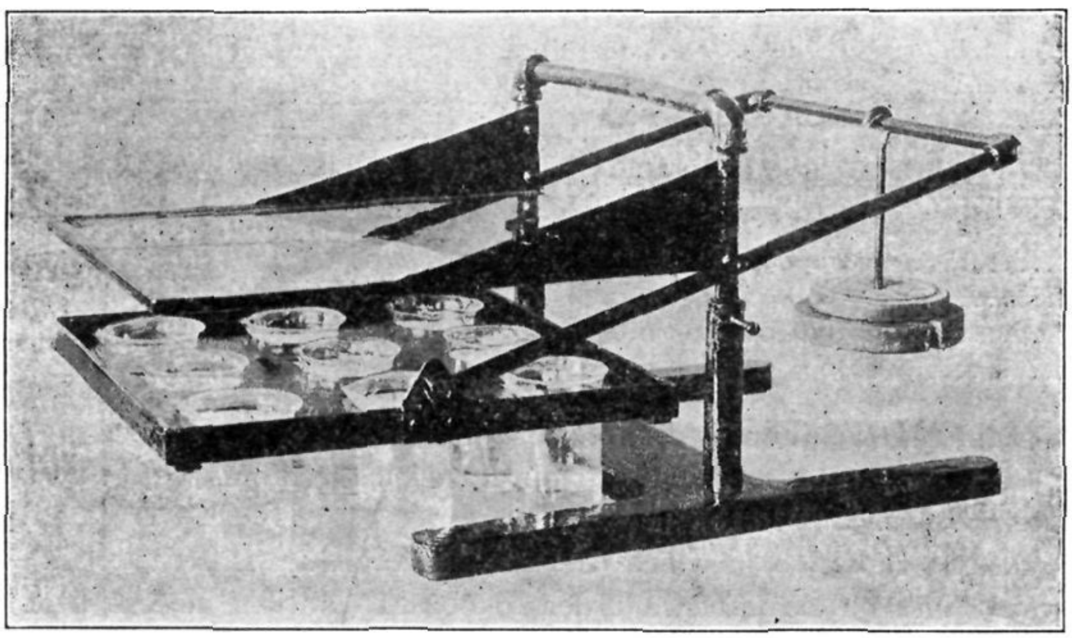
2. This principle is utilized in a direct iodimetric determination of the available oxygen in pyrolusite.

MADISON, WISCONSIN.

NOTES.

A Simple Device for Evaporating Solutions to a Definite Volume.— In analytical laboratories it is frequently necessary to evaporate a number of solutions simultaneously to a given volume. Ordinarily, such evaporations require more or less attention in order that the beakers may be removed from the source of heat at the proper time and before the evaporation has gone too far.

The simple device here described enables the analyst to perform as many as nine evaporations at one time, starting with the same volume in each beaker and evaporating approximately to any desired volume. When the desired volume is reached, the beakers are automatically removed

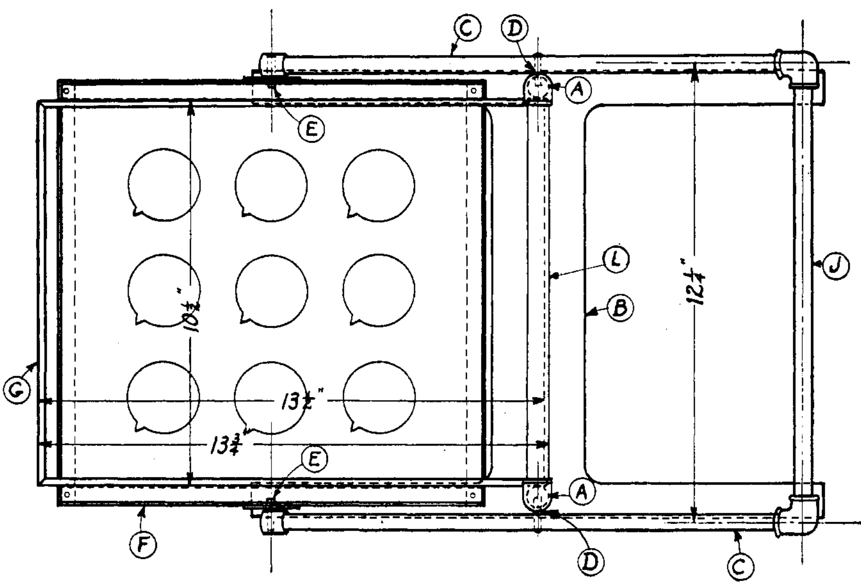


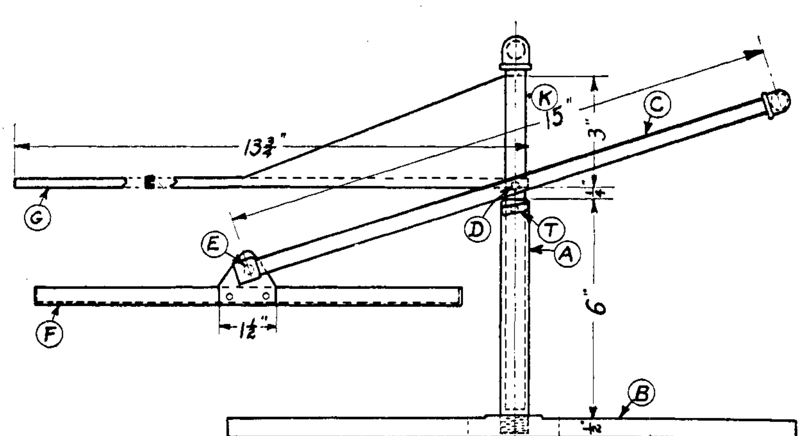
from the source of heat (steam box or electric hot plate) and covered with a glass plate. The evaporations may therefore be made overnight without risk of any of the beakers going dry, and thus a considerable saving of time is effected.

The principle upon which it operates is that of a balance. The beakers which contain the liquid are placed in one arm of the balance. When sufficient water has evaporated the containers are lifted from the source of heat by the weights attached to the opposite arm of the balance. In order to have all of the beakers contain the same amount of solution at the end they must start with equal amounts.

Referring to the cut, B is an "H" shaped cast iron base, $^1/_2$ inch thick.

Into it are tapped two $^3/_8$ inch pipes, A. Into these are telescoped $^1/_4$ inch pipes K, which are connected by a third pipe, L. The two thumbscrews T hold these standards at the proper adjustment, which provides for the different heights of beakers. D is a hard rivet which is fastened firmly in the arm C and is provided with a knife edge where it swings in the upright standards K. The two points D serve as the fulcrum on which the arm balances. Pipes C, J are $^1/_8$ inch. The two points E are the free





swinging supports for the $^3/_4$ inch angle iron frame F. Into this frame is set a flat piece of sheet iron having holes through which the beakers are suspended. The number and size of the holes depend on the size of the beakers. G is an iron frame provided with a groove, into which a glass plate may be inserted. This frame is fastened to the upright standard. With the glass in place this serves as a cover.

The side view shows the apparatus at the beginning of the operation. When sufficient liquid has evaporated from the beakers, the weights attached at J cause the arm C to lift the frame F until it strikes G.

This apparatus may be made any size but the one now in use is according to the dimensions given in the cut, and was designed for use on the 12″ × 18″ electric hot plate as well as a steam plate. The following are some of the results:

Original volume. Cc.	Desired volume. Cc.	Final volume.		Number of evaporations.
		Extremes. Cc.	Average. Cc.	
100	50	45–53	47.6	36
100	25	22–28	24.3	18
100[1]	25	18–26	24.0	9

Beakers of uniform size must be used so that all of them will rest on the hot plate. Evaporating dishes may be used in place of beakers. To increase the heating surface they may rest in sand.

This device may be used to advantage in routine analysis, such as in the determinations of sodium, potassium or calcium. It may also be used where solvents other than water are employed. Numerous other applications will suggest themselves to those using the apparatus.

G. P. PLAISANCE AND N. C. PERVIER.

AMES, IOWA.

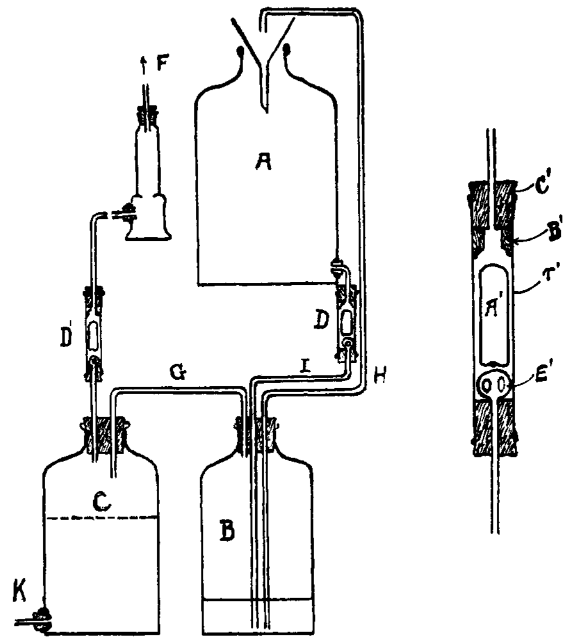
A Hydrogen Sulfide Generator.—The following modification of Ostwald's apparatus for the production of large quantities of gas has proven so satisfactory for a laboratory supply of hydrogen sulfide that it seemed worthy of note. It is designed to automatically remove the free sulfur, formed in relatively large amounts, which clogs the tubes and acid jet, and necessitates frequent and troublesome cleaning.

The apparatus is best described by reference to the accompanying diagram:

A is an acid reservoir, fitted with a tubulature. Its capacity should be at least one and one-half times that of the gas chamber B. The capacity of the generator C is about the same as that of B. It is filled with lump or stick ferrous sulfide to the point indicated. Its tubulature is fitted with a large glass tube and rubber connection, closed by a pinchcock, to draw off the spent liquor.

[1] Alcohol.

D and D′ are valves, which open to downward flow only. They are made as follows: A′ is the round end of a small test tube, sealed off. It is of such size as to slide freely within the glass tube T′. B′, the valve seat, is a short section of rubber tubing, which fits tightly inside the glass tube T′, and is held in place by a rubber stopper, C′. A′ is seated into B′ by applying it, while hot, to B′, thus melting out the rubber and working out its exact curvature. After rubbing with pumice flour or fullers' earth the rubber thus softened looses its adhesive character, and serves remarkably well. E′ is a glass tube, blown as shown, to permit the flow of liquid when A′ is down. It is obvious that liquid rising through E′ raises A′ and closes the valve.



The operation of the generator is as follows: When gas is allowed to escape at F, acid flows from A into B, driving any residual gas into C. This is followed by acid through tube G, which acts on the sulfide in C. When this action results in the production of gas in excess of the demand, the pressure thus developed stops the flow of acid through G, and exerts pressure on the liquid contents in B, which then tends to rise through tubes H and I. The valve in I closes, and the liquid is forced through H, to fall upon a funnel filled with loosely packed glass wool, which effectively removes the coagulated sulfur.

The mean average height of the liquid in B is directly proportional to the outlet of G, which should be of such size as to keep the level in B as low as indicated. D′ is a valve to prevent the flow of liquor into the exit tubes, in the event that C is not regularly drained.

This generator has been in constant use, without repair or cleaning for one year, and has given perfect satisfaction. F. K. Bezzenberger.