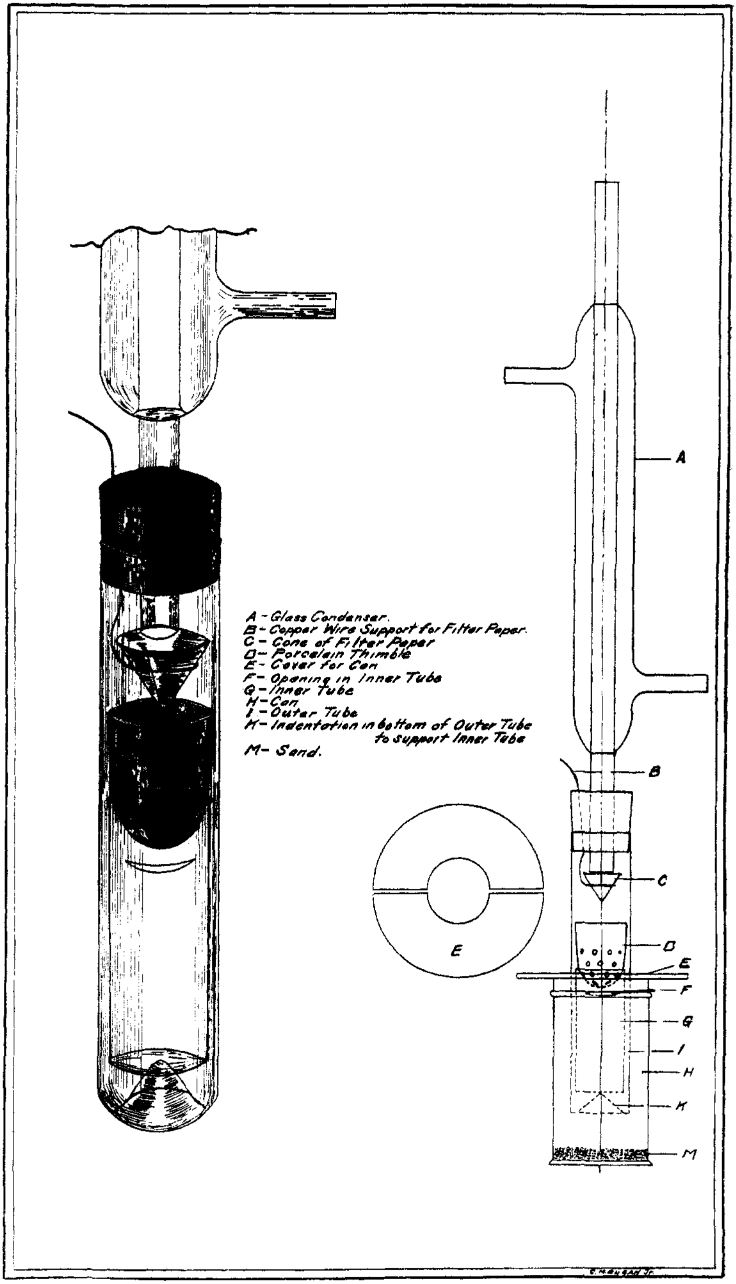
NOTES.

Apparatus for Extraction.—This modification of the Soxhlet extracting apparatus has been employed with gratifying results in the removal of the bitumen in asphalts and asphaltic mixtures. The salient feature is the recovery of the fine clay, which the best quantitative filter-paper, or prepared thimbles will not retain (its weight being deducted from the loss in weight in the material extracted).

The device as shown in the drawings consists of a 100 cc. Nessler jar *I*, cut down to the dimensions indicated, with an indentation at the base; the pyramid supporting a smaller glass cylinder *G*, with an opening at the side for the exit of the vaporized solvent. Upon this rests the receptacle *D*, a small perforated porcelain thimble, which contains the sample; above is a cone *C* of filter-paper, held in position by a piece of wire *B* to prevent contamination. Condensation is affected by means of a glass condenser *A*, 12 inches long, connected with the jar *I* by a wooden stopper. The whole is supported by a clamp attached to the condenser.

Heat is applied from a tin can *H*, containing a layer of sand *M* on the bottom, which is heated on a stove plate; the intensity is regulated by the asbestos cover *E*.

Before making the determination, a piece of the best quantitative filter-paper is molded and cut to fit the thimble, washed with carbon bisulphide, placed in a weighing-bottle, dried in a steam-bath, heated for half an hour in an oven at 110° C., cooled in a desiccator and weighed. In this, 5 to 6 grams of the sample to be analyzed is introduced. The thimble with its contents is then removed and placed in position, about 20 cc. of carbon bisulphide having previously been added to the inner jar *G*. Distillation is begun, and the extraction continued until the filtrate is colorless. The filter is allowed to drain thoroughly, after which heat is again applied; this is twice repeated to insure complete removal of all soluble material. The filter, with its contents, is then transferred to the weighing-bottle, treated as before and weighed. The bitumen and contaminating material in the inner compartment are removed to a weighed porcelain crucible or platinum dish, by means of carbon bisulphide from a small wash-bottle, the solvent evaporated off on a water-bath,


A - Glass Condenser.
B - Copper Wire Support for Filter Paper.
C - Cone of Filter Paper
D - Porcelain Thimble
E - Cover for Can
F - Opening in Inner Tube
G - Inner Tube
H - Can
I - Outer Tube
K - Indentation in bottom of Outer Tube to support Inner Tube
M - Sand.
A
B
C
D
E
F
G
I
H
K
M
E

and the residue ignited to burn off the bitumen. The residue, with the dish, is weighed after cooling in a desiccator, and the amount found is added to the weight of the weighing-bottle, thimble and its contents (after extraction).

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Strontium Malate.—There seems to be no agreement as to the composition of strontium malate. Hagen[1] states that it contains one and a half molecules of water of crystallization and crystallizes in warts. Castoro[2] obtains the salt in needles with four molecules of water of crystallization. Traube[3] reports that the salt crystallizes in rhombic hemihedral crystals, containing six molecules of water of crystallization. Castoro did not observe at any time the formation of the wart-like crystals. He offers no explanation of the differences and concludes simply that the salt exists with different contents of crystal water. In our investigation we have obtained three sorts of crystals: first, warts which separated from a solution while being concentrated in an open dish on the steam-bath; second, rhombic plates, which deposited from a solution concentrated *in vacuo* at the ordinary temperature; third, compact crystals, belonging to the regular system, which separated while boiling down the filtrate from the second kind of crystals. The first and second sorts of crystals contain four molecules of water of crystallization, while the third sort contains one molecule. It appears to be a question of temperature, as we had anticipated. The solubilities of strontium malate at 13.5° and 100° were also determined.

Malic Acid.—We did some work with malic acid which we obtained from the maple sugar residues called "nitre" by the farmers of Vermont. The amount of malic acid which this will yield varies with the source. A lot with which one of us worked in the Harvard Chemical Laboratory yielded 8.6 per cent. of pure malic acid. A lot which we obtained from the vicinity of St. Johnsbury, Vt., gave less than 5 per cent. The Vermont Experiment Station has found a wide range in the yield. Castoro employed malic acid from rhubarb. The results given below were

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[1] *Ann. Chem.* (Liebig), **38**, 257.

[2] *Landw. Vers. Stat.*, **56**, 426.

[3] *Z. Kr.*, **31**, 160.