

The osmotic pressure of sea water is about 20 atmospheres, it is explained. When a river mixes with the sea, free energy equal to that obtainable from a waterfall 680 feet high is lost.

The British experiment put the osmotic pressure to work by separating alternate layers of salt and fresh water by alternate basic and acidic membranes. The membranes are connected in series and yield electricity.

A hydroelectric pile of 47 pairs of membranes each three inches square yielded a maximum of 15 milliwatts, not counting the internal resistance overcome.

At low temperatures, the report to the British journal, *Nature* (Oct. 2), states, the internal resistance is higher and the power output is lower. The pile is therefore likely to be more economic in a warm and equable climate. Whether the process will work economically probably depends upon the time it will run before the membranes need replacing and the interior needs cleaning. The membranes incorporate ion exchange resins. When such a membrane separates two salt solutions of different strengths, a potential difference appears across the membrane.

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POMOLOGY

Wild Avocados to Our Aid

► SEEDS AND budwood from giant wild Mexican avocado trees, that sometimes grow to heights of 80 feet, may help to solve disease and production problems in the California avocado industry.

These plant materials were collected by Dr. C. A. Schroeder of the University of California at Los Angeles subtropical horticulture department recently.

The wild avocado trees grow in Oaxaco, southern Mexico. They are the predominant species in tropical cloud forests on southern slopes of mountains in that region.

The wild avocados were not necessarily selected for edibility or size. Many of the

fruits were small, no larger than an olive. The material will be primarily used in testing for disease resistance and budding and grafting affinity.

Some will be utilized, however, as breeding parents in the fruit improvement program and in development of rootstocks resistant to unfavorable soil conditions.

Dr. Schroeder was accompanied on the tour by Carlos R. La Madrid Faura of Peru's Ministry of Agriculture. The latter has been making a special avocado study for the past several months on the Los Angeles and Riverside campuses of the University.

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CHEMISTRY

Strychnine Synthesized

Process involving 30 steps is more complicated than building up to quinine and cortisone. Strychnine molecule is intricate web of 21 carbon atoms with others.

► POISONOUS STRYCHNINE can be made synthetically, but this achievement of organic chemistry will not result in this alkaloid being made in the laboratory instead of being extracted from seeds of plants.

The total synthesis of strychnine in 30 steps was accomplished by a team of Harvard University chemists led by Prof. R. B. Woodward, and it is more complicated than his earlier building-up of quinine and cortisone from fundamental materials.

The strychnine molecule is an intricate web of 21 carbon atoms, 22 hydrogen atoms, and two each of nitrogen and oxygen.

Strychnine, one of the first alkaloid substances to be isolated in pure state by Pelletier and Caventou in 1818, has long presented a challenging problem to chemists.

Strychnine is a white, crystalline, bitter and poisonous alkaloid. It occurs in the seeds of a West Indian plant, *Strychnos nuxvomica*, and in the bean of the Philippine plant, *Strychnos ignatii*. Taken internally,

it produces excessive irritability of the spinal cord resulting in convulsions.

It has limited medical use, and the medical demand for strychnine is easily met from the natural product. The laboratory process gives uneconomically low yield of the substance in terms of the expenditure of time and money.

Working with Dr. Woodward, during three years of research, were Michael Cava, A. Hunger, W. D. Ollis, H. U. Daeniker and K. Schenker, all of whom were or are post-doctoral fellows of Harvard's Converse Memorial Laboratory.

They report their work in the *Journal of the American Chemical Society* (Sept. 20).

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Tapioca comes mostly from Brazil.

South Africa some day will be one of the world's largest uranium producers; its gold mines contain large uranium reserves.

MEDICINE

Bandage Absorbs Without Sticking

► A PLASTIC and a fabric have been combined to make a surgical dressing that absorbs without sticking. Tried on over 900 major and minor wounds at Augustana Hospital, Chicago, and the Sterling Community Hospital, Ill., the bandage was reported satisfactory in all but eight cases.

The new dressing is now being distributed to doctors and hospitals by the Curity laboratories of Bauer and Black, Chicago, who have tradenamed it Telfa.

Telfa has on one side a plastic, non-wettable film of Mylar, Du Pont's polyester plastic. This shiny perforated side, which goes onto the wound, is bonded to a non-woven cotton fabric of Kendall Mills called Webril. Webril, according to W. O. Elson, head of medical research for Bauer and Black, has the exact absorbing qualities needed for the new dressing.

The tiny perforations in the plastic side let blood, pus and other fluid drain into the absorbent side. This keeps the wound dry, which is important for healing. The perforations, however, are sized so that new-forming skin cells cannot get into them. Consequently they are not pulled off when the bandage is removed.

The bandage, therefore, comes off painlessly, without causing bleeding and without pulling off scabs or healing tissue.

The cases in which Telfa was not entirely satisfactory were those in which there was heavy, thick pus. It also is of doubtful value in burn cases.

Added feature of the new dressing is its shape. Since wounds are rarely square, the manufacturers are making Telfa in strips of different sizes instead of in squares.

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DENTISTRY

Average Man Loses Four-Tenths of Tooth Per Year

► THE AVERAGE American loses four-tenths of a tooth per year between the ages of 15 and 65, U. S. Public Health Service scientists report in the *Journal of American Dental Association* (Oct.).

The findings are from a study by Dr. Walter J. Pelton, public health analyst Elliott H. Pennell and statistician Anton Druzina. They are from reports of nearly a quarter of a million dental examinations of merchant seamen, men in the Coast Guard and Public Health Service officers, all of whom receive care in Public Health Service facilities. But the experience with this group is similar to that reported for private dental patients and for male employees of a large life insurance company.

For those under age 35, the scientists report, the primary cause of tooth loss is decay, or caries. For those over that age, the controlling factor in tooth loss is disease of the gums and other tissues supporting the teeth.

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