

PUBLIC SAFETY

Sports More Dangerous Than People Think

► SPORTS are more dangerous to life than is generally realized, the Metropolitan Life Insurance Company reports in its *Statistical Bulletin* (April).

There were more than 800 deaths in sports among the Company's industrial policy holders between 1953 and 1955 with the victims ranging in age from 10 to 64. Ninety-two percent of them were males, due to the fact more men than women engage in hazardous sports and that men are much more willing to expose themselves to danger.

Water sports took the greatest toll of life with 380 deaths reported from swimming, wading and diving. A few were due to skin diving and water skiing.

One factor in several of the drownings was placing too much reliance on inflated tire tubes, the Company reports.

Pleasure boating claimed about a fifth of the total sporting deaths. Most of these were caused by overloading, boaters shifting position, and other dangerous practices. About the same number of deaths occurred among fishermen.

Ninety hunters lost their lives, mostly from firearm accidents. The three most common causes of injury were walking into the line of fire, mistaking a hunter for the game, and poor handling of weapons.

Every sport has its hazards. It was noted in the *Bulletin* that eight persons died because they skated on ice too thin to hold them up.

Science News Letter, June 1, 1957

SURGERY

Hearing Operation Highly Successful

► THE HIGHLY successful results of an operation that restores much of the hearing lost through deafness was reported by Dr. Samuel Rosen of New York to the International Congress of Otolaryngology meeting in Washington.

The new operative technique is designed to help persons who are deaf through poor conduction of sound energy from the vibrating ear drum to the nerve endings in the inner ear.

These vibrations are usually carried by a lever system of three very tiny bones, the last of which is called the stapes and is a stirrup-shaped bone that attaches to the inner ear.

Normally, this bone can vibrate and transmit the sound energy to the inner ear, but in otosclerosis, a hearing disease accounting for almost half the cases of conductive deafness, the base of the "footplate" of the stapes has been "frozen" solidly in position by newly formed bone which grows around it.

The technique developed by Dr. Rosen is called "stapes mobilization." It involves a relatively quick operation in which the stirrup-shaped bone is gently pushed on in

order to free its base. If this is unsuccessful, the next step is to try to free the stapes by prying under it, as one would lift the cover off a manhole.

But in some cases neither of these methods will work because the bone is too firmly overgrown. When this happens, Dr. Rosen creates what is technically known as a "fenestra ovalis," or a window cut through the base of the stapes and into the inner ear. Then, even though there is no mechanical movement of the stapes, hearing is dramatically improved.

Approximately 300 of the window-making operations have been done, and there has been "significant improvement" in 72% of people who had good bone conduction except for the frozen stapes, Dr. Rosen reported.

Dr. Rosen, developer of the mobilization technique, has been using it in ear surgery since 1952.

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GENETICS

Blood Test Clears "Admitted" Fathers

► MANY of the men who admit guilt in paternity suits are being wrongly accused and would be acquitted if they were given the standard blood grouping tests, Dr. Leon N. Sussman, Beth Israel Hospital, New York, and Sidney B. Schatkin, assistant corporation counsel of the City of New York, report in the *Journal of the American Medical Association* (May 18).

The blood grouping tests, used for matching the child's blood with that of the supposed father, are now required only if the man denies paternity. Admissions of guilt, on the other hand, are "routinely and perfunctorily" accepted daily in court, the authors report.

But their blood studies of 67 men who admitted in court fathering the children involved showed six of the men "absolutely" were not the fathers of the children concerned and, since the tests used can clear only 50% of falsely accused men, 12 out of the 67 were "probably" not the fathers of the children.

Previous studies have shown from 30% to 40% of the men who deny guilt in paternity cases and who are given blood tests are falsely accused. Therefore, in the interests of justice, a blood test should be ordered in every case involving a charge of paternity, the authors recommend, whether or not guilt is admitted.

The blood tests included three standard groupings and were performed on the involved persons after their uncontested suits were settled.

A man who admits to paternity usually does so for one of the following reasons: a sincere belief that he is the father; a sense of pride arising from the fact that he could be the father; no feeling of responsibility; inability to afford defense and blood tests costs; or a misunderstanding of what the word paternity means.

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IN SCIEN

PHARMACOLOGY

New Form of Antibiotic Works Twice as Fast

► A MORE POTENT form of the life-saving antibiotic tetracycline that can be absorbed by the body twice as fast as the older form, has been produced by Bristol Laboratories, Inc., Syracuse, N. Y.

The new drug, named Tetrex, is a molecular combination of the parent drug, tetracycline, and a phosphate component that increases the speed of absorption. This shortens the time needed for the antibiotic to get into the blood stream and begin killing bacteria.

Tetrex is effective against the bacteria causing pneumonia, meningitis, respiratory infections, and skin and urinary tract infections.

It was developed by Drs. M. A. Kaplan and F. H. Buckwalter of the Laboratories who succeeded in "welding" tetracycline and a phosphate into one molecular unit.

Another advantage of Tetrex is that it contains virtually no sodium, an important factor when the drug is used to treat diseases where dietary sodium must be restricted. These include congestive heart failure, high blood pressure, kidney disease and cirrhosis of the liver.

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ENTOMOLOGY

Pesticides Protect Against Growing Termite Threat

► THE TERMITE menace in the United States is on the increase but pesticide tests recently concluded show the home owner is better prepared than ever before to meet the threat. This is the conclusion of Dr. Ralph E. Heal, executive secretary of the National Pest Control Association, Inc., Elizabeth, N. J.

Dr. Heal told a meeting of the Chemical Specialties Manufacturers Association in Chicago that recent tests show dieldrin and chlordane can free the home owner of termite problems for more than ten years if applied once to the soil around the house under construction. These insecticides, he pointed out, will not harm growing plants and, when used properly, are not toxic to humans or animals.

In use, the chemicals are mixed with water and flooded heavily on the ground near a structure. Although they are most effective if applied around new structures where the soil is loose from excavation, Dr. Heal said, the new pesticides can be applied to firm earth around older houses and will be effective longer than chemicals formerly used.

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CE FIELDS

MEDICINE

More Leukemia Caused By Atomic Radiation

► MORE CASES of leukemia can be expected from increased exposure to radioactive fallout and other sources, Dr. E. B. Lewis, professor of biology at the California Institute of Technology, Pasadena, reports in *Science* (May 17).

From studies of the increased amount of leukemia among radiologists and survivors of the atomic bombings at Hiroshima and Nagasaki, Dr. Lewis has derived a mathematical formula for predicting what amount of radiation is needed to cause increased leukemia.

A five to ten percent increase can be expected if only one-tenth of today's "maximum permissible concentration" of strontium 90 is maintained in the body, he reports.

The maximum permissible concentration is now set at one microcurie for the total body for those who work with radioisotopes.

Nagasaki and Hiroshima proved ionizing radiation does cause the disease in man, he explains. By comparing the number of cases reported with the amount of radiation known to be present, it was possible to calculate, within limits, the leukemia-inducing effects of the radiation.

Between January, 1948, and September, 1955, there were 95 confirmed cases of leukemia among the inhabitants of the two cities combined. Of these, 69 are considered to have been caused by radiation from A-bomb, Dr. Lewis reports.

Other studies, he says, have shown that at least a portion of "spontaneously" occurring leukemia, 10% to 20%, may be caused by background radiation.

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MEDICINE

Report Walking Helps Cure Gangrene

► SUCCESS of a "walking cure" for gangrene of the feet and legs has been reported by Dr. William T. Foley, New York Hospital-Cornell Medical Center.

Amputations were avoided and the gangrenous condition healed in 21 out of 22 cases when the patients got out of bed and walked around in spite of the ailment, he reports.

The gangrene was a complication of various circulatory diseases that had cut down the flow of blood to the feet or legs. The customary practice is to keep such patients in bed and off their feet, but then the blood flow decreases even further and muscles begin to shrivel up.

One technique usually tried is to use an

oscillating or rocking bed which helps increase blood flow. Actual walking has now proved to be the best treatment, since it is one of the greatest stimuli to improved circulation in the legs.

"Along with the rest of the medical profession," Dr. Foley says, "we were hesitant to allow patients with gangrenous limbs to walk. The success of our surgical colleagues, however, in the treatment of fractures by exercise suggested that we might profit by their experience."

The first patient who received the "walking cure" was a young truck driver with a gangrenous big toe. After a week in bed, he began walking on crutches. The intense pain quickly vanished and healing took place with "unexpected rapidity," Dr. Foley reports.

Along with early walking, the patients also received the traditional treatments such as the oscillating bed, and the prevention of local infection.

Especially important in the treatment is the prohibition of all smoking, since nicotine is known to constrict blood vessels and may bring back the gangrene.

Dr. Foley reports on the new technique in *Circulation* (May), the scientific journal of the American Heart Association.

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EDUCATION

Cost of College Degree Has Doubled Since 1940

► THE COST of a college education has doubled since 1940, Lawrence G. Derthick, commissioner of education, U. S. Department of Health, Education and Welfare, has reported.

In 1940 it cost an undergraduate student \$747 a year if he went to a public college and \$1,023 if he went to a private one. Now, the cost is \$1,500 for the public college and \$2,000 for the private one.

These are some of the results of a survey of more than 15,000 students from 110 colleges to find out what the average student pays out and where the money comes from.

Families are still the greatest contributors, supplying 41% of the college money. Families making less than \$3,000 a year accounted for 10% of the men students and 8% of the women. The students themselves supplied 29% of the money from their own savings.

Working one's way through at least part of college is a common practice. The data showed that two-thirds of the men worked as well as half of the women. The men average \$486 a year and the women average \$265.

In 1952-53, the base year of the survey, students who stayed home spent about \$1,000 per year, while if they lived in some other private home or dormitory it cost them about \$350 more. Another \$300 was added to the yearly outlay for college if the students lived in a club, fraternity or sorority house.

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MEDICINE

Hydrogen Peroxide Drink Cures Animal Cancers

► A SOLUTION of hydrogen peroxide in place of drinking water cured cancerous tumors in 50% to 60% of diseased rats who received an otherwise normal diet, Dr. R. A. Holman, Welsh National School of Medicine, Cardiff, Wales, reports in *Nature* (May 18).

The treatment has recently been used in four humans having very advanced inoperable tumors with "marked clinical improvement" in two of the cases, Dr. Holman reports.

Radiation has long been known to destroy malignant cells and this may be due, in part, to the production of hydrogen peroxide, an active oxidizing agent, in irradiated tissue, he explained.

Previous attempts to treat cancers with injections of hydrogen peroxide have been made without much success. To be effective, the hydrogen peroxide should be given continuously, Dr. Holman believes.

The rats were treated by simply replacing their drinking water with dilute solutions of commercial hydrogen peroxide and the tumors usually disappeared completely within 15 to 16 days.

To date, he said, 72 rats have been cured and are back on tap water. Ten of the treated rats have remained cured for more than two months with no sign of a recurrence.

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TECHNOLOGY

Cars of 1960 to Use 110 Octane Gasoline

► WITHIN FOUR YEARS owners of high-performance automobiles will have to buy premium gasoline rated at 110 octane. Many present premium gases rate 95 to 100 octane.

S. P. Blumberg, Humble Oil and Refining Co., Baytown, Tex., outlined at the American Petroleum Institute meeting in Philadelphia the industry's problems in meeting the nation's constantly increasing demands for greater quantities of premium gasolines with steadily rising octane numbers.

Mr. Blumberg pointed to the current rise in motor fuel octane quality accompanying rapidly increasing engine compression ratios.

"Extrapolations of current trends indicate that high-performance cars of 1960 will require a premium motor fuel of approximately 110 research octane number," he said.

The percentage of 1960 cars requiring premium gasolines will be much higher than at present, Mr. Blumberg foresees. This means the refiners not only have the problem of economically raising octane quality, but in addition, producing the premium fuels in tremendously expanded quantities.

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