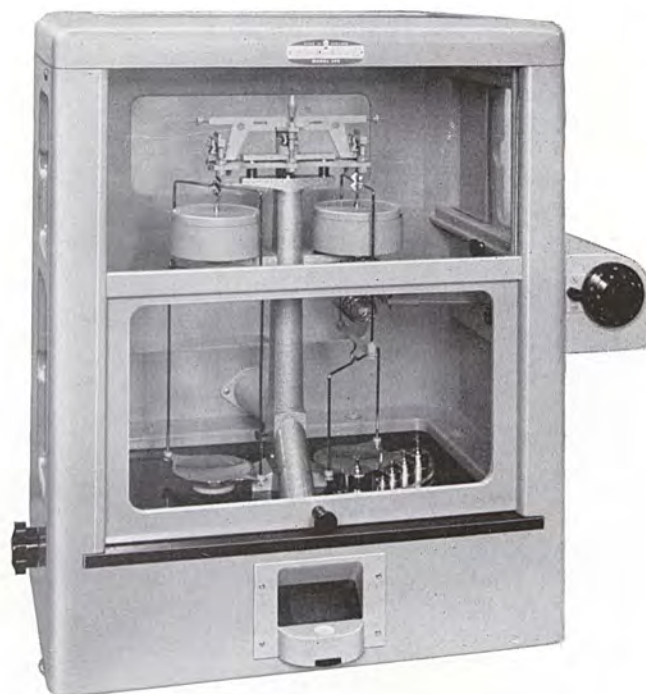
**Model A.47** as Model A.43 but without external weight-loading.

**Model A.45** as Model A.47 except as follows:—

**Projection reading:** From screen in ideal reading position at the base of the balance. Direct reading up to 0.5 g without use of weights. The graticule has 500 divisions, numbered every tenth division from zero on the left to 500 on the right. A graticule with central zero and  $\pm 250$  divisions can also be supplied if specified.

This balance can also be supplied calibrated in grains and with lower sensitivities down to 10 mg per division, details on application.

# APERIODIC BALANCES



## **Model A.49** (Complete with weights).

**Capacity:** 200 grammes.

**Sensitivity:** 0.1 mg per  $\frac{1}{2}$  division of projected graticule image.

**Pans:** Stainless steel slightly concave; pan wires of stainless steel; distance between wires 4" (10 cm) weighing height  $6\frac{3}{4}$ " (17.0 cm), approximately.

**Pan supports:** Spring loaded fully adjustable.

**Knife edges:** Selected agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.

**Beam:** Hard brass 5" (12.5 cm).

**Release:** Side action coupled to micro-switch which automatically operates the illumination.

**Projection reading:** 0-100 mg direct from the graticule screen in 500 divisions each equivalent to 0.2 mg. Every fifth division is numbered commencing with zero on the left. Built-in green filter.

**Illumination:** From 6v lamp supplied from a transformer, or resistance in case of D.C. supplies.

**Aperiodic device:** Precision spun aluminium air damping cylinders fitted below the beam. Time for arrestment 12-14 seconds depending upon load.

**Arrestment:** Fully jewelled, fitted with knife guards.

**Case:** In high quality plywood specially designed to exclude dust and draughts and finished in a scratch-resisting pleasing grey cellulose enamel. Fitted black plastic base and sliding side doors.

**Weight-loading:** Concentric dial multi-weight device for the external application of all weights from 100 mg to 9.9 grammes thus no loose weights are required for weighings below 10 grammes.

**Weights:** The balance is supplied complete with a set of 5 weights (10, 20, 30, 50, 100 g) fitted into a block adjacent to the pan for easy manipulation.

## **Model A.50** (Complete with weights).

**Capacity:** 200 grammes.

**Sensitivity:** 1 mg per  $\frac{1}{2}$  division of graticule image, otherwise as Model A.49 except as follows.

**Projection reading:** 0-1 g direct from graticule in 500 divisions each equivalent to 2 mg. Time for arrestment 3-5 seconds.

**Model A.48** as Model A.50 but without weight-loading and weight block.

# APERIODIC BALANCES — AUTO-LOADING

## Model B.20

- SYNTHETIC SAPPHIRE  
(Corundum) PLANES
- JEWELLED ARRESTMENT  
BEARINGS
- GREEN FILTER
- BETTER PAN ACCESSIBILITY
- FINGERTIP CONTROL  
WEIGHT-LOADING
- BRIGHTER SCREEN AND  
EASIER READING
- STAINLESS STEEL PANS  
AND WEIGHTS
- MODERN STREAMLINED  
APPEARANCE

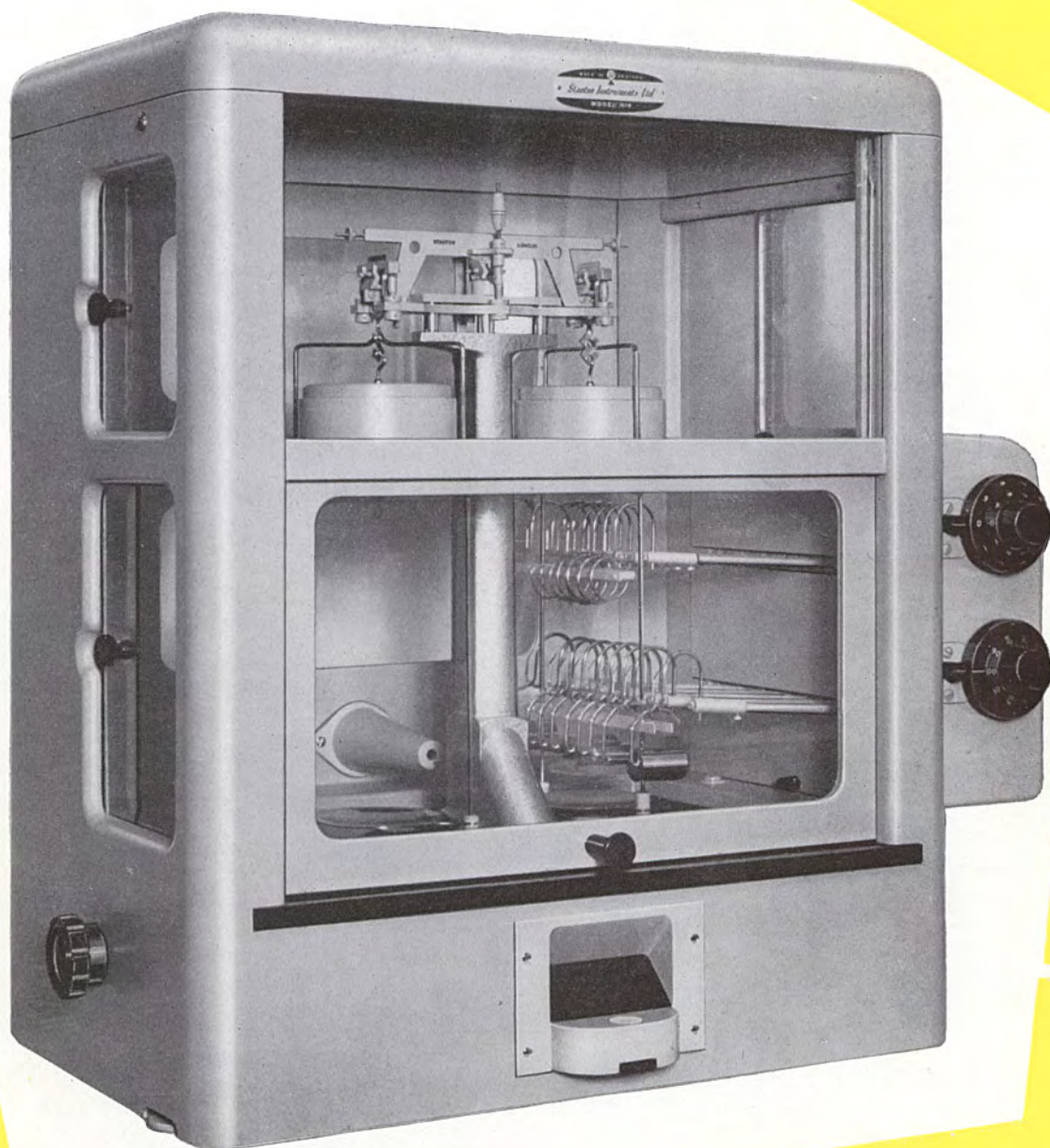
The STANTON B.20 offers outstanding advantages in weighing technique. All weights from 100 mg—199.9 g can be placed instantly by means of the "Omni-weight" attachment, while 0—100 mg is read direct from the graticule screen, placed in an ideal reading position at the base of the instrument. The tedium of weighing is reduced to an absolute minimum with no box-to-pan manipulation, and the totalling of weights is immediate, reducing further possible errors. Compared with Aperiodic Balances with weight-loading attachments up to 1 g, the weighing time is approximately halved. A complete weighing can be carried out in approximately 30 seconds. Housed in a modern high quality plywood case, finished in scratch-resisting light grey cellulose enamel.

Sensitivity : 0.1 mg      —      —      —      Capacity : 200 g

---

### MODEL B.21.

Identical to Model B.20 but with sensitivity of 1 mg per  $\frac{1}{2}$  division. The graticule has 500 divisions each equivalent to 2 mg, thus giving direct reading up to 1 g. Time for arrestment 3—5 seconds; this makes the balance specially suitable for the busy laboratory engaged on large scale routine analysis.



# MICRO-BALANCE



## Model M.C.5

- Planes of **SYNTHETIC SAPPHIRE** (Corundum).
- Weights up to 100 milligrammes added by external dial.
- Projection reading to avoid eye strain.
- Beam totally enclosed to exclude dust and air currents.
- "Ring" rider weights of stainless steel.

**Capacity:** 20 grammes.

**Sensitivity:** 0.01 mg per scale division permitting estimation to within 2-3 micro-grammes.

**Beam:** Light weight construction in special hard rolled aluminium alloy; length 10 cm with 101 accurately notched divisions.

**Knife edges:** Finest selected agate.

**Planes:** **SYNTHETIC SAPPHIRE** (Corundum) polished optically flat.

**Pans:** Stainless steel, flat pattern. Pan wires fitted with absorption tube supports; distance between wires 6.5 cm.

**Arrestment:** Double action with side release; all arrestment bearings fully jewelled.

**Aperiodic device:** Precision spun aluminium air damping cylinders, fitted below the beam.

**Pan stops:** Spring loaded fully adjustable.

**Rider slide:** Stainless steel, double bar type operating a 5 mg Gold rider.

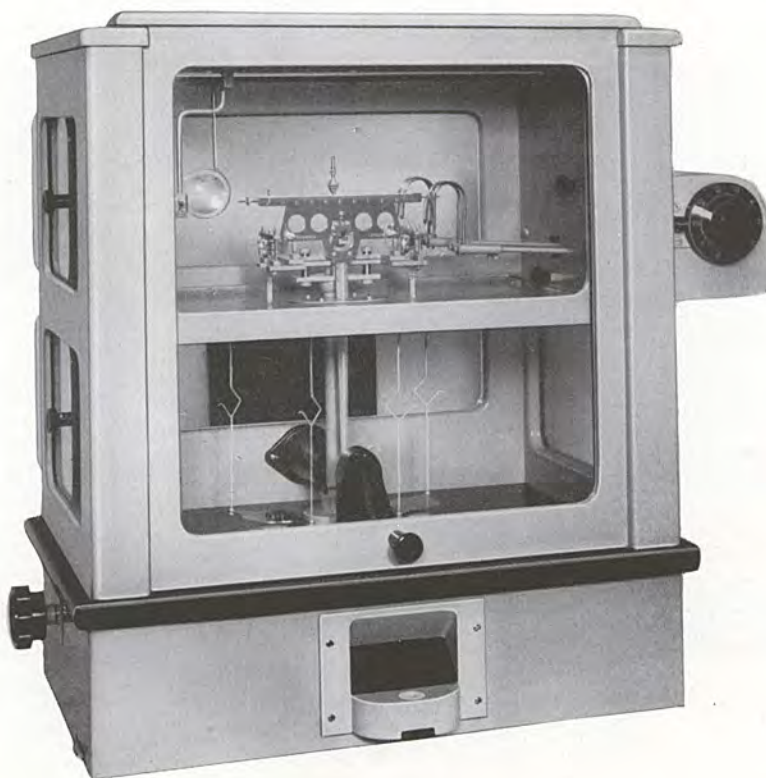
**Reading system:** The graticule image is projected on to a ground glass screen situated in an ideal reading position at the base of the balance. Graticule range  $\pm 1.0$  mg with 100 divisions on either side of a central zero. Each division equivalent to 0.01 mg.

**Illumination:** By a 6v 18w lamp mounted outside the case; built-in green and heat filters. Operation by micro-switch coupled to the release shaft.

**Weight-loading:** Multi-weight device for the external application of all weights from 10 mg to 90 mg (single dial).

**Case:** Finely constructed laminated wood fitted with beam chamber and mounted on heavy black glass base; light grey cellulose enamel finish. Sliding side doors.

# MICRO-BALANCE



## Model M.C.6

The general construction of this balance is similar to Model M.C.5, except that it is NOT air damped.

**Capacity:** 20 grammes.

**Sensitivity:** 0.001 mg. (This change of weight deflects pointer 1 scale division.)

**Graticule:** Range  $\pm 0.1$  mg in 100 divisions either side of central zero.

**Weight-loading:** Multi-weight device for the external application of all weights from 10 mg to 90 mg (single dial).

### MODEL M.C.8

The general construction of this balance is similar to Model M.C.5, except as follows:—

**Capacity:** 20 grammes.

**Sensitivity:** 0.001 mg per Vernier division.

**Graticule:** Range 0.1 mg in 100 divisions with left-hand zero.

**Weight-loading:** Multi-weight device for external application of weights from 10 mg to 90 mg (single dial).

**Zero adjustment:** Facility for adjusting zero of beam from outside the case.

## Riderless Micro-Balance

A model is available identical in design and construction to Model M.C.5. It is fitted with a notched beam and rider mechanism so that it can be used with a rider if desired. Its main feature is that it can be used without a rider.

### MODEL M.C.3

**Capacity:** 20 grammes.

**Sensitivity:** 0.01 mg per  $\frac{1}{2}$  graticule division.

**Graticule:** Range 10 mg in 500 divisions with left-hand zero and reading 0 to 1000.

**Weight-loading:** Multi-weight device for external application of weights from 10 mg to 90 mg (single dial).

**Note: Magnetic susceptibility measurements:** Specially adapted versions of Models M.C.5 and M.C.3 can be supplied, permitting the suspension of samples from the pan in a magnetic field below the case.

0.10 mg per  
Scale division

## SEMI-MICRO BALANCES



### Model S.M.12

**Capacity:** 100 grammes.

**Sensitivity:** 0.1 mg per division permitting estimation to 0.02 mg.

**Pans:** Stainless steel, slightly concave; stainless steel pan wires, distance between wires 4" (10 cm).

**Pan supports:** Spring loaded fully adjustable.

**Knife edges:** Selected agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.

**Beam:** Hard brass 5" (12.7 cm) with 101 accurate notches, zero on the left for use with 5 mg rider.

**Projection reading:** Graticule reading  $\pm 2.5$  mg in 50 divisions with central zero, each division equivalent to 0.1 mg. Alternatively graticule reading 0—10 mg in 100 divisions.

**Aperiodic device:** Precision spun aluminium air damping cylinders fitted below the beam. Arrestment time approximately 18-20 seconds depending upon load.

**Weight-loading:** Multi-weight device for the external application of all weights from 10 mg to 990 mg. Stainless steel "ring" weights.

**Additional features:** Fully jewelled arrestment and compensated stirrups. Stainless steel rider slide. External illumination with built-in green filter. Modern case in light grey cellulose finish, mounted on plastic base. Beam Chamber. Knife guard protection plates. For magnetic susceptibility measurements this balance can be specially adapted to permit the suspension of samples from the pan into a magnetic field below the instrument.

# ASSAY BALANCES

## Model S.A.10 (Illustrated)

**Capacity:** 5 grammes.

**Sensitivity:** 0.005 mg per  $\frac{1}{2}$  division.

**Beam:** Aluminium alloy; special light weight construction 10 cm long with 101 divisions for use with 1.0 mg rider. Marking 50 divisions either side of central zero.

**Reading:** Finely divided scale piece is read through a plano convex lens.

**Pans:** Removable stainless steel skiffs.

**Knife edges:** Finest selected agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum).

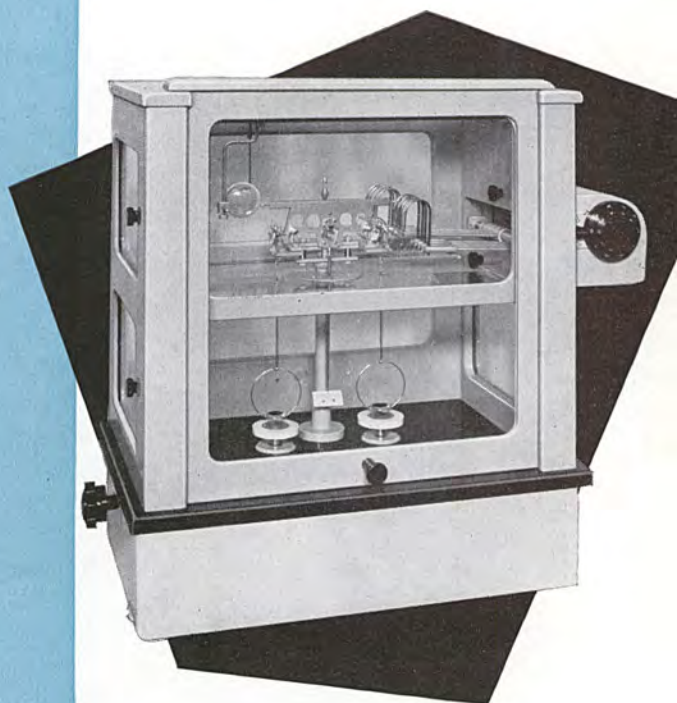
**Weight-loading:** External application of weights from 1 mg to 99 mg; stainless steel "ring" rider weights.

**Pan stops:** Adjustable; ivory with agate domes.

**Case:** In high quality plywood specially designed to exclude dust and draughts and finished in a scratch-resisting pleasing light grey cellulose enamel. Fitted black glass base and sliding side doors.

**Arrestment:** Double action, fully jewelled.

**Rider slide:** Parallel type stainless steel.



## Model S.A.20 (Illustrated)

**Capacity:** 5 grammes.

**Sensitivity:** 0.005 mg per  $\frac{1}{2}$  division.

**Beam:** Aluminium alloy; special light weight construction 10 cm long with 101 accurately notched divisions for use with 1 mg rider. Marking 50 divisions either side of central zero.

**Projection reading:** From screen situated in ideal reading position at the base of the balance; Graticule range  $\pm 1$  mg in 100 divisions on either side of central zero; each division equivalent to 0.01 mg. Illumination from 6v 18w projection lamp, built-in green filter.

**Aperiodic device:** Precision spun aluminium cylinders fitted below beam.

**Pans:** Removable stainless steel skiffs.

**Knife edges:** Finest selected agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum).

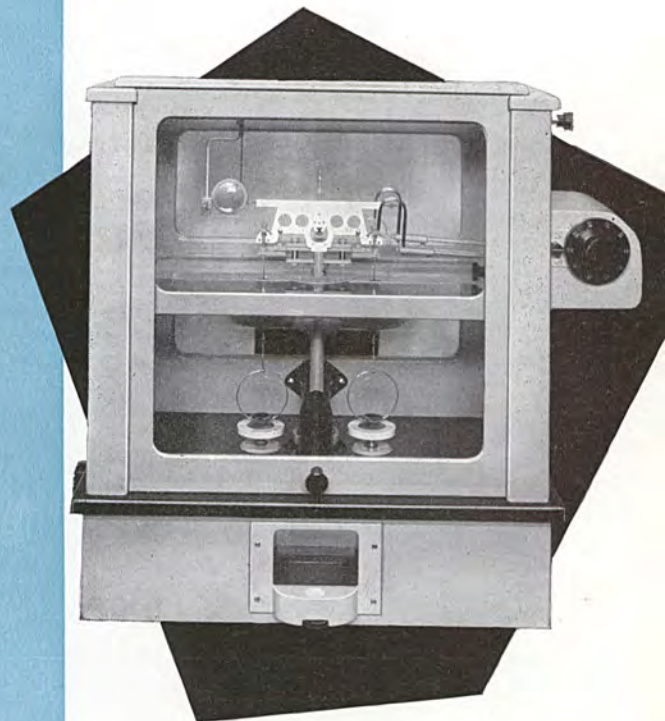
**Weight-loading:** External application of weights from 1 mg to 99 mg; stainless steel "ring" rider weights.

**Pan stops:** Adjustable; ivory with agate domes.

**Case:** In high quality plywood specially designed to exclude dust and draughts, and finished in a scratch-resisting pleasing light grey cellulose enamel. Fitted black glass base and sliding side doors.

**Arrestment:** Double action, fully jewelled.

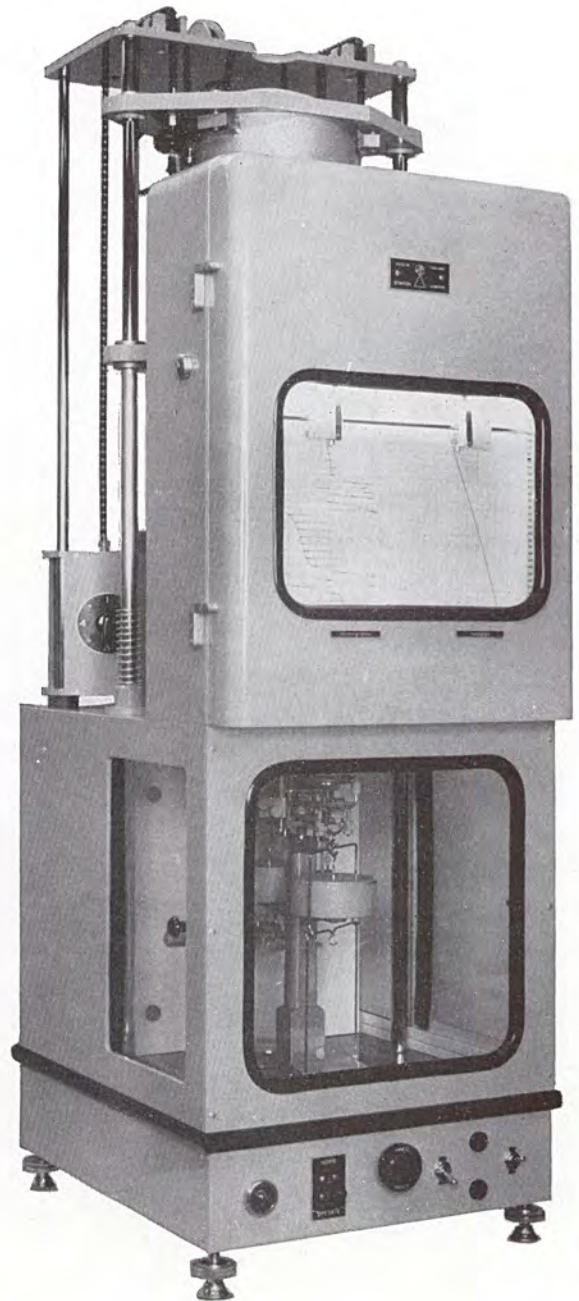
**Rider slide:** Parallel type, stainless steel.



## Model S.A.30

as Model S.A.10 but without external weight-loading.

- ★ Britain's first Thermo-recording Balance
- ★ Simultaneous recording of weight and temperature changes against time
- ★ Continuous and immediate visible records
- ★ Rectilinear charts
- ★ Fluorescent recorder lighting
- ★ Completely self-contained unit



**Fig. 1** Illustration showing the compactness of design of the STANTON Thermo-recording Balance.

## THERMO-RECORDING BALANCE

The instrument comprises a precision air-damped analytical balance of proved design surmounted by a bifilar wound tube furnace. The standard furnace is nichrome wound and is suitable for 1,000°C; its internal bore is 2" (5 cm). Alternative models with platinum/rhodium bifilar wound furnaces are available and are suitable for use to 1,550°C. A further model with a straight wound platinum/rhodium furnace may be used at 1,450°C. All platinum/rhodium wound furnaces have an internal bore of 1½" (3.8 cm). Both standard and high temperature models have been designed to take inner refractory sheaths, so that samples may be heated in a gas atmosphere. Such sheaths cannot be sealed at the base and this precludes work at pressures other than atmospheric.

The furnace is counterbalanced with its own low voltage transformer and may thus easily be raised or lowered over the charge. Its position above the balance renders convection currents inoffensive and the provision of heat radiation shields between the furnace and balance make the effect of stray radiation negligible. Bifilar windings prevent field effects when magnetic or conductive materials are heated. A simple but effective combined programme and limit control is fitted and works in conjunction with variable high-low switching.

The object to be tested is placed on a silica or alumina platform located in the furnace mounted on a rod of similar refractory material rising from the top of the rear balance suspension piece.

Furnace temperature and change of weight are followed simultaneously on a twin-pen electronic recorder fitted above the balance and in front of the furnace. The curves are thus seen at eye level and are both shown by continuous lines side by side. The twin pens are power driven by servo motors and receive their information from a platinum/rhodium: platinum thermocouple and a capacity follower plate located over the balance beam. This plate faithfully follows every minute movement of the beam and yet has no direct or mechanical contact with it. Thus, models may be arranged for either 1 mg sensitivity or for 1/10 mg sensitivity with the same proportional accuracy of scale.

The ability of these instruments to record change of weight is limited neither by the range of chart nor by the range of a single beam deflection. Advantage is taken of the servo-driven mechanism to operate electric weight loading at the end of each full beam movement (British Patent No. 771,593; U.S. Patent No. 2, 812, 172 and other Foreign Patents pending). By this means it is possible to follow weight change up to  $\pm 1$  g automatically on the 1 mg sensitivity models, or  $\pm 0.1$  g on the 1/10 mg versions. The instruments once set will reproduce and record time, temperature and weight changes for periods up to several days. Three chart speeds are available and at the slowest speed the spool holds sufficient paper for 20 days' work. The twin recorder incorporates Fielden "Servograph" patents and the electronic chassis used are of the "plug-in" type. Replacements are readily available.

## APPLICATIONS

There are a great many uses for a Thermobalance but almost all fall into three main groups.

1 *Research into methods of analysis and general analytical work.*

2 *Oxidation or corrosion and reduction studies on materials.*

3 *Comparison of closely allied samples and similar control work.*

An analyst obtains a permanent record of an ignition or similar study and may at his leisure decide at which temperature his precipitate reaches constant weight. By careful examination of his record he may decide the quantity of an absorbed material and by reference to previous work deduce the purity of his precipitate.

Oxidation or reduction studies may be made on test specimens or powders made from metals, ceramics or ceramals. The rate of oxidation is a satisfactory guide to the corrosion resistance of such materials at elevated temperatures. Such work may be carried out in gas atmospheres at atmospheric pressures and covers the whole field of high temperature materials research, associated with the production of turbine blades, rocket nozzles and jet engines.

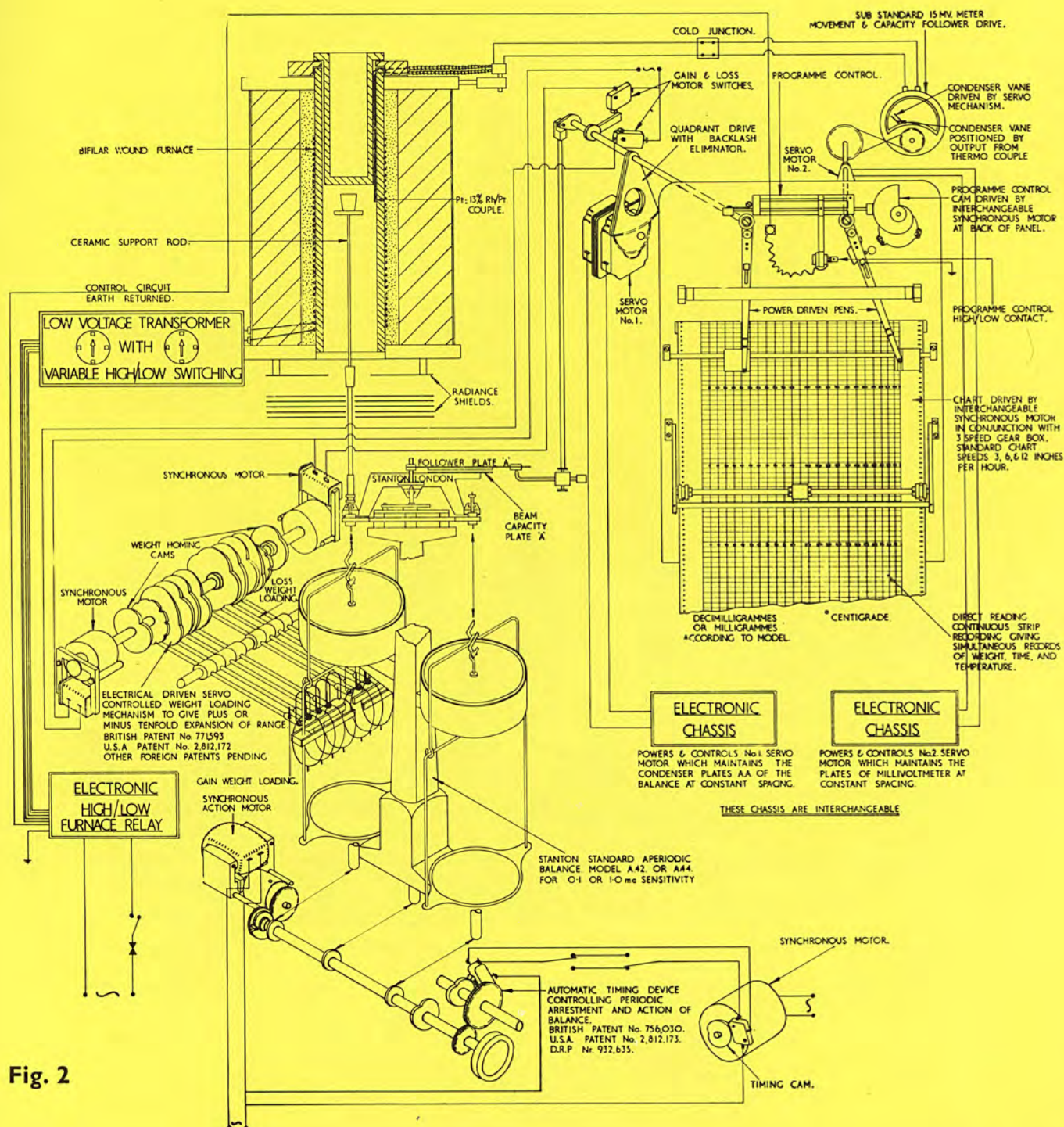
Figures 7 and 8 overleaf clearly show the potential of the instrument for checking the changes in composition of samples without the need for full analysis. Operators, trained in the use of these balances, but otherwise unskilled, may make continuous checks on the thermogravimetric curves of samples and need only refer a result to the chief analyst when the record differs from a previous check.

The further uses of the balance include the determination of moisture, volatile and ash; the investigation of sublimation phenomena, the behaviour of desiccants, the evaporation rate of solvents, gasometry, carbon and sulphur determinations, surface absorption and catalytical studies, atomic weight determinations, reagent purity and the like.

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# SCHEMATIC DIAGRAM OF "STANTON" AUTOMATIC DIRECT READING THERMO BALANCE.



# THERMOBALANCES—GENERAL SPECIFICATION

## BASIC BALANCE

Constant Load Principle over the whole recorded weighing range.

**Knife edges:** Special agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.

**Beam:** Hard brass 5" (12.5 cm) STANDARDISED AND INTERCHANGEABLE.

**Release:** Front action, hand and automatically motorised.

**Aperiodic device:** Precision spun aluminium air damping cylinders fitted below beam. Parallel movement between cups eliminates possibility of sticking.

**Arrestment:** Fully jewelled with knife-guards—warning bell fitted to guard against accidental release of beam.

**Follower plate:** Jewel pivoted on centre knife line, acting through same arc as beam: pick-up jewelled. No mechanical linkage with beam.

**Weight loading:** Electrically operated by smooth synchronous motors; self-retain circuits prevent weights stopping in the part-loaded position; power-driven homing device; gain and loss readings separately indicated in addition to pen record.

## RECORDER-CONTROLLER

**Type:** Twin-pen electronic, giving continuous strip side by side records of both change in weight and furnace temperature with time.

**Pens:** Power driven, straight line response. Adjustable zeros. Response time 2-3 seconds.

**Chart:** Twin 5" rectilinear tracks scaled mass and temperature in °C. High grade, low shrinkage paper. Length 120' per roll.

**Chart speeds:** (Standard gearbox) 3", 6" and 12" per hour.  
Additional speeds available (by interchange motors). See Optional Spares, page 30.

**Control:** Simple programme system to give near linear rate of heating at 350°C. per hour on HT. models and 250°C. per hour on TR models (other rates by interchanging motors—see OS 5 page 30). Fixed control at any temperature by de-energising programme motor. Manual control of high/low input voltages to give closest control.

**Millivoltmeter:** Sangamo Weston 1st grade moving coil to B.S.S. 89.

## FURNACE EQUIPMENT

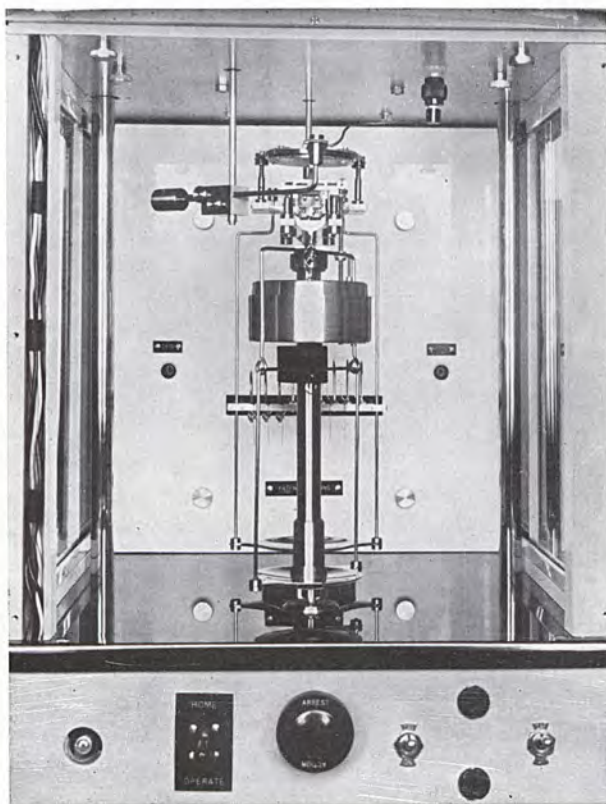
**Furnace:** Vertical tube type, with top closed by 4" deep alumina plug. Generous gauge nichrome or platinum winding, normally bifilar to prevent field effect when magnetic or conductive materials are heated. Grooved silica or alumina former. Compact size accomplished by the use of high efficiency graded insulation materials and heat-resisting stainless-steel separator. Robust case of  $\frac{1}{8}$ " steel. Stove grey finish.

**Thermocouple:** Platinum: 13% rhodium-platinum; 0.2" (0.5 mm) wires.

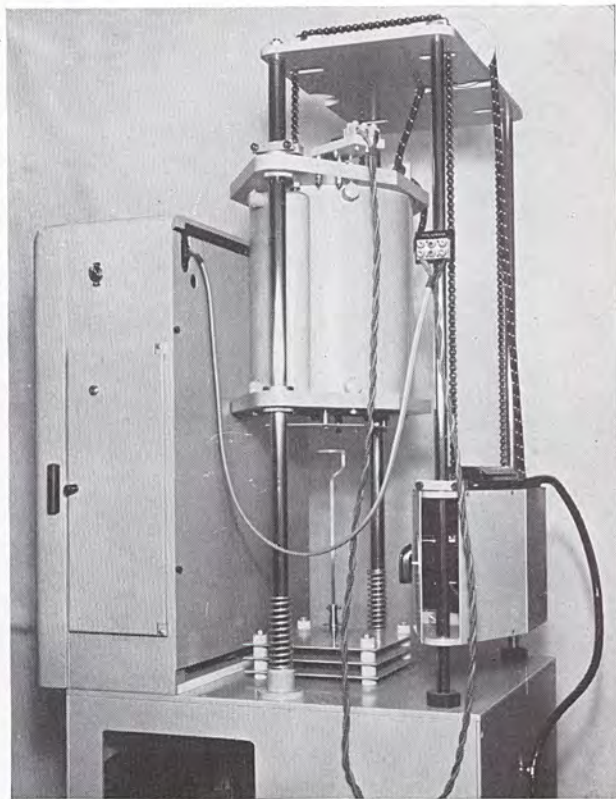
**Transformer:** Generously rated autowound, arranged with heavy duty A.C. switches to give 4 high and 4 low output voltages.

**Construction:** Aluminium alloy castings and sheet—sliding glass doors with draught excluders on balance chamber.

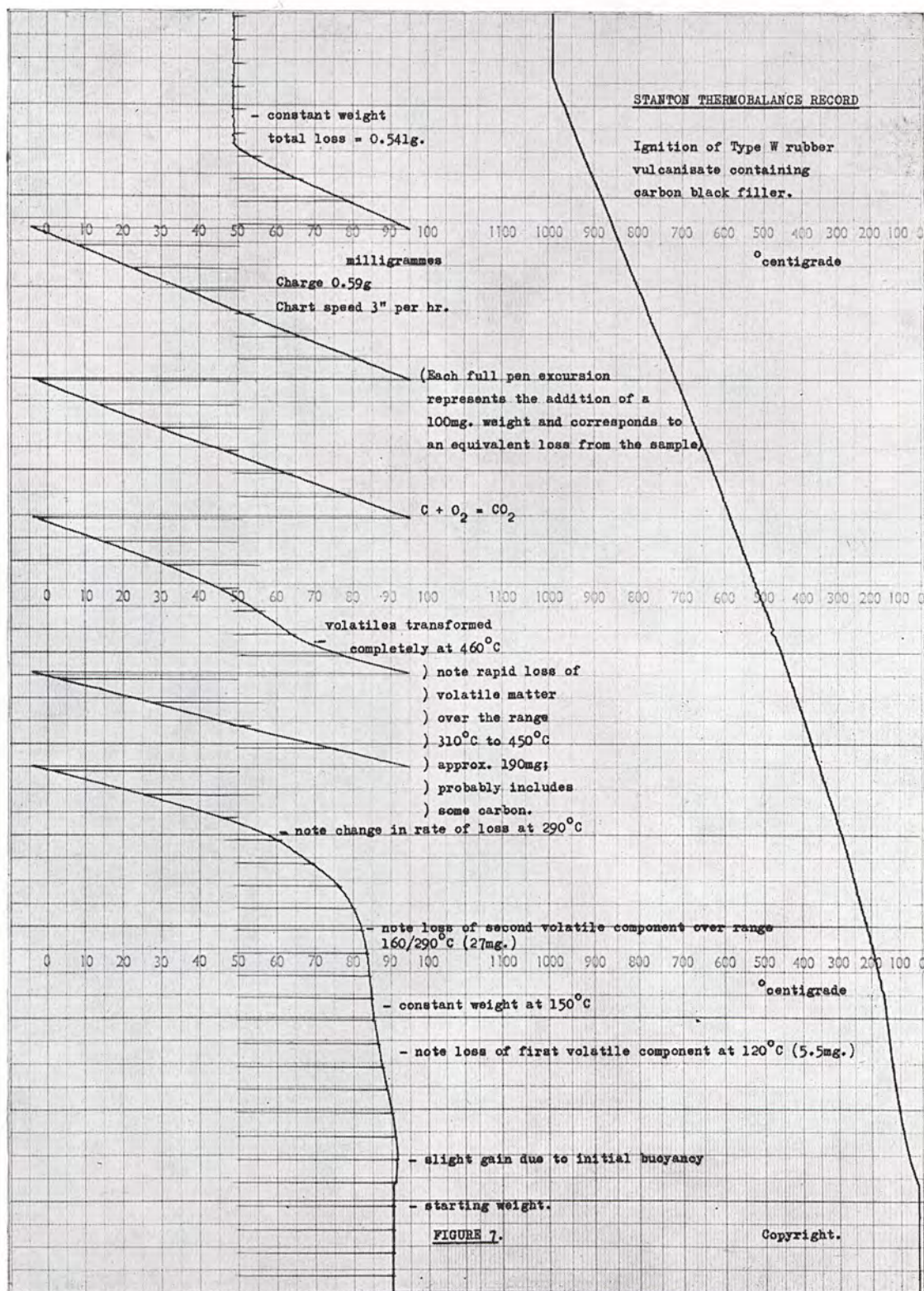
**Finish:** Stoved grey enamel—chrome plate fittings.



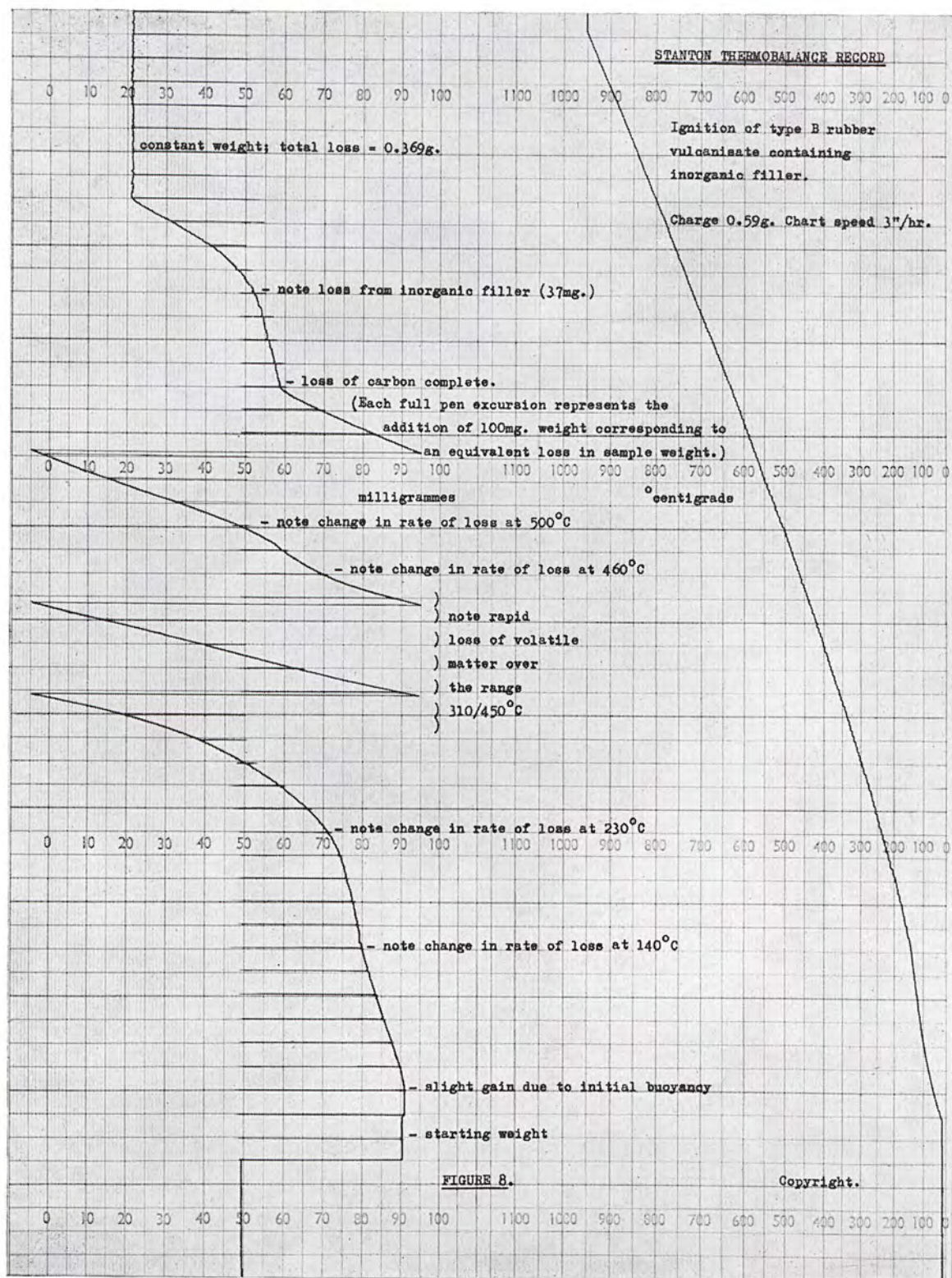
**Fig 3** Balance compartment and control panel of Thermo-recording balance showing weight loading mechanism and capacity follower plate mounted horizontally above the beam.



**Fig 4** Side view of the Thermo-recording balance showing recorder, furnace with counter-balancing transformer and silica rise rod for holding a crucible.



**Fig. 7** Curves showing the ignition of a rubber sample containing carbon black filler on a Model TR-1 Thermobalance. Linear rate of heating over four hours.



**Fig. 8** Curves showing the ignition of an identical charge of a similar rubber sample containing an inorganic filler heated under similar conditions to Fig. 7 sample.

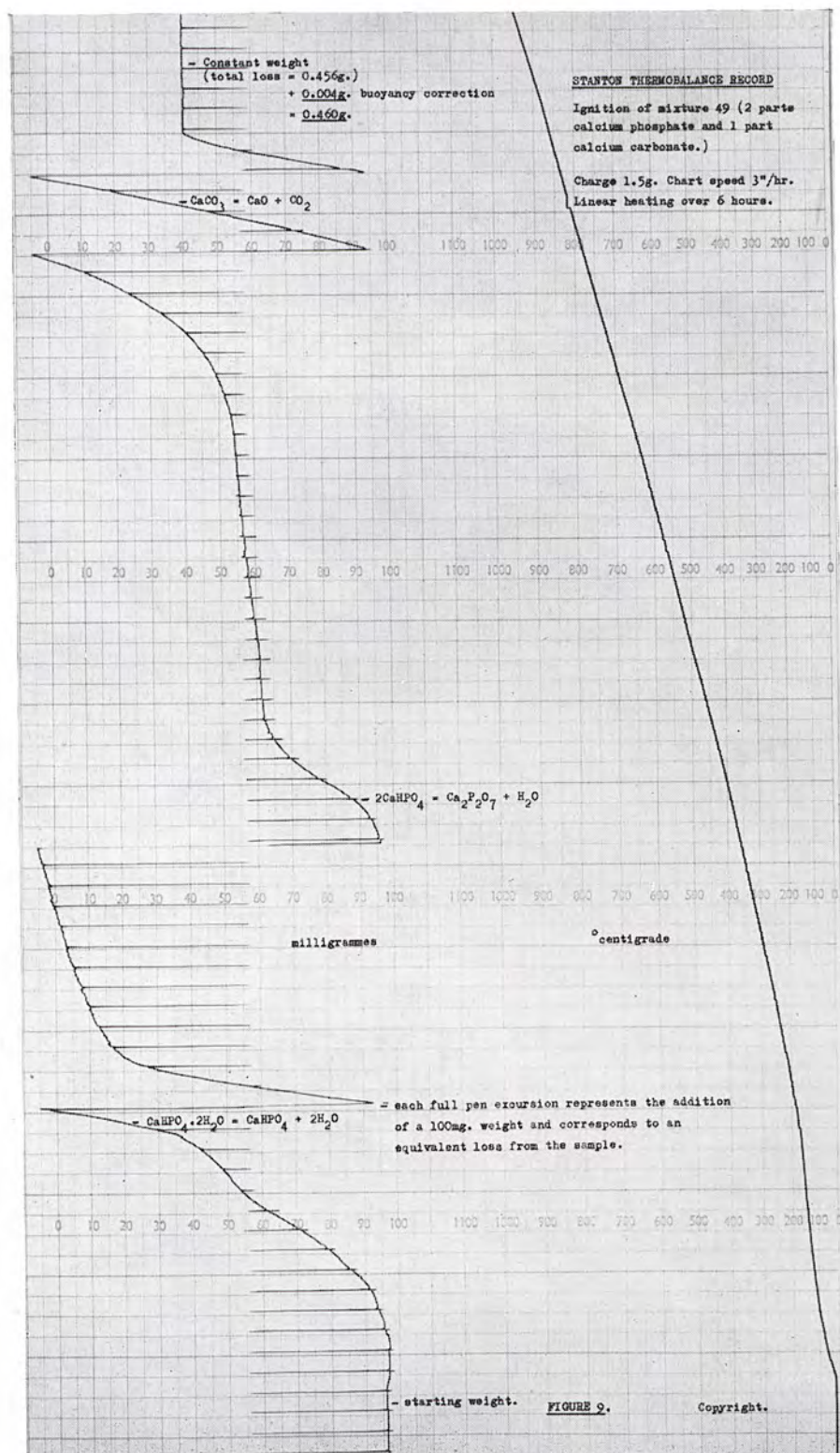
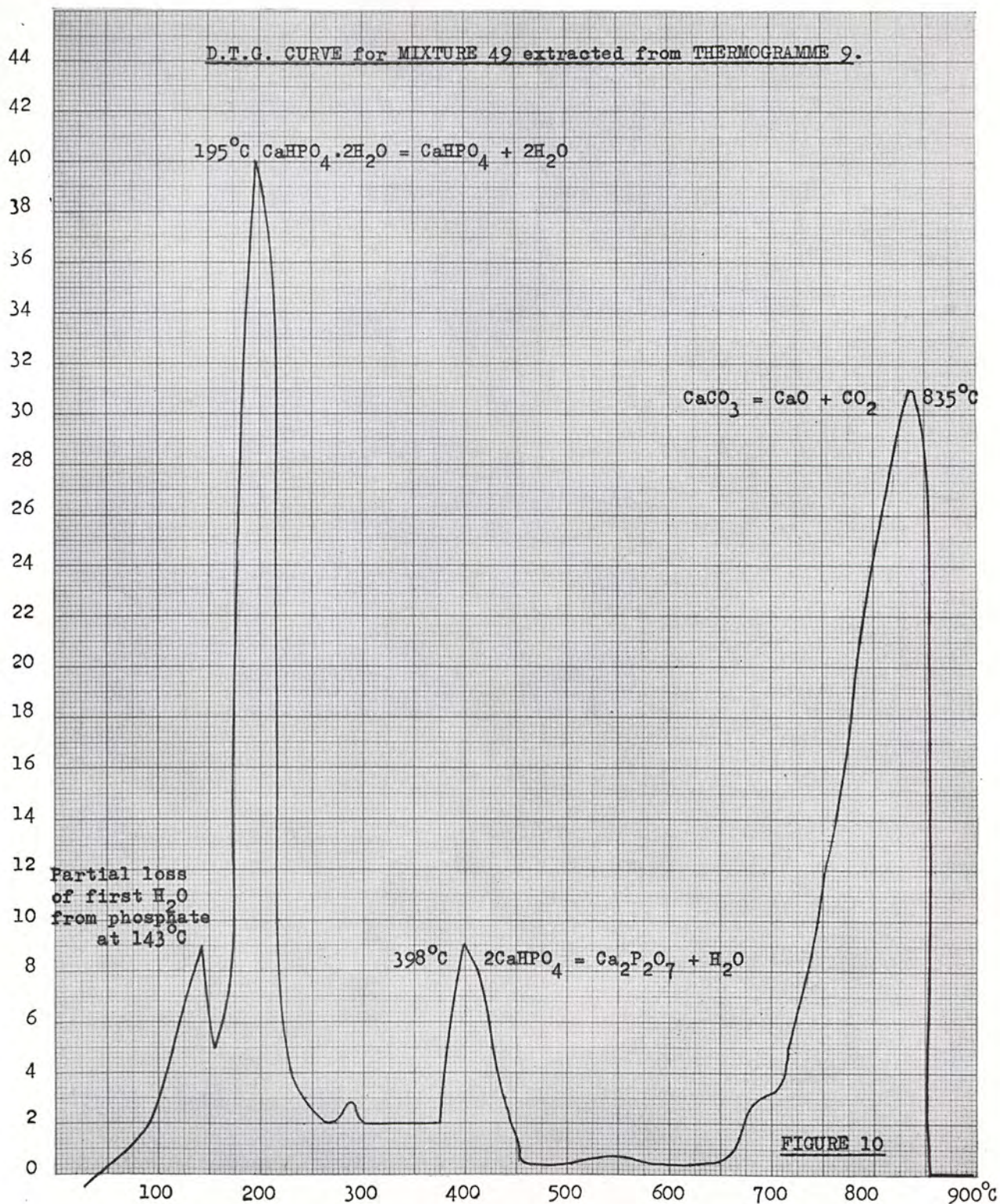


Fig. 9 Curves showing the ignition of a mixture composed of two parts calcium phosphate (ortho, dibasic) and one part pure calcium carbonate on TR-1 Thermobalance. Linear heating over 6 hours.



**Fig. 10** D.T.G. curve extracted from the thermogravimetric record shown opposite (Fig. 9). Rate of weight change per 5 min./interval obtained by simple difference subtraction at each standard timing interval.

# Thermo-Recording Balances

## Individual model Specifications.

| MODEL No.                                  | TR-I             | TR-01            | HT-M                     | HT-D                     | HT-SM                      |
|--------------------------------------------|------------------|------------------|--------------------------|--------------------------|----------------------------|
| Sensitivity per small chart division       | 1 mg             | 0.1 mg           | 1 mg                     | 0.1 mg                   | 1 mg                       |
| Chart range                                | 100 mg           | 10 mg            | 100 mg                   | 10 mg                    | 100 mg                     |
| Range of electric weight loading           | $\pm 1$ g        | $\pm 0.1$ g      | $\pm 1$ g                | $\pm 0.1$ g              | $\pm 1$ g                  |
| Max. rate of weight change per minute      | 400 mg           | 40 mg            | 400 mg                   | 40 mg                    | 400 mg                     |
| Normal overhead weighing capacity*         | 20 g             | 20 g             | 16 g                     | 16 g                     | 16 g                       |
| Type of furnace                            | bifilar nichrome | bifilar nichrome | bifilar platinum rhodium | bifilar platinum rhodium | straight wound plat./rhod. |
| Maximum temperature                        | 1,000°C          | 1,000°C          | 1,400°C                  | 1,400°C                  | 1,550°C                    |
| Furnace bore                               | 2" (5 cm)        | 2" (5 cm)        | 1½" (3.8 cm)             | 1½" (3.8 cm)             | 1½" (3.8 cm)               |
| Depth of hot zone                          | 2" (5 cm)        | 2" (5 cm)        | 1½" (3.8 cm)             | 1½" (3.8 cm)             | 1½" (3.8 cm)               |
| Min. timeliner heating to max. temperature | 3 hrs.**         | 3 hrs.**         | 4 hrs.                   | 4 hrs.                   | 4 hrs.                     |

\* Overhead capacity may be extended to 50 g on all models by using "ballast".

\*\* 4-hour rate control standard on all Models see OS5 below.

All Thermobalances are supplied complete and ready for immediate use. The standard equipment includes stand, chart, crucibles, crucible supports and counterweights, thermocouple, furnace plugs, inks, spare fuses and sundries.

*The following optional spares are available:*

- OS 2 Parallel-sided stainless-steel (25/20) weights, Class A adjustment, 10 mg to 50 g with additional 50 g weight for counterpoising heavy overhead loads: complete in seasoned timber box, grey finish.
- OS 3A  $\frac{1}{3}$  Rev. per hour chart motor to give additional chart speeds of 1", 2" and 4" per hour.
- OS 4A 4 Rev. per hour chart motor to give additional chart speeds of 24" and 48" per hour.
- OS 5 6 Rev. per hour chart motor to give additional chart speeds of 18", 36" and 72" per hour.
- OS 6 Programme control motors with speeds of 1 rev. in 3, 4, 6, 8, 12 or 24 hours, each complete with cam mounting spigot and two-pin plug. (Ref. Nos. PC 3, 4, 6, 8, 12 and 24.) PC 3 suitable for TR models only.
- OS 7 "Sunvic" thermostatic cold junction pot.
- OS 8 Set of test weights for weight loading checks (quote model No.).
- OS 9 Standard inner silica sheath (internal bore 1⅜") for use in 2" diameter furnaces on models TR—1 and TR—01.

- OS 10** Inner sheath for high temperature furnaces in "Mullite" grade aluminous porcelain—internal bore approximately  $1\frac{1}{8}$ " for use in  $1\frac{1}{2}$ " diameter furnaces on models HT-M, HT-D and HT-SM.

**TIMING DEVICES** (British Patent No. 756,030; U.S. Patent No. 2,812,713; DRP No. 932,635 and other Foreign Patents pending)

The change in weight record on both Thermobalances and Recording balances is normally continuous on all standard instruments. A device actuates momentarily at five-minute intervals to record the progress of time directly with the main functions and guards against errors due to beam drift. When these instruments are required for oxidation work involving hundreds or thousands of hours, special timing devices may be fitted additional to the standard as detailed below.

|                  |                                 |                                   |
|------------------|---------------------------------|-----------------------------------|
| <b>Ref. 5/55</b> | Bal. actions 5 mins.—chart runs | Bal. arrests 55 mins.—chart stops |
| <b>Ref. 5/25</b> | Bal. actions 5 mins.—chart runs | Bal. arrests 25 mins.—chart stops |
| <b>Ref. 5/10</b> | Bal. actions 5 mins.—chart runs | Bal. arrests 10 mins.—chart stops |

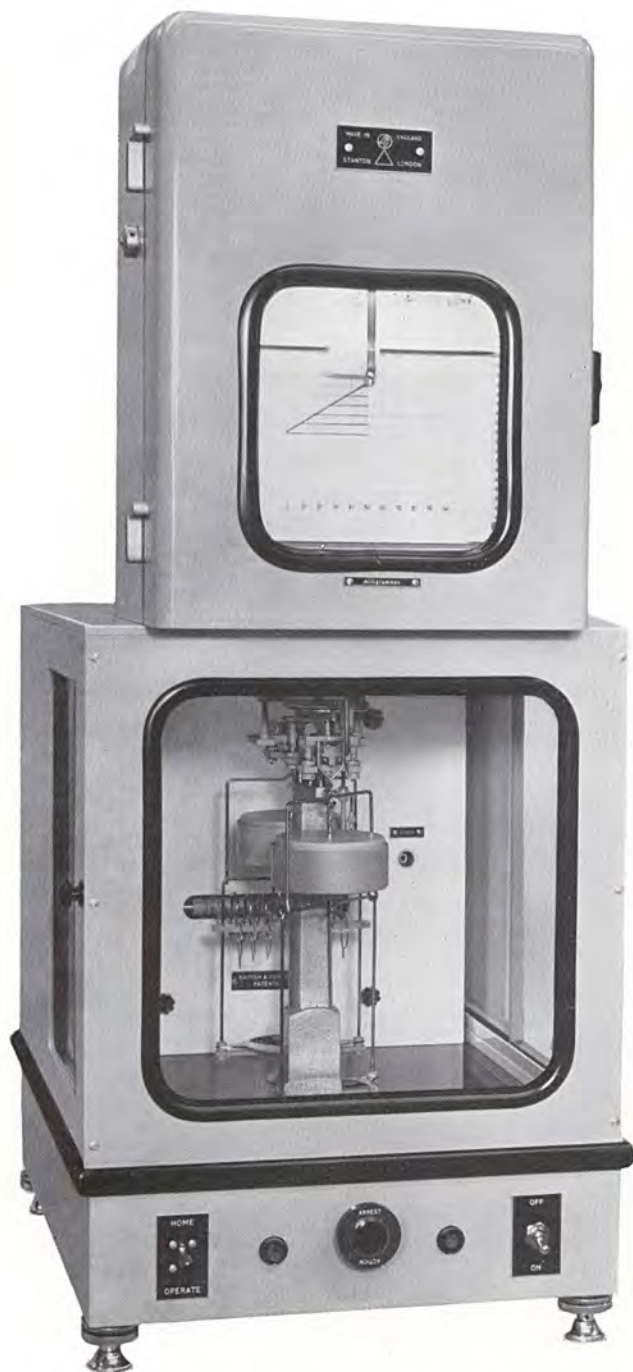
## RECORDING BALANCE

The specification and layout of the basic balance is similar to the Thermobalances described above. The twin recorder is, however, replaced with a single-range instrument which records weight and time only on a 5" (12.5 cm) chart. The change in weight record is shown as a continuous curve visible at eye level. The electronic equipment used is identical with the equivalent part of the Thermobalance, involving the "Fielden" principle.

The recorder pen is power driven by a servo motor and receives its information from a capacity follower plate located over the balance beam. This plate faithfully follows every minute movement of the beam but has no direct or mechanical contact with it. These models are available: R-10 for 10 mg sensitivity, R-1 arranged for 1 mg sensitivity and R-01 arranged for decimilligramme sensitivity. Each has the same proportional accuracy of scale.

Advantage is taken of the servo-driven pen to operate electric weight loading at the end of each full beam movement (British Patent No. 771,593; U.S. Patent No. 2, 812, 172 and other Foreign Patents pending). By this means it is possible to follow automatically weight changes up to  $\pm 10$  g on Model R-10,  $\pm 1$  g on model R-1, and  $\pm 0.1$  g on model R-01. Once set, the instruments will record time and weight changes for periods up to several days. Three chart speeds are available and at the slowest standard speed the spool holds sufficient paper for 20 days' work.

The main balance is of conventional three knife edge type but it is arranged so that the whole of the recorded weight range is followed at *constant load*.



## APPLICATIONS

The field of application for recording balances is almost unlimited. They are suited to moderate temperature "thermo" work with customers' own preferred furnace equipment located beneath the balance. The sample is hung from the rear pan and may be located in an oven, furnace, refrigerator, humid chamber, dry box or similar chamber holding the chemist's own favoured "set-up".

Flow through gas or liquid cells may be arranged below the balance for corrosion investigation or gas and liquid measurement of specific gravity. Such work is limited to atmospheric pressures, but the aperture through which the wire passes to the cell can be restricted to  $\frac{1}{16}$ " (1.5 mm) diameter if suitable ancillary equipment is provided. They have been used for work in combined steam and gas atmospheres.

These balances have a very definite place in the science of automation; thus they may, by suitable modification, be arranged for the continuous recording and control of liquid gas specific gravities to the very highest accuracy. This is accomplished by hanging a standard plummet or gas sphere from the pan into a flow through cell and additionally fitting limit switches to the power driven pen to operate control-valve mechanisms remotely.

## Recording Balances — GENERAL SPECIFICATION

Constant Load Principle over the whole recorded weighing range.

**Knife edges:** Special agate.

**Planes:** SYNTHETIC SAPPHIRE (Corundum) optically flat.

**Beam:** Hard brass 5" (12.5 cm) STANDARDISED and INTERCHANGEABLE.

**Release:** Front action, hand and automatically motorised.

**Aperiodic device:** Precision-spun aluminium air damping cylinders fitted below beam. Parallel movement between cups eliminates possibility of sticking.

**Arrestment:** Fully jewelled with knife-guards—warning bell to guard against accidental release of beam.

**Followers plate:** Jewel pivoted on centre knife line, acting through same arc as beam: pick-up jewelled. No mechanical linkage with beam.

**Weight loading:** Electrically operated by smooth synchronous motors: self-retain circuits prevent weights stopping in the part-loaded position; power-driven homing device; gain and loss readings separately additionally to pen record.

## RECORDER

**Type:** Single pen electronic, giving continuous strip record of change in weight with time.

**Pen:** Power driven, straight line response 7.66" (19.5 cm), adjustable zero; response time 2—3 seconds.

**Chart:** 5" track scaled mass. High grade low shrinkage paper, length 120'.

**Chart speeds:** (Standard gearbox) 3", 6" and 12" per hour. (Additional speeds available see optional spares.)

## CASE

**Construction:** Aluminium alloy castings and sheet—sliding glass doors with draught excluders on balance chamber.

**Finish:** Stoved grey enamel—chrome plate fittings.

# Recording Balances

## —INDIVIDUAL MODEL SPECIFICATION

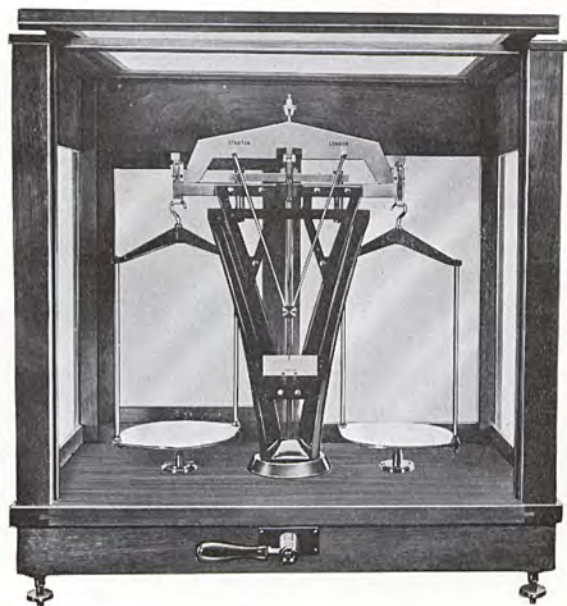
| MODEL No.                            | R-1         | R-01       | R-10     |
|--------------------------------------|-------------|------------|----------|
| Sensitivity per small scale division | 1 mg        | 0.1 mg     | 10 mg    |
| Chart range                          | 100 mg      | 10 mg      | 1 g      |
| Range of electric weight loading     | ± 1 g       | ± 0.1 g    | ± 10 g   |
| Maximum rate of weight change        | 400 mg/min. | 40 mg/min. | 4 g/min. |
| Maximum capacity below balance       | 120 g       | 120 g      | 200 g    |

Recording balances are supplied complete with chart, ink, rear pan extension hook, spare fuses and sundries.

The following optional spares are available:—

- OS 1** Angle-iron stand, size 19" × 17" × 30" (48 cm × 43 cm × 75 cm) high, stoved grey to match balance; complete with feet location cups.
- OS 2** Parallel-sided stainless steel (25/20) weights, Class "A" adjustment 10 mg—50 g complete in seasoned timber box, grey finish.
- OS 3A**  $\frac{1}{3}$  Rev. per hour chart motor to give additional chart speeds of 1", 2" and 4" per hour.
- OS 4A** 4 Rev. per hour chart motor to give additional chart speeds of 24" and 48" per hour.
- OS 6** 6 Rev. per hour chart motor to give additional chart speeds of 18", 36" and 72" per hour.
- OS 8** Set of test weights for weight loading checks (quote model No.).

# BULLION BALANCES



## Model H.D.6

**Capacity:** 10 kilogrammes (350 oz troy).

**Sensitivity:** 10 mg per division (0.0005 oz troy).

**Beam:** Special aluminium alloy construction combining lightness with strength.

**Knife edges:** Selected agate or steel, to be specified when ordering.

**Planes:** SYNTHETIC SAPPHIRE (Corundum).

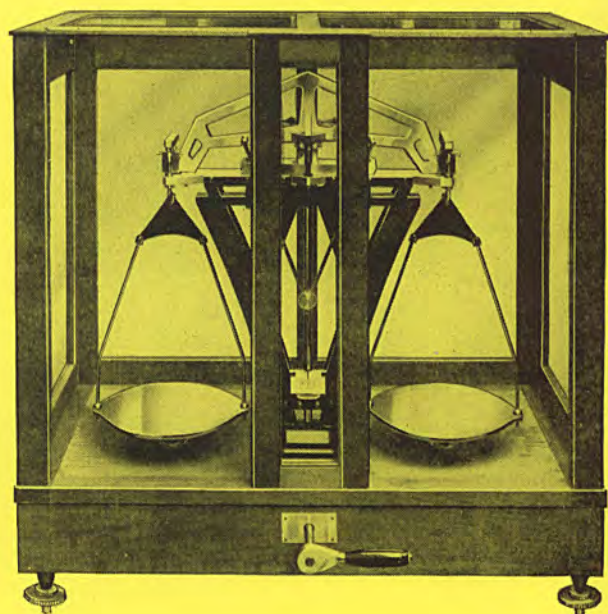
**Arrestment:** Fall-away type; six point, with front release.

**Index:** Ivorine with ten divisions on each side of central zero.

**Pans:** Flat chromium plated as illustrated.

**Case:** Balance supplied complete in hardwood case finished in light grey cellulose enamel with levelling feet and spirit level.

**Finish:** Frame, stand and dropping bar finished in smooth black stove enamel.



## Model H.D.7

**Capacity:** 30 kilogrammes (1000 oz troy).

**Sensitivity:** 30 mg per division (0.001 oz troy).

**Beam:** Special aluminium alloy construction combining lightness with strength.

**Knife edges:** Selected agate or steel, to be specified when ordering.

**Planes:** SYNTHETIC SAPPHIRE (Corundum).

**Arrestment:** Fall-away type; six point with front release.

**Index:** Ivorine with 5 or 20 divisions on each side of central zero.

**Pans:** Flat chromium plated as illustrated—or copper coin scoop or bullion carrier. (Please state exact requirements when ordering.)

**Case:** Balance supplied complete in hardwood case finished in light grey cellulose enamel with levelling feet and spirit level.

**Finish:** Frame, stand and dropping bar finished in smooth black stove enamel.

## BULLION BALANCES



### Model H.D.8

**Capacity:** 30 kilogrammes (1000 oz troy)—  
or—50 kilogrammes (1500 oz troy).

**Sensitivity:** At 30 kg 30 mg per division  
(0.001 oz troy). At 50 kg 50 mg  
per division (0.002 oz troy).

**Beam:** Special aluminium alloy construction  
combining lightness with strength.

**Knife edges:** Selected agate or steel.

**Planes:** SYNTHETIC SAPPHIRE (Corundum).

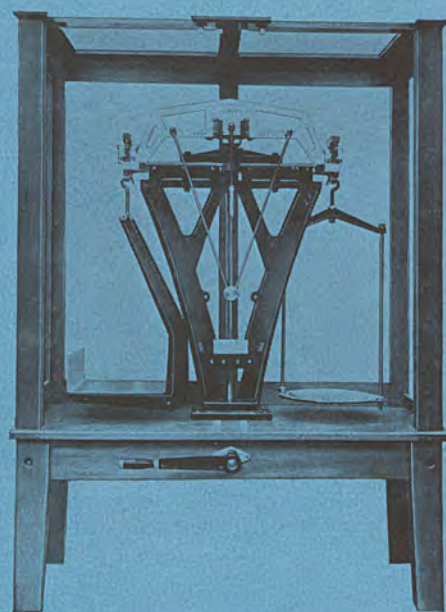
**Arrestment:** Six point fall-away type, with  
front release.

**Index:** Ivorine with 5 or 20 divisions on each  
side of central zero.

**Pans:** Coin scoop as illustrated; also available  
are a bullion carrier or flat chromium  
plated pans. (Please state requirements  
when ordering.)

**Finish:** Frame, stand, and dropping bar  
finished in smooth black stove  
enamel.

**Mounting:** The balance is supplied with  
metal frame only for bolting to client's  
own table, but a finely cellulose  
enamel table with writing flap and  
linoleum inlaid top can also be  
supplied. In addition a light grey  
cellulose enamelled outer case is also  
available. (Illustrated on table only.)



### Model H.D.9

**Capacity:** 60 kilogrammes (2000 oz troy).

**Sensitivity:** At 60 kg 30 mg per division  
(0.001 oz troy).

**Knife edges:** Specially hardened steel.

**Planes:** Selected agate.

**Arrestment:** Six point fall-away type with  
front release.

**Index:** Ivorine with ten divisions on each  
side of central zero.

**Pans:** Trough type as illustrated; also avail-  
able flat circular pans, bullion carrier,  
coin scoop. (Please state require-  
ments when ordering.)

**Finish:** Frame, stand and dropping bar  
finished in smooth black stove  
enamel.

**Mounting:** The balance is supplied on metal  
mounting plate only. Light grey  
cellulose enamelled case and table  
(as illustrated) can be supplied if  
required.

# HEAVY DUTY BALANCES



*As the name implies, these balances are strongly constructed and designed for the precision weighing of heavier objects. The craftsmanship embodied in each instrument is of the very highest order enhancing the already fine reputation of Stanton analytical balances throughout the world.*

## Model H.D.1

**Capacity:** 5 kilogrammes.

**Sensitivity:** 20 mg per division.

**Beam:** 16" (40 cm) long of special aluminium alloy construction.

**Arrestment:** Rise action; beam and stirrups located by stainless steel arrestment points. All knife edges are thus fully relieved when balance is not in action. Fitted knife guards.

**Pans:** Stainless steel, dish type 8½" (21.5 cm) diameter. Height from pans to shoulders 14" (35 cm).

**Knife edges and Planes:** Selected agate.

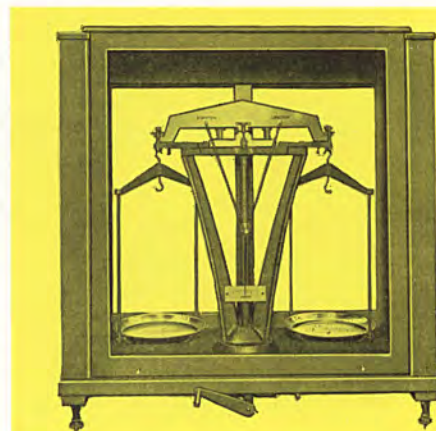
**Mounting:** Laminated wood base finished light grey cellulose enamel with spirit level and levelling screws. Size: 30" × 14" (72 cm × 35 cm), approximately.

## Model H.D.2

Specification as for Model H.D.1, but fitted with Synthetic Sapphire (Corundum) Planes.

**Cases:** Fitted cases in light grey cellulose enamel with counterpoised front slides can be supplied for any of the above Heavy Duty balances, at additional cost.

**NOTE:** Larger types of Heavy Duty and Bullion Balances are available. Please see pages 34-35.





## ANALYTICAL WEIGHTS

### "Fifty-thirty"

#### SERIES OF SPECIAL ANALYTICAL WEIGHTS

- ★ No confusion arising from weights of same denomination.
- ★ Less cumulative error.
- ★ Fewer weights to handle resulting in speedier weighing.

N.B.: 49 grammes can be attained using five weights only, i.e. 30, 10, 5, 3 and 1 instead of seven weights 20, 10, 10, 5, 2, 1 and 1.

Stanton Analytical Weights are manufactured by modern methods to the very highest standards of design, accuracy and finish.

Although brass weights are still available, the advantages of modern stainless steel alloys are now widely recognised, and Stanton stainless steel weights are made from a special austenitic alloy containing 25% Chromium and 20% Nickel.

This material is extremely resistant to corrosion and absolutely non-magnetic. Freedom from sharp edges, minimum surface area and very high surface finish contribute to the superior qualities of Stanton weights and ensure that they maintain their mass over long periods. *All weights are housed in finely constructed hardwood cases free of animal glues and lined with velvet which does not contain corrosive chemicals.* Fraction weights are also made in the "Fifty-thirty" series and are of the geometrical wire pattern.

Adjustment of all weights is to well within N.P.L. Class "A" tolerances unless otherwise stated. A works certificate is supplied with each set.

**SS1.** Stainless steel weights of exceptional quality with recessed base and suitable for use as Laboratory Standards, 100 g-10 mg (SS1/50: 50 g-10 mg).

**SS2.\*** As SS1 but without fraction weights, 100 g-1 g (SS2/50: 50 g-1 g).

**SS8.** Stainless steel weights of finest quality for general analytical use. Parallel shape with flat base. 100 g-10 mg (SS8/50: 50 g-10 mg).

**SS9.\*** As SS8 but without fraction weights, 100 g-1 g (SS9/50: 50 g-1 g).

**SS5.** Micro-chemical weights with special adjustment to well within half of N.P.L. Class "A" tolerances. 20 g-10 mg.

**SS7.** Special stainless steel weights, geometrical wire type, housed in round Catalin box, 1 g-1 mg.

\* These sets are intended for use with Balances having external weight-loading up to 1 g.

## STANTON MAINTENANCE

*Stanton Balance Maintenance Service operates for you.*

Stanton have available a team of highly skilled balance technicians\* to ensure that your instruments are operating at peak efficiency. They normally carry out their maintenance work on the spot in your own laboratory. Already, many hundreds of laboratories have taken advantage of this service which has been found essential in maintaining smooth efficiency in the face of increased demands for faster production. We should be happy to send you further details and proposal forms for a regular servicing contract.



\* Operating from London, Southampton, Cardiff, Birmingham, Manchester, Leeds and Edinburgh

## SYNTHETIC SAPPHIRE PLANES

Stanton Instruments Ltd. were the first balance manufacturers in the world to use synthetic sapphire, or corundum ( $\text{Al}_2\text{O}_3$ ) for the bearing planes of precision chemical balances.

This scientifically produced material has turned promise into performance with exceptional success. Its near diamond hardness virtually eliminates wear on one vital factor, and the higher degree of surface finish obtainable reduces frictional effects to infinitesimal proportions.

These two features lead to a substantial increase of accuracy and reproducibility and prolong the life of the balance—tests having revealed indentation-free surfaces after 4/5 million weighings.

Sapphire planes are fitted as standard to nearly every balance listed in this catalogue, and indeed have been used by us since 1947. We are particularly proud of this fundamental advance in precision balance design.

## OVERSEAS AGENTS AND DISTRIBUTORS

- ARGENTINA.** Sirex, Echeverria 1677, Buenos Aires.
- AUSTRALIA.** \*Electronic Industries Imports Pty Ltd., 139-143 Bouverie Street, Carlton N.3, Vict.  
713 Parramatta Road, Leichardt, N.S.W., 90 Grote Street, Adelaide, S.A. Also at Brisbane,  
Perth.
- AUSTRIA.** \*S.M.G. Steuerungstechnik & Messgeräte, Währingerstrasse 12, Vienna.
- BELGIUM.** Les Ateliers Damuzeaux, 239 Rue Royale, Bruxelles.
- BRAZIL.** Ambriex S.A. Av. Graça Aranha 226-6°, Rio de Janeiro.
- BRITISH WEST INDIES.** C. Johnson & Co., P.O. Box 102, 20 Henry Street, Port of Spain, Trinidad.
- BURMA.** Bharadwaja & Co., 226 Phayre Street, Rangoon.
- CANADA.** Wilson Science Equipment Ltd., 333 Bering Avenue, Toronto 18.  
Cooke, Troughton & Simms Ltd., 77 Grenville Street, Toronto 5.  
Canadian Laboratory Supplies, 80 Jutland Road, Toronto 18.
- CENTRAL AFRICAN FEDERATION.** Macdonald Adams & Co. Pvt. Ltd., 180 Prince Edward Dam  
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- FINLAND.** Wessco, P.O. Box 5048, Helsinki 26.
- FRANCE.** Promesur S.A., 19 Rue Eugene-Carriere, Paris 18e.
- GERMANY.** \*Hans Joachim Kleinfeld, Alte Celler Heerstr 43, Hannover.
- GREECE.** \*Athanes. Ch. Dervos, P.O. Box 114, 126a Solonos Street, Athens.
- HOLLAND.** \*For Thermo & Recording Balances Only:—N.V. Dordrechtsche Chemische Productenhandel,  
Dept. Scientific Instruments, 9 Oranjestraat, The Hague.  
\*For all models Other than Above:—N.V. Wed. J. Ahrend & Zoon, Singel 22-26 (Postbus 70),  
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- INDIA.** \*Martin & Harris (Private) Ltd., Savoy Chambers, Wallace Street, Bombay 1.
- IRAQ.** \*Iraq Scientific Co. Ltd., P.O. Box 287, Baghdad.
- IRELAND (EIRE ONLY).** Moloney Bros. Ltd., 74 Drimnagh Road, Dublin.
- ISRAEL.** \*M. Kochn, P.O. Box 1147, Jerusalem.
- ITALY.** \*Ing. A. Rastelli and Co., Via San Martino della Bataglia 31, Rome.
- KOREA.** Asia Science & Company, International P.O. Box 1250, 28, 1-ka Choongmoo-Ro. Choong-  
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- MALAYA.** \*Associated Instrument Manufacturers Ltd., Macdonald House, Orchard Road, Singapore  
9. Also P.O. Box 767, Kuala Lumpur.
- MAURITIUS.** \*Ducray Lenoir (Chemical Supplies) & Co. Ltd., 2 Leoville L'homme, Port Louis.
- MEXICO.** Harry Mazal, S.A., Liverpool 10, Mexico 6.D.F.
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- TURKEY.** Hans Geelmuyden, Veli Alemdar Han 202, Galata, Istanbul.
- U.S.A.** \*Burrell Corporation, 2223 Fifth Avenue, Pittsburgh 19, P.A.

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*Designed and Produced by D. J. Mackridge & Partners Ltd. and  
Printed in England by Eyre & Spottiswoode Limited.*

50C 10-60.

20 0001

Stanton

**PRECISION BALANCES**



# model 29 LABORATORY BALANCE

This sturdy semi self-indicating balance for general purpose laboratory use will find numerous applications in any laboratory weighing out bulk quantities of chemicals or liquids, the weighing of animals, etc., and wherever speedy weighings on a larger scale are required.

## SPECIFICATION

|                    |                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|
| <i>CAPACITY</i>    | 2 kilogrammes                                                                                                         |
| <i>SENSITIVITY</i> | 0.1 gramme per division                                                                                               |
| <i>KNIVES</i>      | Steel knife edges                                                                                                     |
| <i>PLANES</i>      | "V" shaped agate planes                                                                                               |
| <i>SCALE</i>       | 0—10 grammes, 0.1 gramme per division. Easily readable scale visible from front or back                               |
| <i>DAMPING</i>     | Silicone oil damping                                                                                                  |
| <i>GOODS PAN</i>   | Flat plate "L" shaped stainless steel as illustrated. Concave pan, or Pear shaped scoop, in stainless steel, to order |
| <i>CASE</i>        | Metallic bronze finish with spirit level incorporated in base. Adjustable levelling feet. Chrome fittings             |
| <i>DIMENSIONS</i>  | Overall width 21". Depth 9½". Height 19½"                                                                             |



STANTON INSTRUMENTS LIMITED

119 OXFORD STREET, LONDON, W.1 Telephone: GER 7533

# PRICE LIST NOVEMBER, 1960

## BALANCES

|                           | £              | s. | d. |
|---------------------------|----------------|----|----|
| Model C26                 | 42             | 0  | 0  |
| Model C27                 | 59             | 0  | 0  |
| Model C28                 | 77             | 0  | 0  |
| Model A43                 | 100            | 0  | 0  |
| Model A45                 | 90             | 0  | 0  |
| Model A47                 | 90             | 0  | 0  |
| Model A48                 | 90             | 0  | 0  |
| Model A49                 | 115            | 0  | 0  |
| Model A50                 | 105            | 0  | 0  |
| Model B20                 | 142            | 0  | 0  |
| Model B21                 | 132            | 0  | 0  |
| Model SM12                | 135            | 0  | 0  |
| Model MC3                 | 180            | 0  | 0  |
| Model MC5                 | 180            | 0  | 0  |
| Model MC6                 | 200            | 0  | 0  |
| Model MC8                 | 218            | 0  | 0  |
| Model 29                  | 52             | 10 | 0  |
| Outer cases for MC models | on application |    |    |

|                                         | £              | s. | d. |
|-----------------------------------------|----------------|----|----|
| Model HD1                               | 62             | 0  | 0  |
| Model HD2                               | 66             | 0  | 0  |
| Model HD6                               | 230            | 0  | 0  |
| Outer cases for HD1 or HD2              | on application |    |    |
| Model SA10                              | 150            | 0  | 0  |
| Model SA20                              | 170            | 0  | 0  |
| Model SA30                              | 130            | 0  | 0  |
| Hales Moss Gas Specific Gravity Balance | 150            | 0  | 0  |
| SYNCHRO RELEASE DEVICE                  | 17             | 0  | 0  |
|                                         | extra          |    |    |
| Bullion Balances HD7, 8 and 9...        | on application |    |    |
| Thermo and Recording Balances           | on application |    |    |

Note: For prices of "ULTRAMATIC" and "UNIMATIC" single pan Balances Models UM3, UM4, UM5, UM10, CL1, CL2, CL3 see leaflet.

## ANALYTICAL WEIGHTS

(All sets to NPL Class "A" adjustment)

|                                    | £  | s. | d. |
|------------------------------------|----|----|----|
| SS1 Stainless steel 10 mg-100 g    | 23 | 10 | 0  |
| SS8 Stainless steel 10 mg-100 g    | 16 | 0  | 0  |
| SS1/50 Stainless steel 10 mg- 50 g | 22 | 0  | 0  |
| SS8/50 Stainless steel 10 mg- 50 g | 15 | 0  | 0  |

The following sets for use with balances with weight loading attachments up to 1 g

|                                  | £  | s. | d. |
|----------------------------------|----|----|----|
| SS2 Stainless steel 1 g-100 g    | 20 | 10 | 0  |
| SS9 Stainless steel 1 g-100 g    | 13 | 0  | 0  |
| SS2/50 Stainless steel 1 g- 50 g | 19 | 0  | 0  |
| SS9/50 Stainless steel 1 g- 50 g | 12 | 0  | 0  |

## MICROCHEMICAL ASSAY WEIGHTS

|                                                                                                | £  | s. | d. |
|------------------------------------------------------------------------------------------------|----|----|----|
| SS5 Stainless steel, 10 mg-20 g Micro-Weights Class "A" special adjustment                     | 18 | 0  | 0  |
| SS7 Stainless steel, 1 mg-1 g Analytical Weights Class "A" in catalin box                      | 12 | 0  | 0  |
| SAWI Assay Weights, gold sheet, Class "A" in catalin box, 1000 = 1 g or 1000 = $\frac{1}{2}$ g | 12 | 0  | 0  |



# Stanton Instruments Limited

119 OXFORD STREET · LONDON · W.1 · GERRARD 7533-34

All prices in this list are nett ex works, subject to alteration without notice.  
All quotations and accepted orders are subject to our General Conditions of Sale.

TRADE MARK

PRINTED IN ENGLAND  
2M/060/S

# HEAVY DUTY WEIGHTS

First quality, adjusted to N.P.L. Class "A" Tolerance.  
Complete in finely finished velvet-lined box.

|                         |     |            |     |     |     |     |     |         | £   | s. | d. |
|-------------------------|-----|------------|-----|-----|-----|-----|-----|---------|-----|----|----|
| Polished Brass          | ... | 10 kg-l g  | ... | ... | ... | ... | ... | per set | 92  | 0  | 0  |
|                         |     | 5 kg-l g   | ... | ... | ... | ... | ... | " "     | 75  | 0  | 0  |
|                         |     | 3 kg-l g   | ... | ... | ... | ... | ... | " "     | 62  | 0  | 0  |
|                         |     | 2 kg-l g   | ... | ... | ... | ... | ... | " "     | 51  | 0  | 0  |
|                         |     | 1 kg-l g   | ... | ... | ... | ... | ... | " "     | 45  | 0  | 0  |
| Stainless Steel (25/20) |     | 200 g -l g | ... | ... | ... | ... | ... | " "     | 12  | 0  | 0  |
|                         |     | 10 kg-l g  | ... | ... | ... | ... | ... | " "     | 235 | 0  | 0  |
|                         |     | 5 kg-l g   | ... | ... | ... | ... | ... | " "     | 160 | 0  | 0  |
|                         |     | 3 kg-l g   | ... | ... | ... | ... | ... | " "     | 136 | 0  | 0  |
|                         |     | 2 kg-l g   | ... | ... | ... | ... | ... | " "     | 115 | 0  | 0  |
|                         |     | 1 kg-l g   | ... | ... | ... | ... | ... | " "     | 98  | 0  | 0  |
|                         |     | 200 g -l g | ... | ... | ... | ... | ... | " "     | 33  | 0  | 0  |

(Fraction weights, geometrical wire pattern 500 mg—10 mg £3 0 0 extra.)

Technical quality, polished brass weights in hardwood box  
(These weights are not of our own manufacture)

|                                |     |     |     |     |   |                                          |
|--------------------------------|-----|-----|-----|-----|---|------------------------------------------|
| 5 kg-l g                       | ... | ... | ... | ... | } | Prices<br>available<br>on<br>application |
| 2 kg-l g                       | ... | ... | ... | ... |   |                                          |
| 1 kg-l g                       | ... | ... | ... | ... |   |                                          |
| 200 g -l g                     | ... | ... | ... | ... |   |                                          |
| Fraction weights, 500 mg—10 mg |     |     |     |     |   |                                          |

## MISCELLANEOUS

|                                                                                                                                        |     |     |     |     |          |      |     |          | £  | s. | d. |
|----------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|----------|------|-----|----------|----|----|----|
| Fraction Trays, Black Plastic                                                                                                          | ... | ... | ... | ... | ...      | ...  | ... | each     | 5  | 0  |    |
| Glass Covers, with Brass Knob                                                                                                          | ... | ... | ... | ... | ...      | ...  | ... | each     | 2  | 6  |    |
| Forceps, Ivory Tipped Stainless Steel                                                                                                  | ... | ... | ... | ... | ...      | ...  | ... | each     | 7  | 0  |    |
| Brass Rests, set of 3                                                                                                                  | ... | ... | ... | ... | ...      | ...  | ... | per set  | 15 | 0  |    |
| Catalin Rests, set of 3                                                                                                                | ... | ... | ... | ... | ...      | ...  | ... | per set  | 1  | 7  | 0  |
| Rider Weights, Aluminium Jockey Type, 1, 2, 5, 10 mg.                                                                                  | ... | ... | ... | ... | 2/6      | each | ... | per doz. | 1  | 8  | 0  |
| Rider Weights, Gold                                                                                                                    | ... | ... | ... | ... | 5, 10 mg | ...  | ... | each     | 4  | 6  |    |
| Ring Rider Weights for Auto-loading Balances Models C28/SM12/MC3/MC4/MC5/MC6/SA10/SA20                                                 | ... | ... | ... | ... | ...      | ...  | ... | per set  | 2  | 12 | 0  |
| Ring Rider Weights for Model A43                                                                                                       | ... | ... | ... | ... | ...      | ...  | ... | per set  | 1  | 6  | 0  |
| Ring Rider Weights for Model A49                                                                                                       | ... | ... | ... | ... | ...      | ...  | ... | per set  | 3  | 2  | 0  |
| Ring Rider Weights for Model A50                                                                                                       | ... | ... | ... | ... | ...      | ...  | ... | per set  | 1  | 16 | 0  |
| Fraction Weights 500–10 mg in Stainless Steel Wire-Geometrical type—complete in plastic tray with glass cover and ivory tipped forceps | ... | ... | ... | ... | ...      | ...  | ... | per set  | 3  | 15 | 0  |
| Fraction Weights as above in Gold and Aluminium                                                                                        | ... | ... | ... | ... | ...      | ...  | ... | per set  | 4  | 0  | 0  |
| Balance covers (grey leathercloth):                                                                                                    |     |     |     |     |          |      |     |          |    |    |    |
| Type "A" for Balances with weight-loading attachment                                                                                   | ... | ... | ... | ... | ...      | ...  | ... | each     | 1  | 1  | 0  |
| Type "B" for Balances without weight-loading attachment                                                                                | ... | ... | ... | ... | ...      | ...  | ... | each     | 19 | 6  |    |
| For Ultramatic and Unimatic Balances                                                                                                   | ... | ... | ... | ... | ...      | ...  | ... | each     | 17 | 6  |    |
| Static Eliminator                                                                                                                      | ... | ... | ... | ... | ...      | ...  | ... | each     | 15 | 0  | 0  |
| Tare Pots for Ultramatic and Unimatic                                                                                                  | ... | ... | ... | ... | ...      | ...  | ... | each     | 2  | 0  |    |

## PRICE LIST

# "ULTRAMATIC" & "UNIMATIC"

## Single pan balances

### New UNIMATIC CONSTANT LOAD BALANCES

|             |                                                                                   |          |
|-------------|-----------------------------------------------------------------------------------|----------|
| Model C.L.1 | 0-100mg scale in 100 divisions each equivalent to 1mg. Vernier reading to 0.1mg   | £145 0 0 |
| Model C.L.2 | 0-1g scale in 100 divisions each equivalent to 10mg. Vernier reading to 1mg       | £135 0 0 |
| Model C.L.3 | 0-10mg scale in 100 divisions each equivalent to 0.1mg. Vernier reading to 0.01mg | £210 0 0 |

### ULTRAMATIC APPLIED LOAD BALANCES

|              |                                                                                 |          |
|--------------|---------------------------------------------------------------------------------|----------|
| Model U.M.3  | 0-100mg scale in 100 divisions each equivalent to 1mg. Vernier reading to 0.1mg | £160 0 0 |
| Model U.M.4  | 0-100mg scale direct reading in 500 divisions each equivalent to 0.2mg          | £165 0 0 |
| Model U.M.5  | 0-1g scale direct reading in 500 divisions each equivalent to 2mg               | £160 0 0 |
| Model U.M.10 | 0-1g scale in 100 divisions each equivalent to 10mg. Vernier reading to 1mg.    | £135 0 0 |



TRADE MARK

# *Stanton Instruments Limited*

119 OXFORD STREET · LONDON · W.1 · GERRARD 7533-34

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