variation 0.001 in the interpolated densities of the solutions would give calculated values almost identical with the observed values.[2,3]

CONTRIBUTION FROM THE CHEMISTRY DEPARTMENT F. E. BROWN
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RECEIVED NOVEMBER 16, 1923

A Receiving Apparatus for Practical Distillation at Low Pressures.—Anyone who may have had to carry out a fractional distillation at low pressures knows the difficulties encountered in overcoming leaks in the various forms of vacuum distillation receivers. To avoid all leaks and yet be able to perform a continuous fractional distillation, the apparatus as shown in the diagram was constructed and found to work satisfactorily.[1]

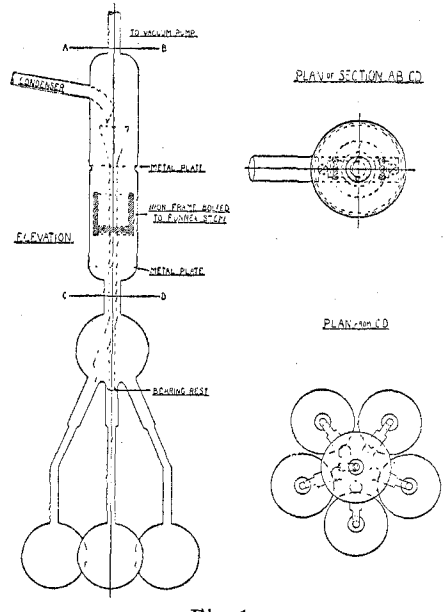

Fig. 1.

The whole apparatus was made of Pyrex glass. This allowed it to be heated whenever there was a possibility of fractions solidifying and blocking the funnel. The details of construction are shown in the figure and are as follows: two metal plates serve to hold the funnel in position and they are in turn supported by constrictions in the large tube; clamped to the funnel are two small pieces of iron rod held together at the ends by brass strips; the funnel with the fixtures turns on a glass bearing which rests in a small indentation. Pivoted in this manner, the funnel and connections swing about easily when a magnet is brought near to either one of the iron pieces.

[2] *Editor's Note.* Dr. Svedberg in a private communication to the Editor states that, in view of Mr. Brown's suggestions, he is now determining by means of a dilatometric method the corrections required to ascertain the actual volume changes. He has already found that there is a contraction attending the solution of gelatin in pure water, of about 50 cubic millimeters per 100 cc. This contraction becomes steadily less with increasing concentration of hydrochloric acid.

[3] The author has already commenced a determination of the partial molal volumes of gelatin and of water in various proportions by the methods described on pp. 33–41 of "Thermodynamics" by Lewis and Randall.

[1] A receiver similar to this has been described in the *Chem.-Ztg.*, **1902**, 337. and in Catalog No. 60 of the Kny-Scheerer Company.

Thus by means of a magnet, the lower end of the funnel may be brought directly over a number of outlet tubes sealed into the apparatus. Five of these outlets (only three are shown in the figure) have been found to be a convenient number. The outlet tubes are, in turn, sealed to flasks whose sizes are determined by the amounts of the various fractions. In some cases it may be found preferable to connect the outlet tubes to the flasks by means of ground glass joints with mercury seal.

CONTRIBUTION FROM THE DEPARTMENT OF CHEMISTRY
UNIVERSITY OF BRITISH COLUMBIA
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RECEIVED DECEMBER 17, 1923

A Lecture Table Demonstration to Illustrate that the Conductivity of a Solution is Due to its Ions.—This demonstration visualizes the conductive property of the ions of an electrolyte and shows that as they form part of an undissociated compound or insoluble precipitate the concentration of the electrolyte is diminished with the consequent decrease in conductance.

The apparatus consists of a beaker containing platinum electrodes which are connected in series with an electric light bulb and an alternating current source. The electrolyte placed in the beaker is a 5% solution of barium hydroxide. As this is a moderately strong base, the light will burn brightly, showing the conductivity due to the barium and hydroxyl ions. While the solution is stirred, dil. sulfuric acid is added slowly from a buret. As the base becomes neutralized, the light gradually becomes dimmer. When just enough acid has been added to neutralize all of the base, the light goes out entirely indicating the absence of all ions. When, now, a slight excess of the acid is added, the current begins to pass again and the filament to glow due to the presence of hydrogen and sulfate ions. The neutralization is made more striking by the addition of phenolphthalein, which fades at the same time that the light goes out.

From a consideration of the equation, $Ba(OH)_2 + H_2SO_4 = 2H_2O + BaSO_4$, it is seen that this is a unique reaction in that both undissociated water and a very insoluble salt are formed, and at the neutral point the conductivity is at a minimum, as practically all ions are removed from the system. This also visualizes the principle upon which depends the determination of the concentration of an electrolyte by conductance measurements.

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RECEIVED DECEMBER 31, 1923

The Action of Ammonium Hydroxide on Copper Ferrocyanide.—Treadwell and Hall[1] make the statement that copper ferrocyanide dis-

[1] Treadwell and Hall, "Treatise on Analytical Chemistry," John Wiley and Sons, New York, **1916**, 4th ed., vol. 1, p. 220.