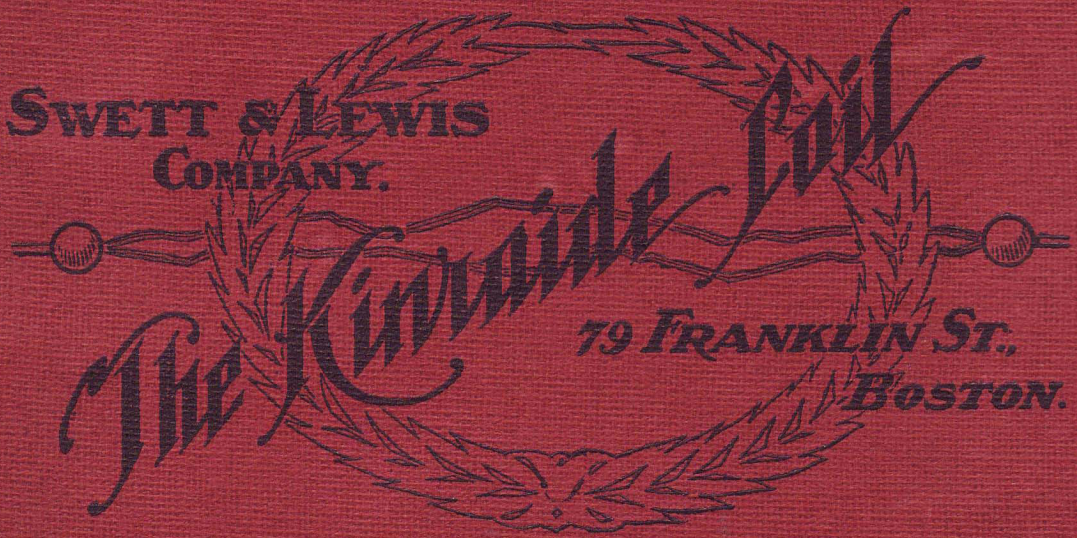
Private

SWETT & LEWIS
COMPANY.



79 FRANKLIN ST.,
BOSTON.

SWETT & LEWIS
COMPANY.

The Kinraide Coil

79 FRANKLIN ST.,
BOSTON.

WE ARE PLEASED TO ANNOUNCE THAT WE ARE SOLE SELLING AGENTS FOR THE KINRAIDE COILS, WHICH HAVE NOT UNTIL NOW BEEN MADE ON AN EXTENDED SCALE, THE FEW BUILT IN THE LABORATORY OF THE INVENTOR, MR. THOMAS B. KINRAIDE OF JAMAICA PLAIN, MASSACHUSETTS, HAVING WON UNSTINTED PRAISE. MR. HOWARD JACKSON, THE WELL-KNOWN ELECTRICAL ENGINEER WHO HAS MANUFACTURED OUR GOODS FOR SEVERAL YEARS, HAS SECURED THE SOLE LICENSE TO MANUFACTURE UNDER MR. KINRAIDE'S PATENTS.

The Kinraide Induction Coil

THE Rhumkorff Coil, with its many miles of fine wire wound in thin sections, a hundred or more of which are necessary for a twelve-inch spark coil, is the starting point from which the Kinraide Induction Coil was developed. This coil consists of two separate secondaries with their primaries connected in series. Each secondary has a high and low potential terminal due to the position and the method of winding the primary. The primary is located *outside* the secondary winding. The secondaries are wound in single flat discs and lie in the same plane as the primaries; with this method of construction the discharge from the two terminals is vastly different.

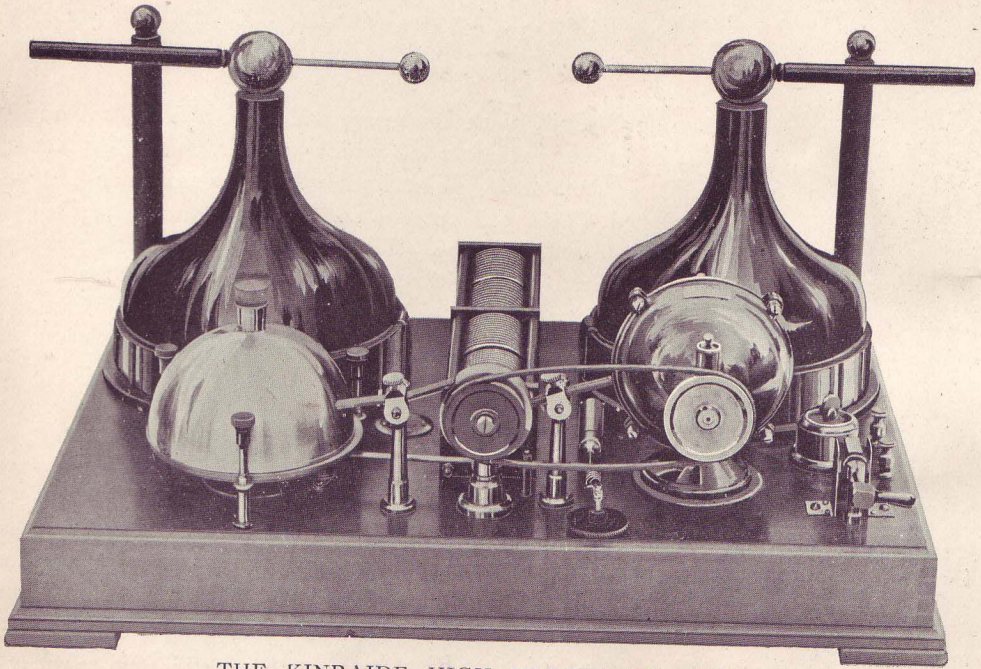
WINDING

The potential at the central terminal of the secondary is extremely high, whilst that of the outer turns near the primary is very low. By connecting the outer terminals of two such secondaries in series the potential of the outer turns entirely disappears.

A UNIQUE FEATURE

This unique feature is of the utmost importance, as there is no tendency to discharge into the primary, a most deplorable weakness of the Rhumkorff Coil, and most expensive, since, if the primary tube is punctured, the coil is practically ruined. The secondary of the Kinraide Coil is not subject to any such danger.

Another weak feature of the Rhumkorff Coil is the heat developed in the primary. Outside the wall of the primary tube, and in contact with it, is the



THE KINRAIDE HIGH FREQUENCY COIL

insulating compound. The least increase of temperature in the primary softens this and before danger is suspected, it has melted, and no safe operation can thereafter be assured.

ABSENCE OF HEAT

There is absolutely no heating in the primary of the Kinraide Coil, so that the insulation cannot be melted, nor is there heat generated where it can in any way affect this delicate part of the apparatus.

In the above, the Rhumkorff Coil is used for comparison only, and not to depreciate its value, after long years of service as an inseparable part of a well-equipped laboratory.

SPARK GAP

HIGH FREQUENCY

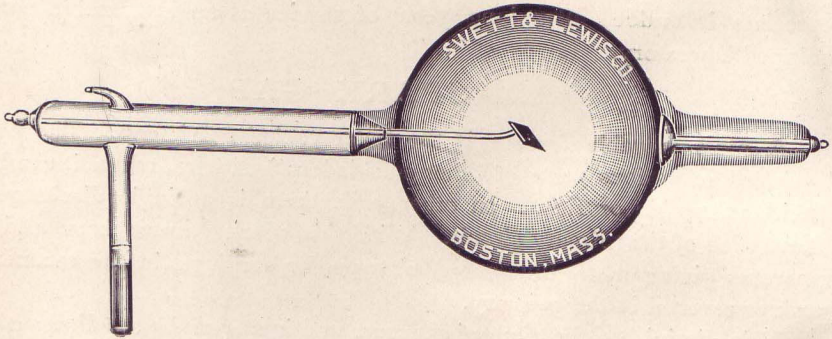
A most valuable feature is the water cooled spark gap. The heat ordinarily developed in various parts of other coils is localized here, where it can be taken care of without trouble or risk. In other coils there is a single discharge from every interruption of the primary circuit. With this spark gap we have a high frequency apparatus giving many hundred discharges, or surgings, in the secondary for every break or reversal in the primary.

DISCHARGE

This diminishes the time of exposure and increases the steadiness of the illumination of the screen. The appearance of the discharge is wholly different from the Rhumkorff spark, and must be seen to be appreciated.

IMPROVED INTERRUPTER

A vexatious feature of the old apparatus was the constant attention required by the vibrator. The sticking of the platinum points and the cost of their renewal is



TYPE K FOR DIRECT CURRENT USE

entirely eliminated by the new rotary break, which will easily handle sufficient current without noticeable sparking.

DURABILITY

This interrupter is a most solid and durable thing, and with the spark gap embodies an entirely new principle. It is as durable as any part of the coil, and when started runs at constant speed until the motor is stopped. The alternating coil requires no interrupter. The spark gap, however, is essential.

PORTABILITY

LIGHT WEIGHT

The use of so little wire in the coil makes the apparatus compact, strong and readily portable. The whole outfit may be taken in the physician's buggy. In hospitals it may be placed upon a small table and moved from ward to ward. The weight of the coil complete is from sixty-five pounds to seventy-five pounds.

SMALL AMOUNT OF CURRENT USED

This apparatus consumes three to four amperes. It can be attached to any lamp socket, and is also constructed for use with storage batteries.

SHORT EXPOSURES

SUCCESSFUL TESTS

For X-ray fluoroscopic work great steadiness of illumination is necessary; also energy enough to brilliantly illuminate the screen. For radiographs it is essential that the time of exposure be not very long; in fact a great amount of detail in the finished negative is often sacrificed on account of difficulties attending a prolonged exposure. All these valuable effects are obtainable in this new apparatus, which has been put to

most severe tests in both private and hospital work for the past two years, and is highly recommended by the users.

The following table of exposures will be found to meet the requirements in the average case, with a normal distance and a plate of the ordinary speed.

FOR ADULTS

Chest	3 minutes	Pelvis	5 minutes
Shoulder	3 minutes	Hip	5 minutes
Elbow	15 seconds	Knee	60 seconds
Wrist	5 seconds	Ankle	15 seconds
Hand	3 seconds	Foot	5 seconds

SUMMARY OF ADVANTAGES

RELIABILITY

A summary of the advantages of the Kinraide Coil are portability, safety of operation, simplicity of construction, durability, small amount of current used in operating, steadiness of illumination of fluorescent screen, a greater amount of X-ray light than from any other apparatus using anything like the same amount of current, always ready for work in all weathers, no sparking into the primary, no melting of the solid insulation of the secondary, easily and cheaply repaired, no platinum points, no breaking down of the condenser, and a much shorter time of exposure than has been before obtained.

TUBES

Our tube at first sight is not different from the ordinary X-ray tube. It is, however, carefully constructed upon accurate measurements made from, and according

to the requirements of this coil. The curvature and size of the cathode, its distance from the anode, and the proper vacuum have all been experimentally determined and incorporated into its structure. The alternating current tube is a new departure, and is the outcome of years of experiment, and is unequalled for definition.

VACUUM ADJUSTER

Too much stress cannot be laid upon the necessity of having a suitable tube, as therein lies the secret of the best work. All of our tubes for coil use are fitted with our special vacuum adjuster, by which the vacuum can be held at any point with ease. It has been a difficult problem to successfully design a tube to resist the energy developed by the Kinraide Coil, many methods having been tried with varying success.

HEATING CONTROLLED

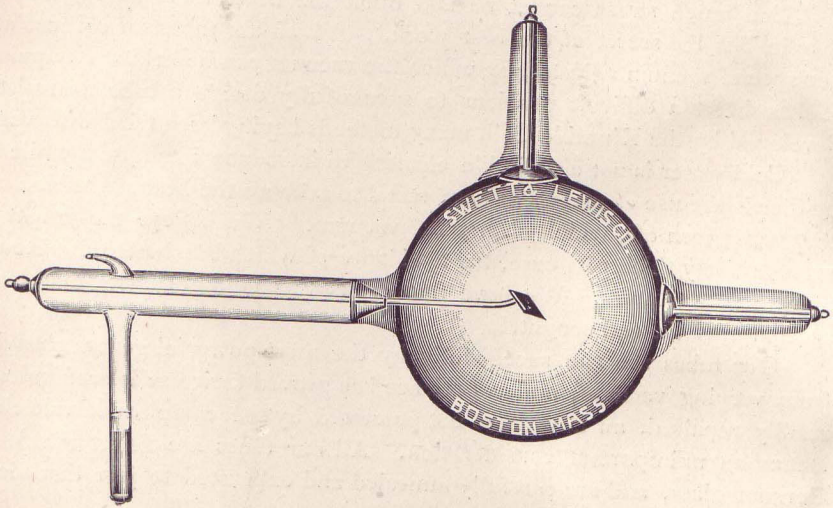
Cold water is not a desirable element to introduce into a tube while in operation; neither is the use of masses of base metal to take up the heat advisable, on account of the gases given off, which change the vacuum. We believe the proper method is to use extremely thick platinum, the avoidance of which has heretofore been the object of many manufacturers. We have found that this is the surest, and best method to acccomplish the end sought.

ECONOMY

Our tubes are run successfully by the most powerful generators with no trouble from varying vacuum, and experience has proved their use is economical. They are readily repaired, an advantage not possessed by the complicated varieties, and by no means an unimportant consideration. All our tubes are *hand made* from the best German glass, and are carefully annealed and exhausted to just that nice point which gives the best results.

TERMINALS

Our terminals are worthy of commendation. We are proud of the mechanical design of our tubes, and extended use shows that they have ample strength exactly where needed. In short, our aim has been to avoid complication of all kinds, and the accompanying cuts show how well we have succeeded.



TYPE H FOR ALTERNATING CURRENT USE

TUBE STANDS

SIMPLE

Our experience has shown us that the present tube-holders on the market leave much to be desired for practical every-day work. After much experimenting we have produced a floor stand that is not complicated, has all needful adjustments, is sufficiently rigid, and looks well.

ADJUSTABLE

An adjustable spark gap for tube regulations is a valuable feature, and this addition takes up no extra space. The only metal used is the cast iron base. The tubes and wires are well insulated with the best hard rubber, thus increasing the efficiency of the whole apparatus.

PRICE LIST

COILS

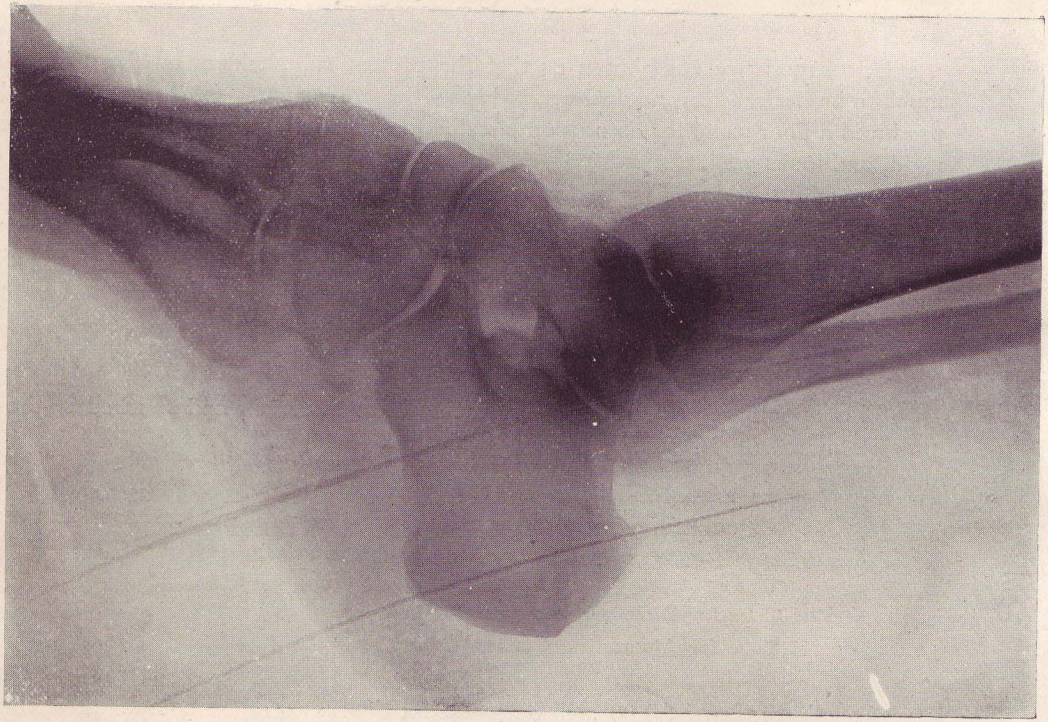
This apparatus is constructed from the finest materials and finished in the best possible manner. No second grade is made.

The Kinraide Induction Coil . . . Net	$200.00
(Direct and alternating currents of all voltages from 20 to 500)	

TUBES

K Tube for Direct Current Coil	15.00
H Tube for Alternating Current Coil only . .	18.00

An allowance of $3.00 will be made for the return of the complete terminals of either of the above tubes towards the price of new apparatus.



FIFTEEN SECONDS EXPOSURE

FLUOROSCOPES

Platinum Barium Cyanide Fluoroscope, 4 x 5	8.00
Platinum Barium Cyanide Fluoroscope, 5 x 5	10.00
Platinum Barium Cyanide Fluoroscope, 5 x 7	12.50
Platinum Barium Cyanide Fluoroscope, 6 x 6	13.00
Platinum Barium Cyanide Fluoroscope, 6 x 8	16.00
Platinum Barium Cyanide Fluoroscope, 8 x 10	24.00

QUALITY

The Platinum Barium Cyanide, from which these screens are manufactured, is crystalized and re-crystalized before the cardboard is coated; afterwards a protecting varnish is applied, which makes them, in our opinion, the best screens in the country today. These screens are brilliant and lasting, and of very fine grain.

Tungstate of calcium screens will be furnished if desired. These are much cheaper, but we do not recommend them for ordinary work. Price list on application.

X-RAY PLATES

5 x 7, per dozen	$1.40
6½ x 8½, per dozen	2.30
8 x 10, per dozen	3.40
10 x 12, per dozen	5.50
11 x 14, per dozen	7.00
Complete developing and printing outfit, with full instructions for use	5.00

A supply of the above sizes always in stock. These plates are specially wrapped in light proof paper, no plate holder being required for use with the X-ray.

POSITIVE DISCHARGE FROM KINRAIDE COIL (Reduced)

FLOOR TUBE STAND

Floor Tube-Stand, with Adjustable Spark Gap	$10.00
A finely polished quartered oak table large enough for either of the foregoing outfits, and equipped with ball-bearing castors	12.00

SAMPLE OUTFITS

OUTFIT NUMBER TWENTY-ONE.

FOR DIRECT CURRENT—

One (1) Direct Current Kinraide Coil	$200.00
Two (2) Tubes, Type K	30.00
One (1) 5 x 7 Platinum Barium Cyanide Fluoroscope	12.50
One (1) Floor Tube-Stand, with adjustable Spark Gap for controlling vacuum	10.00
Total	$252.50

OUTFIT NUMBER TWENTY-TWO

FOR ALTERNATING CURRENT—

One (1) Alternating Current Kinraide Coil	$200.00
Two (2) Tubes, Type H	36.00
One (1) 5 x 7 Platinum Barium Cyanide Fluoroscope	12.50
One (1) Floor Tube-Stand, with adjustable Spark Gap for controlling vacuum	10.00
Total	$258.50

In ordering coils give voltage of circuit, whether direct or alternating; if alternating, the number of alternations.

Full directions for operating accompany each coil.

We want our customers to feel perfectly free at all times to call upon us for expert advice on all things pertaining to the operation of X-ray outfits.

The factory where our goods are manufactured is well equipped with the finest tools and latest facilities for our business.

CATALOGUES

If interested in static machines and electro-therapeutical apparatus in general send for Bulletin Number Twenty-Four. Static tubes, Bulletin Number Twenty-Five.

TERMS

Prices in this catalogue are net.

Remit by money order, express or by New York draft. Add twenty-five cents to face of all checks except on New York or Boston, to cover collection charges.

REFERENCES

Customers unknown to us must give satisfactory references, or send cash with order, for which we will allow five per cent. We will ship C. O. D., provided a remittance of twenty per cent. accompanies order. Charges for return of money to be borne by purchaser.

Goods will be delivered f. o. b., freight or express, Boston, Mass. No charges for packing. Each piece of apparatus is carefully packed and no allowance will be made for loss or breakage in transit.

PRESS OF MURRAY AND EMERY COMPANY
BOSTON