

MEDICINE

Jewett Nail Aids Healing Of Broken Hip Bones

► **ELDERLY PEOPLE** who suffer broken hips nowadays have a much better chance of recovering, thanks to a device known as the Jewett nail. Good results with this latest appliance were reported by Drs. Mather Cleveland, David M. Bosworth and Frederick R. Thompson of New York City at the meeting of the American Academy of Orthopaedic Surgeons.

Mortality, formerly about 40%, has been reduced to about 12%, and the broken bone has been prevented from healing crookedly so the person has difficulty walking.

The Jewett nail is a combination of a three-flanged nail and bone plate all in one piece. It is screwed firmly to the shattered bone after it has been put back into normal position by an operation.

No traction is necessary after the operation. The elderly patients can turn in bed and so do not develop bed sores. Very few developed severe mental disease, though previously about 11% had to be transferred to mental institutions because of the severe psychotic state which developed.

The time the patient must stay in the hospital has been cut to almost half and the cost to the patient has been equally reduced. When these broken hips in elderly patients were treated by traction, before development of the Jewett nail, they had to remain in bed as long as 14 weeks.

Broken hips, or fractures of the neck of the femur (thigh bone), are traditionally the fractures of old people but they are also often sustained by persons in the prime of life.

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MINERALOGY

Golden Fleece of Jason Probably Was Sheepskin

► **A SCIENTIST** has come up with an explanation of the mythical Golden Fleece of Jason.

Prof. Arthur F. Taggart of the Columbia University School of Mines, writing in the *American Scientist* (Jan.), explains, "The Golden Fleece that Jason stole was probably the sheepskins used to line the bottoms of gold sluices."

He adds that the ancient sheepskin process is related to the modern flotation method, used to concentrate more

than 100,000,000 tons of ore per year in the United States.

In the flotation process, small particles of different minerals are separated in an aqueous suspension, called a pulp. A froth of one mineral floats on top of the other and is overflowed or skimmed off. "Without the process," declares Prof. Taggart, "the copper, lead and zinc supplies of the country would have been more than critically short in the last war, and many less common metals and minerals would have been unavailable."

Heart of the process is the selective production of a hydrocarbon-like film on the particles in the pulp which are to be floated. The sheepskins, which were probably the basis of the ancient myth about the Golden Fleece, owed at least a part of their effectiveness as gold collectors to the natural grease they contained, Prof. Taggart points out.

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CHEMISTRY

Helium and Spectrometer Detect Leakage of Gases

► **TINY LEAKAGES** in systems built to hold gases are easily detected by the use of helium and a spectrometer, the American Chemical Society was told by Prof. T. I. Taylor of Columbia University at a meeting at Hunter College.

The equipment to be tested is filled with helium gas, the non-combustible American gas used in balloons and dirigibles, he said. The mass spectrometer is placed at joints which are suspected of leaking. If helium is escaping, its spectrum lines show up in the instrument. The helium used in this manner is called a tracer, and the method employed is called tracer technique.

Tracer technique is now widely coming into use in every branch of chemistry in which chemical reactions are followed in detail as they occur among isotopes. These are specially prepared atoms of peculiar weights. Recently relatively simple mass spectrometers have been developed especially for identifying isotopes rapidly and accurately.

Citing the importance of the mass spectrometer in petroleum chemistry, where it is used for rapid analysis of mixtures of many chemically similar compounds, Prof. Taylor declared that the instrument can be applied to the problems of almost any chemical process involving gases or substances that can be gasified.

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IN SCIENCE

CHEMISTRY

Wax-Like Sticks Remove Stains From Clothes

► **STAINS** on clothes, from tea, coffee, iodine, ink, grass and other substances, are easily removed by means of two new wax-like chemical sticks recently patented. They contain a type of alcohol.

The process is simple. The fabric is laid on a clean under-cloth and sponged; then what is called the acidic stick is daubed on until no more stain appears on the under-cloth. After again rinsing the spot, the second stick, a reducing stick, is applied and the spot disappears.

The chemicals used in the wax-like sticks are based on what is known technically as polyethylene glycols. Glycol is an alcohol, but not the ordinary type. Chemically it is between ethyl alcohol and glycerine, which is also an alcohol. The acidic stick contains an acid salt of oxalic acid and tri-ethanolamine, a product made by treating ethylene with ammonia. The reducing stick contains powdered sodium bisulfite or other reducing material.

A new tarnish remover, a household article to clean silver, gold, copper, brass and other metals, is also based on the same glycols. Both stain remover and tarnish remover are developments of Carbide and Carbon Chemicals Corporation of New York.

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AGRICULTURE

Member of Aspirin Family Kills Tobacco Blue Mold

► **CHEMICAL COUSINS** of aspirin have proven among the best means for control of tobacco blue mold tried out by the U. S. Department of Agriculture scientists. Blue mold is a fungus disease that attacks tobacco seedlings before they reach the transplanting stage, and often destroys enormous numbers of them.

The chemicals found effective against the fungus are compounds of salicylic acid; bismuth subsalicylate, used as either a spray or a dust, gave especially good results. Aspirin is the proprietary name for another compound of the same acid—acetyl salicylic acid.

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E FIELDS

PLANT PHYSIOLOGY

Penicillin Can't Cure Trees of Blight Diseases

► **PENICILLIN** is great stuff when used on many human diseases, including some pneumonias, but it doesn't cure sick trees.

When University of California agriculturists found that the mold chemical destroyed pear and walnut blights in test-tube experiments, they were hopeful.

Injections of commercial penicillin into blighted Bartlett pear trees and English walnut trees were made by pathologist B. A. Rudolph. The experiment failed. Evidently the sap in the trees diluted the drug too much.

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INVENTION

Mass-Production Ice Cubes Come Out of New Machine

► **ICE CUBES** on a mass-production basis, turned out fast enough to satisfy even the biggest and thirstiest convention crowd, are the comforting promise of a new machine on which U. S. patent 2,414,264 has been granted to Willis B. Kirkpatrick of Scarsdale, N. Y.

The cubes are frozen in compartments in a set of double-walled trays, revolving on a horizontal hollow shaft through which the freezing brine is circulated to the hollow space between the double walls. The set of trays revolves within a horizontal drum containing the raw water, dipping it up until they are filled. The trays are then covered with flat lids, to insure that the ice cubes will be turned out clear and unbulged.

The brine is kept at optimum freezing temperature until the cubes are well solidified. Then the flat lids are removed, the warmer brine is circulated around the compartments, loosening the cubes and permitting them to fall out through a chute as the machine continues to revolve. Then more water is turned into the drum, the freezing trays are refilled and lidded, freezing brine flows through the circulating system, and the process is repeated.

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PHYSICS

Hydrogen May Be Used In Rocket Propulsion

► **ATOM-POWERED** rockets of the future may use liquid hydrogen to translate the radiant energy of uranium into terms of propelling push, Rear Adm. William S. Parsons, Navy Director of Atomic Defense, suggested at the Founders' Day luncheon of the University of Pennsylvania. The hydrogen will not be burned as fuel, but merely will be converted back into gas, which will be heated to incandescence and expelled through the nozzles at tremendous velocity. Outside, it will of course unite with atmospheric oxygen, giving the rocket a flaming tail; but this will not add anything to the propelling power.

This mode of rocket propulsion, first suggested by Dr. Luis W. Alvarez, seems possible because of one physical law of rocket propulsion: that the lightest atoms have the highest momentum at any given temperature. Hydrogen, being the lightest of elements, would be best to use for theoretical reasons. Fortunately, practical reasons back it up: hydrogen is plentiful, cheap, easily liquefied and easily handled.

Outstanding difficulty about using atom-powered rockets, as Adm. Parsons sees it, is the terrific expense in terms of hard-to-get uranium, whenever a rocket goes astray and is not recovered.

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ZOOLOGY

Thirteen Frogs in Red Union Suits From Colombia

► **THIRTEEN FROGS** in red union suits, even redder than the old-fashioned ones that most of us have been wishing we had, have just arrived at Washington from the South American republic of Colombia and are comfortably established in the well-warmed reptile house of the National Zoological Park, where cold waves never come.

They were brought to Washington by Maurice K. Brady, a Washington businessman who had occasion to be in Colombia recently, and turned over to Director William M. Mann of the Zoo, who declares that they are "the reddest things I've ever seen alive." The red body color is emphasized by black spots. Although the frogs are only an inch long from nose-tip to where the tail might be if a frog had one, their vivid

coloring makes them look bigger.

They live in most unfroglike fashion, Mr. Brady reports, hopping about on the open forest floor in the high jungle, where the remote treetops are so densely interwoven that no underbrush can grow on the ground. Despite their conspicuousness, they hop around perfectly freely, seeming to fear no enemy.

This may be due to the deadly poison they carry under their skins, Mr. Brady suggests; their blazing hue may be a case of what Darwin termed warning coloration.

Indians use this toxin to poison their arrow-heads and blow-gun darts. They put the frogs in the hot sun, or even on heated stones, until the luckless batrachians literally sweat poison through their skins. This the Indians carefully scrape off and save for their munitions business. Mr. Brady states that he saw a dog hit by such a poisoned blow-gun dart; the animal died very quickly.

One species of these land-going frogs, states Dr. Mann, carries its tadpoles from one pool to another. They cling to the parent's body during such migrations like a lot of bright-hued little flags.

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CHEMISTRY

New Nitrogen Fertilizer Is Insoluble Resin

► **WAR-CAUSED** famine in Europe is focusing attention on problems of production of food, and of fertilizer that helps make food. Timely interest thus attaches to a new kind of nitrogen-containing fertilizer, covered by U. S. patent 2,415,705.

One difficulty with all nitrogen fertilizers now in use is their high solubility, which permits rain or irrigation water to leach them out of the soil very rapidly. A water-insoluble fertilizer, in which the nitrogen is still available to plant roots, has long been a great desideratum among agronomists.

This problem has been met by L. V. Rohner of Syracuse and A. P. Wood of Geddes, N. Y., who make a water-insoluble resin by compounding urea and formaldehyde, adding ammonium nitrate (another high-nitrogen compound) during the process to bring the mixture to a desired degree of acidity. After washing and drying, the resulting resin is finely ground and bagged for shipment. Patent rights have been assigned to the Solvay Process Company.

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