

as filtrate. As this filtrate passes down through the tubules, the water, salt and sugar essential to the body are reabsorbed through the walls of these tubules to maintain the normal body chemistry. The waste products, however, that cannot be used again continue to pass down the tubules

MEDICINE

Young Heart Victims Old

➤ MEN WHO get heart disease before they are 40 seem at least 10 years older than they are.

This is "one of the most striking observations" made on a group of 100 heart patients aged 23 to 40 and reported in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (Aug. 4).

The 100 patients came from all parts of the country east of the Rocky Mountains to be studied by eight medical scientists at the Massachusetts General Hospital and Harvard Medical School, Boston.

Besides looking older than their years, the under-40 heart patients were shorter and wider than a control group of healthy persons the same age. They were of mesomorphic (muscular) body build with an increased chest diameter from front to back, but they did not weigh more, on the average, than the healthy control group.

Most of the acute heart attacks in this group of patients occurred during the time of day when most people are at work, 7:30 a.m. to 7 p.m. This, the doctors

NATURAL RESOURCES

Good Fuel from Lignite

➤ AMERICA'S vast deposits of lignite give promise of becoming a valuable fuel with a new process revealed by the U. S. Bureau of Mines that reduces it to a char of high heating value and at the same time yields crude coal tar from which many coal tar products can be obtained.

The process can be used also to make valuable fuel and obtain coal tar products from the low-grade non-coking bituminous coal with which the western United States is well supplied. According to V. F. Parry, chief of the Bureau's laboratories at Denver, Colo., where the process was developed, it is applicable to any coal of lesser rank than high volatile bituminous B, a bracket that encompasses 90% of all western coal.

The process, as described by Mr. Parry, consists in crushing the lignite or other non-coking coal into particles of one-quarter-inch or less in size. The material is then "boiled" at 350 degrees Fahrenheit in a fluidized dryer that uses the hot products of combustion or flue gas as the heating medium.

Then the hot dry fuel is moved to a carbonizing reactor, where it is burned

and down the ureters into the bladder.

When anything interferes with these filters, such as blocking or plugging, the waste products are not properly processed, inflammation develops and we have the condition known as nephritis.

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state, does not prove a direct cause and effect relation between effort and heart disease but makes it reasonable to conclude that activity may influence the rate of occurrence of heart attacks.

Heart attacks occur more often in the late fall, winter and early spring.

Almost two-thirds, 64%, of the patients had symptoms before the acute attack. In 95% of the cases, pain over the heart or under the breastbone came on just before the acute attack.

Of the 97 men and three women, 32% were of British Isles mixture and 27% were Jews.

Each clue suggested by the findings on these patients must be carefully studied, the doctors stress, since each clue may bring closer the final solution of the cause of coronary heart disease.

Members of the research team are: Dr. M. M. Gertler, Comdr. M. M. Driskell (MC) U. S. N., Drs. E. F. Bland, S. M. Garn, J. Lerman, S. A. Levine, H. B. Sprague and P. D. White.

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with air at a temperature of 950 degrees Fahrenheit to extract the coal tar and obtain a char. The bone-dry char has a heating value about 50% greater than raw lignite containing 35% moisture. Also it has a weight of only 45% of the raw lignite.

Raw lignite, known also as brown coal, is now mined and used in the United States in a quantity approaching 3,000,000 tons a year. It is used, however, largely in regions relatively near where it is produced because it deteriorates rapidly in the air. As mined, it contains from 30% to 40% of moisture, and when dried in air it slacks and ignites.

The principal known deposit of lignite in the United States is in North Dakota and about two-thirds of that mined is produced in that state. South Dakota, Montana and Texas have considerable supplies. The new process will be given its first commercial application at a new aluminum smelting plant in Texas. The char obtained will be used to provide power to drive generators to make the large quantities of electricity required in aluminum making.

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METALLURGY

Aluminum-Magnesium Casting Alloys Made

➤ ALUMINUM-magnesium alloys, suitable for either chill or sand casting, which have high tensile strength and ductility, are made by a process on which Charles B. Willmore, North Aurora, Ill., received patent 2,564,044. William F. Jobbins, Inc., of Aurora, Ill., was awarded the patent.

The chief difference between chill casting and sand casting lies in the rate of heat loss through the mold walls. In molds of sand it is slower than in permanent molds of metals or other materials in which the so-called chill casting takes place. Chill casting usually has the effect of decreasing grain size of the cast alloys, particularly when they are composed of an aluminum base.

In these aluminum-magnesium alloys, the magnesium content is less than 9% by weight. The improved properties are secured by the addition of very small quantities of titanium, beryllium, boron, and manganese or chromium. The castings have the desired improved physical properties without any following heat treatment.

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