CHEMISTRY

Differently Charged Ions Separated on "Treadmill"

Those With Single Charges Held Stationary by Current While Those With Double Charges Hasten Their Journey

A TREADMILL for ions is the latest device for separating molecular solutions. Such a treadmill apparatus is now being imported from Sweden for use at the Biochemical Research Foundation of the Franklin Institute, reports Dr. Ellice McDonald, director.

One of the important problems of biochemistry, said Dr. McDonald, is to determine the number of constituents in a biological solution and separate them for analysis. Where these constituents have the same molecular weight the problem has been a baffling one for scientists.

The new apparatus being built in the laboratories of Dr. Thé Svedberg, Swedish Nobelist, effects the separation of such solutions if the molecules in it have different electrical charges on them, even though they have like molecular weights.

In the apparatus an electrical voltage is applied across the solution containing the molecules to be separated. This voltage makes the electrically-charged molecules start to migrate toward the terminals at either end; positively charged molecules move to the negative terminal and negatively charged ones to the positive terminal.

The trick in the new apparatus is to make the solution flow through the apparatus at exactly the same speed but in the opposite direction to those molecules which have, say, a single electric charge. Thus these molecules actually seem to stand still in the same way that a man walking on a treadmill can "stand still" even though his legs are moving rapidly.

However, a molecule having two electrical charges will "run" faster than the one with a single charge. Thus, this latter molecule will be able to buck the current and eventually reach its goal at the terminal. There it, and the millions of other similar ones which are doing the same thing, are drawn off and effectively separated from other molecules having only a single charge.

Describing the working of the apparatus, Dr. McDonald said:

"Suppose our treadmill is large enough to allow two men to move freely on it. If one of them is capable of walking in the same direction but slightly faster than the other, they will in walking be separated from each other, even though they remain on the treadmill because its motion opposes theirs."

Science News Letter, February 12, 1938

PHOTOGRAPHY

Color Films Introduced For Use in All Cameras

COLOR photography by which the amateur can take pictures in his own cheap camera and obtain prints in colors is coming out of the laboratories of scientists and professional photographers and becoming available for general use.

Dufaycolor, Inc., have announced that their color film is now going on nationwide sale in all sizes for use in almost any size and style of camera, from the popular miniature models to the large ones using 8 by 10 inch plates.

The cost of the film was not announced but it will be higher than ordinary black and white because the sales price will include cost of development of the film. The cost of color prints will depend on the volume of business handled by the special processing factory now being planned by Dufay. At present a print 2¼ by 3¼ inches costs 70 cents.

Agfa Ansco is known to be working on a color process film for amateurs in their laboratories. While the details have been secret it is known that Agfa has two goals: (1) a fast film equal in exposure speed to present black and white, and (2) a film which can be developed and processed by any amateur instead of at the factory.

Science News Letter, February 12, 1938

ARCHAEOLOGY

Oracle Had Speaking Tube In Ancient Syrian Chapel

A PAGAN chapel, equipped with a speaking tube for an oracle, has been discovered in ruins of 2300 B. C., in northern Syria.

The chapel is a discovery of a joint expedition of the British Museum and the British School of Archaeology at the mound called Tell Barak.

A hole in the clay, semi-circular altar in the chapel was traced by the archaeologists as leading to an adjoining hidden room, where a priest might hide and whisper through the tube.

A vase shaped like a comic head of a tramp is another notable discovery. This clay head, dating from 1500 B. C., has pop-eyes, a smirking mouth and a painted stubble beard.

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