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SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Submarine Hunter

See Page 373

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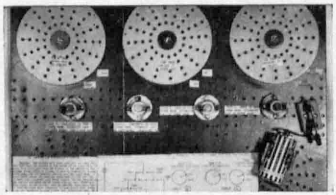

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GENETICS

No Race of Monsters

Radiation will not produce race of monsters, Harvard scientist tells American Medical Association. Physical abnormalities in newborn are results of mother's physical injury or stress.

➤ FEAR THAT RADIATION from nuclear weapons will produce a race of monsters through genetic mutation is groundless, Dr. Theodore Hunt Ingalls of Harvard School of Public Health, Boston, said at the American Medical Association meeting in Boston.

Physical abnormalities in the newborn, such as mongolism, congenital deafness, cleft palates and Siamese twins, are not genetic mutations but the results of physical injury or stress experienced by the mother during pregnancy.

"Assertions that a race of monsters and sports is the likely price of discovery of nuclear fission are unsupported," he stated.

Millions of dollars have been spent, he pointed out, without bringing out substantial evidence that radiation has induced mutations among the wartime residents of Hiroshima. Mental retardation and some other defects were found in 11 babies of mothers pregnant and standing within 1,200 meters, or less than 1,200 yards, of the hypocenter at the time of the explosion.

In addition to radiation injury there were other factors of stress suffered by the mothers of these 11 babies — tremendous heat, concussion, injury and probably infection, shock and hemorrhage.

"All the tragic evidence is that the malformations were acquired and not inherited," Dr. Ingalls said. "The practical demonstration is the direct effect of high dosage of ionizing radiation upon the mammalian conceptus (unborn baby) and not a confirmation of dire speculations about mammalian mutations."

As to the much more feared hydrogen bombs, Dr. Ingalls said these "can cause such direct havoc to a whole population, the old and the young and the embryonic, by their immediate and delayed effects, that little is to be gained at this point by concentrating on the macabre speculation that the impact is to be measured in mutations and inheritable monstrosities."

The practical way to prevent birth of monsters and physically and mentally damaged babies, he said, is to protect the mother from stresses during pregnancy, especially the first months.

Trying to prevent abnormalities in succeeding generations by genetic breeding works for plants and animals, but not for humans except in "inconsequential numbers."

"Maternal illnesses are more easily controlled in human populations than are marriages," he observed.

He pointed to the discovery that an epidemic of German measles among women in early pregnancy could cripple the brains, hearts, eyes and ears of their babies as one evidence of the importance of maternal health rather than genetic background on the unborn.

Carbon monoxide poisoning of the mother, the Rh blood factor and physical injuries to the mother are other non-genetic causes of abnormalities in the offspring.

Genetics are not to be ignored, he said, but in his opinion, backed by research with laboratory animals and study of human case histories, it is "the species strain and family constitution that is handed down. The genesis of the defect is open to question."

Assumption that congenital disorders are determined by a combination of defective genes, Dr. Ingalls said, would mean the ignoring of medicine itself. Genetics by itself, he pointed out, is not enough of an applied science by which to control human abnormalities.

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GENERAL SCIENCE

Public Expected Too Much From Polio Vaccine

➤ SCIENCE must have better relations with the public if it wishes to avoid a repetition of the Salk polio vaccine controversy, the annual report of the John and Mary R. Markle Foundation advises.

John M. Russell, executive director and vice-president, characterized "the most publicized event in medical research during the year" as "a tragic demonstration of confusion and misunderstanding which should never be allowed to happen again."

Public interest was overstimulated and the public was allowed to expect too much, the report charges.

Laymen are inclined to assume that all scientific and health problems can be solved in practically no time, failing to understand the time involved for basic research, Mr. Russell points out.

He urges money-raising experts of national foundations to make sure the public is given the true facts and understands the limitations and time required for research.

The foundation, with income exceeding a million dollars for the year, spent as its largest grant $660,000 to support 22 scholars in medical science on medical school faculties.

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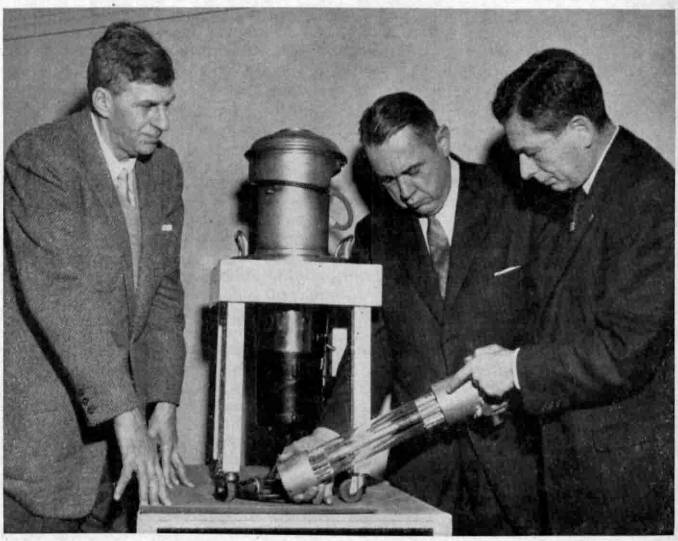

ULTRAVIOLET-KILLED VIRUS — The purifying device that has proved highly effective in killing virus in vaccine production, including the Salk polio vaccine, is shown here. Called the "Centri-Filmer," it was developed by scientists from Michael Reese Research Foundation, Chicago, and General Motors research staff. Left to right are Dr. Franz Oppenheimer of Michael Reese and Thomas C. VanDergrift and Egon Benesi of GM. The two staffs have worked since 1948 on development of the mechanical sterilizer, which uses ultraviolet light to kill viruses.

ENTOMOLOGY

Wetbacks Bring Insects

➤ ILLEGAL "WETBACK" LABORERS slipping into the United States from Mexico may become the means of introducing one of the world's most destructive insect pests, the pink bollworm, into uninfested areas of the nation.

A report by the U. S. Department of Agriculture disclosed that live pink bollworm larvae were found in the personal effects of contract migratory workers on three separate occasions recently, as they were entering California from Mexico to work in cotton fields there.

While all contract workers, or "braceros," are checked at the border for such insect pest hitch-hikers, the great number of Mexican workers who slip across the border illegally, thereby avoiding inspection, offer an excellent opportunity for the pink bollworm to be transmitted to the U. S. unnoticed.

"If the wetback is a cotton-picker, he brings his pick-sack with him," Dr. Avery Hoyt, director of the U. S. crops regulatory program, told SCIENCE SERVICE, "and pick-sacks are favorite hiding places for pink bollworm larvae."

The danger is made even greater, since the cotton-picking wetback is sure to head for cotton country "as fast as he can go," Dr. Hoyt said.

The pink bollworm is a serious pest of cotton, ranked by some experts as the world's sixth most destructive insect. While it is widely distributed in Mexico, strict control measures have kept it restricted to sections of Arizona, New Mexico, Texas, Oklahoma, Arkansas, Louisiana and southern Florida in the U. S.

Wetbacks are a constant threat to keeping the bollworm out of non-infested areas, but not too much can be done about them, Dr. Hoyt said. About the only effective way to keep wetbacks out would be to station a guard along every two or three feet of the border, 24 hours a day, Dr. Hoyt pointed out.

Two lots of the bollworms intercepted from the effects of contract workers entering California at Calexico were found in infested seed in pick-sacks. The third lot was taken from a flour sack stuffed with five pounds of infested cotton, which the bracero was using as a pillow. Investigation of half of the "pillow stuffing" disclosed 25 living and two dead pink bollworm larvae.

As many as 36,990 contract workers entered California through Calexico in September, 1955. Besides pink bollworm, officials intercepted the larvae of the avocado weevil, the Mexican fruit fly and adults of the boll weevil in their effects.

At El Paso, Texas, 25 separate interceptions of the pink bollworm were made in the luggage of contract workers during October. However, Dr. Hoyt said that entries of the bollworm into already infested areas does not cause the alarm that invasion threats to bollworm-free cotton country do.

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MEDICINE

Search Headache Cause

➤ A CLAM'S HEART is helping scientists at Duke University, Durham, N. C., put the finger on a body chemical as cause of migraine headaches.

If the clam clue is correct, discovery of a cure for migraine should soon follow.

The chemical now suspected of causing migraine headaches is acetylcholine. It is often called a nerve chemical because it is released at certain nerve endings when a message travels along those nerpes.

The clam comes into the picture because it has a heart "easily discouraged" by contact with very small amounts of the nerve chemical. As little as one part of the chemical in 100 million parts of fluid will make the clam heart beat slow down.

Knowing this, Dr. E. Charles Kunkle, Duke neurologist, uses the clam heart as a detective to see whether the nerve chemical gets into the spinal fluid of patients during migraine headache attacks.

He suspects that, during these attacks, the nerve chemical is released at endings of the nerve fibers that make blood vessels constrict and expand.

"If the arteries dilated are those inside the skull," Dr. Kunkle told SCIENCE SERVICE, "it is conceivable that the acetylcholine released might find its way into the fluid which surrounds the brain, spinal cord and the blood vessels. If this does happen, we have every reason to believe that the amount which reaches the spinal fluid is exceedingly small and if we ever hope to prove its presence, we must use some very sensitive test. This is where the clam enters the story."

Dr. Kunkle's experiment involves a clam heart suspended in a solution of sea water. Spinal fluid taken from a migraine patient is injected into the solution and, if the fluid contains acetylcholine, the action of the clam heart slows down measurably.

Again, in Dr. Kunkle's words:

"If we can get indirect evidence in this way that the headache comes because certain arteries dilate and that they dilate through the local release of a chemical whose properties are well known, then perhaps we may be able to block the action of this agent by some selected chemical. But this is a problem for the future, for this particular search has just begun and I cannot estimate what we may find."

Dr. Kunkle showed the clam heart experiment and with Dr. Ewald W. Busse, psychiatrist at Duke, discussed headaches in general during the national television program, "Medical Horizons," sponsored by Ciba Pharmaceutical Company in cooperation with the American Medical Association.

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MEDICINE

Drugs Check Oldsters' Behavior Problems

➤ FOR BEHAVIOR PROBLEMS of the oldsters, a combination of two drugs is now giving good results, Drs. John T. Ferguson and William H. Funderburk of Traverse City State Hospital, Mich., reported at the American Medical Association meeting in Boston.

The drugs are reserpine, trade named Serpasil, and methylphenidylacetate, or Ritalin. The first is a tranquilizer and the second a restorative, the doctors explained.

Family doctors, they think, can use the two in management of aged patients who would otherwise have to be sent to an institution. Tried on senile patients in the mental hospital, the drug combination brought "marked improvement in the ability to cooperate and a new interest in their outlook on life and themselves."

The elderly patients after starting the two drugs "swamped" the staff beautician, and bought toothbrushes and asked for dental treatment. Destruction of furniture and clothes dropped 65% and mattress replacement was reduced 75%.

Nursing time for spoon feeding was "markedly decreased." Attendance at social functions went up 300%.

The treatment was effective with patients ranging in age from 60 to 84 years who had been in the hospital an average of 18 years. If homes were available, 50% of the patients could be discharged. The treatment seemed safe. No patient became worse in spite of having heart and blood pressure ailments before the treatment was started.

"Our goal", the doctors said, "was not so much the actual results to be obtained as it was an endeavor to help solve a great and ever-growing situation that faces the medical profession today, the socio-medical problems created by the extra years we, as doctors, have given mankind."

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TECHNOLOGY

Increase Light Output of Incandescent Bulbs

➤ LIGHT OUTPUT of incandescent bulbs will be increased six percent for household types and up to 15% for higher wattage bulbs, without using more electricity, General Electric Company said in Cleveland, Ohio.

Improvements in design and filament structure result in the added light. Benefit to consumers, the company predicted, may eventually amount to more than $100,000,000 annually.

The improved lamp is now available in 750- and 1,000-watt sizes. The new bulbs of smaller wattages will become available within a few years, as rapidly as mass production equipment can be installed.

In the new light bulbs, the filament is positioned lengthwise and coiled-coil filaments are substituted for singly coiled ones.

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ANTIBIOTIC-TREATED POULTRY — Trace amounts of Aureomycin, or chlortetracycline, are shown here being added to final icing tanks in which poultry are cooled after leaving the processing line. The antibiotic helps maintain freshness for several extra days.

PUBLIC HEALTH

Antibiotic on Human Food

➤ USING ANTIBIOTICS to preserve foods changed from a laboratory promise into commercial reality when the U. S. Food and Drug Administration granted permission for use of Aureomycin as a preservative for uncooked poultry.

Aureomycin, or chlortetracycline, can be used when no more than seven parts per million of the antibiotic remain on treated uncooked poultry. The FDA's decision to allow this amount of residue was based on evidence that cooking poultry destroys this concentration of the antibiotic, so that none is left when the meat is served.

In using chlortetracycline on poultry, the antibiotic is added to the water in which the meat is chilled after dressing. This antibiotic dip hinders the development of spoilage organisms and so prolongs freshness. The chemical, produced by the American Cyanamid Company, will be sold under the trade name Acronize chlortetracycline.

Application for permission to use the antibiotics was made to the FDA two years ago, and was granted only after many checks and rechecks, Dr. Henry Welch, director of the FDA's division of antibiotics, told SCIENCE SERVICE.

Reason for such stringent precautions in using antibiotics on human food is the danger of allergic reactions in many people, Dr. Welch said.

To have a pesticide, including antibiotics, approved for use in or on raw agricultural products, manufacturers must submit scientific data as to safe tolerance levels for specific products and under different conditions.

American Cyanamid at this time asked only for approval on poultry meats, reporting research on this product alone, Dr. Welch said. Thus, chlortetracycline can now be used only on poultry.

This company and other chemical manufacturers are now determining safe antibiotic tolerances on other meats and fish products, Dr. Welch said, and can be expected to apply for FDA approval for them in the future.

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TECHNOLOGY

Largest Navy Frigate For Hunting Submarines

See Front Cover

➤ To protect Navy task forces against submarines and to escort destroyers and carriers on anti-submarine warfare missions, the Navy built this frigate, the largest ever constructed.

Equipped with rocket launchers and large guns, the speedy ship carriers extensive electronic equipment for spotting and tracking enemy submarines.

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ANTHROPOLOGY

Peaceful Coexistence

➤ WHAT MIGHT HAPPEN if the present cold war between East and West reaches a final showdown may be inferred from a report to the American Anthropological Association meeting in Boston of what has occurred in the past when two cultures clashed.

It is possible for the two cultures to live in peaceful coexistence, the report indicated.

The Arawak and Ciboney lived side by side for about 1,000 years, and there is little indication that either people had any effect on the culture of the other. The Arawaks were a predominantly agricultural people, but search of the living sites of the Ciboney folk failed to turn up any signs that they grew their own food in the West Indies.

What made possible the peaceful coexistence, the report suggested, was the absence of any arms race. Weapons were rare among both cultures. Fortifications were completely absent.

Complete merging of two peoples resulting in a new fused culture occurred in what is now Georgia when the Early Middle Mississippian people, then centered in the Macon area, met the Swift Creek.

The Mississippians were also an agricultural people who lived in a palisaded town containing specialized buildings. The Swift Creeks, probably not so advanced, lived in small villages without special types of construction. The Swift Creeks, however, made large projectile points and complicated pottery patterns, while the Mississippians had only small projectile points and relatively simple pottery.

The new culture was generally dominated by the Swift Creek, the men with the large weapons.

In Peru, archaeologists found evidence of another result from a clash of cultures. There, the powerful Incas conquered the Icas and absorbed them culturally. Yet less than 60 years later, after the Incas had in turn bowed to the will of the Spaniards, the pottery shows that the Ica traditions were revived.

Dr. Gordon R. Willey of Harvard University presented the report, which grew out of a summer seminar in prehistoric culture contact, to which Drs. C. C. DiPeso, Amerind Foundation, Dragoon, Ariz., W. A. Ritchie, National State Museum, Albany, N. Y., I. Rouse, Yale University, J. W. Rowe, University of California, and D. W. Lathrop of Harvard contributed.

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PHYSICS

Study Walking Physics

➤ THE AVERAGE CITIZEN with a sprained ankle only moans and groans, but when a physicist sprains his ankle, it leads to a new study of the physics of walking.

While recovering from a severely sprained ankle, Dr. Richard M. Sutton, physicist at Haverford College, Haverford, Pa., noticed a twinge of pain as his foot left the ground in walking and was moving forward, even though there was no weight resting on it.

Considering the reason for the pain, he realized that the foot in walking acts like the pendulum of a clock. In its swing, it would have a high velocity and an increased weight from gravity.

Formulas for pendulum motion and a slide rule soon showed him that at an ordinary rate of walking, about 4.1 miles per hour, the moving foot as it passes the stationary foot is traveling at a speed of 12.8 miles per hour, more than three times the forward motion of the walker.

As the moving foot passes the stationary foot, each pound of foot and shoe weighs 3.7 times more than it does while still. And that is enough weight to hurt anybody's sprained ankle.

Dr. Sutton then computed the force acting upon the main leg bone, or tibia, when all the body weight is placed on one foot. He found that a 175-pound athlete raising himself four feet in a one-legged push lasting about half a second would put a force of compression on his tibia of about 1,150 pounds, or more than half a ton.

Next he investigated standing on tiptoe, and found this act requires shifting the body weight forward of the toes. This suggested the following parlor trick to Dr. Sutton's inquiring mind:

"Ask a person to stand facing the edge of an open door, with nose and stomach touching the edge. The person's feet will then extend forward slightly beyond the edge, one on each side. Now ask the person to rise on tiptoe. It is quite impossible, because the door prevents him from shifting his weight forward. His feeling of complete frustration is immediate and startling."

Dr. Sutton makes his report in the *American Journal of Physics* (Nov.).

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PHYSICS

Fission Product Alloy Strong Neutron Source

➤ DOUBLED NEUTRON PRODUCTION results when americium, a fission product metal, substitutes for plutonium in an alloy with beryllium, one of the light metals whose atomic properties are of interest in connection with possible H-bomb fusion reactions.

Announcement of neutron yield and the method of producing the americium-beryllium alloy is made by Drs. O. J. C. Runnalls and R. R. Boucher of Atomic Energy of Canada, Ltd., at Chalk River, Ontario, in *Nature* (Nov. 26).

Beryllium and radium together make up the standard source of neutrons to trigger atomic reactions. Studies by the Canadian team will, when complete, give the neutron yields for all radioactive elements, including the man-made fission product elements after sufficient quantities are available.

Two alloys of beryllium and americium, one a shiny ingot weighing about one-tenth of an ounce, the other sintered and crystalline, were prepared in the work.

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OPTICS

Elderly Cat Does Not Have Old Age Vision

➤ AN ELDERLY cat does not have the far-sightedness of old age.

Man, after the age of about 45, is affected by what the eye doctors call presbyopia. Presbyopia is due to failure, with age, of the eye to accommodate for seeing nearby objects.

The eye accommodates when the eye muscles pull on the lens to increase its curvature. Failure to accomodate is why middle-aged people hold a book or newspaper farther and farther away until they start to wear reading glasses.

Now, it is found that an elderly cat might not need to wear reading glasses even if he were in the habit of reading the daily paper. The cat has practically no presbyopia.

The finding was made through tests on an elderly cat. The cat, a domestic shorthair animal, had been in excellent health except for several infected teeth that had been extracted several months earlier. He was 15 years old, the equivalent of from 75 to 90 years in a man.

Results of the tests are reported in the *Journal of the Optical Society of America* (Nov.) by Dr. Elwin Marg of the University of California and Dr. Johnie L. Reeves of the Aeromedical Laboratory, Wright Air Development Center, Ohio.

Although electric stimulation of the ciliary ganglion of the aged cat showed that its accommodative response was slightly below that of the average young cat, the loss was not enough to be considered significant.

A human child is born with a potential amplitude of accommodation of 18 diopters. At ten years of age, it has already dropped to 15 diopters. By the time he is 60, it has reached its lowest point of one diopter or less. At 60, a man has less than one-tenth of the accommodation amplitude of youth.

The tests on cats showed about two diopters accommodation for young animals and 1.5 for the aged cat.

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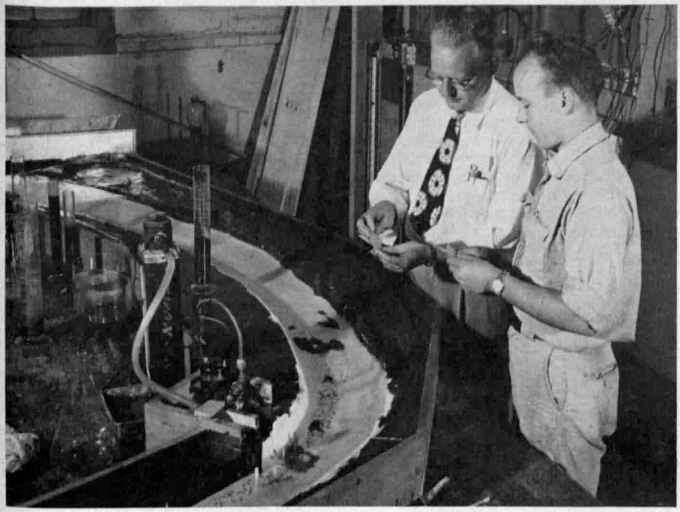

MINIATURE RIVER FLOODS—Engineers are learning how to keep debris out of a power plant's water supply by studying this model of the Kanawha, a West Virginia stream. Prof. Marvin Bogema of Cornell University and L. E. Hovi of the American Gas and Electric Service Corp. examine the cabbage seeds used to show how debris would flow in the real river.

MEDICINE

Palsied Child's Future

➤ BRAIN X-RAYS and psychological tests can help doctors predict whether a cerebral palsied child will make a successful adjustment in later life or whether he is "destined" for home or custodial care.

How the tests and X-rays do this was reported at an American Medical Association meeting in Boston by Dr. Eric Denhoff and Raymond H. Holden, psychologist, both of the Meeting Street School for Cerebral Palsy, and Dr. Maurice Silver of Miriam Hospital, all in Providence, R. I

They gave standard psychological tests and X-ray examinations to 50 children from the school. Their potential adjustments were predicted as good, fair or poor.

Two years later 81% of the children had made the sort of progress predicted by the psychological tests, and 72% had progressed in the direction of predictions based on the brain X-rays

Environment, the scientists said, must not be overlooked in making the predictions. Favorable family attitudes helped the children's progress, while unfavorable ones interfered with progress, even of those children initially thought to have good futures.

The study showed that children with any type of cerebral palsy, who have good intelligence, relatively normal brain X-ray findings and mild physical handicaps, are capable of relatively normal and productive lives. Children with spastic hemiplegia (paralysis on one side), nearly average intelligence and damage to only one side of the brain also may make adequate adjustments.

The severely handicapped child with paralysis of all four limbs, mental deficiency and bilateral brain damage is "destined" for home or custodial care.

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DENTISTRY

"Washed Field" Makes Easier Dental Treatment

➤ HAVING A TOOTH filled or other dental treatment should be easier and quicker with a new technique, called "the washed field" technique, reported by Dr. Elbert O. Thompson of Salt Lake City in the *Journal of the American Dental Association* (Dec.).

The method uses a device that directs a flow of warm water into the mouth to wash away tooth cuttings, saliva and other waste. These are pulled by suction into an air stream and disposed of through a filter system.

The moistening eliminates heat from friction and thus reduces discomfort. Dr. Thompson found the method especially valuable in dental treatment of young children because the work can be done so fast.

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ANTHROPOLOGY

Japanese Children Have Ideas About Americans

➤ JAPANESE CHILDREN view the American as a frightening creature who fights, shoots guns and "makes war."

He has yellow hair and blue eyes, plays a lot, and is always going somewhere, usually in a jeep, car or airplane.

Members of the American Anthropological Association meeting in Boston heard this reported by Dr. Mary Ellen Goodman, Boston anthropologist.

Japanese five-year-olds, when shown photographs of Americans along with pictures of Koreans, Chinese and people from India, were better able to pick out the Americans and name them than any of the other nationalities. This was in spite of the fact that, at the time of the study, 95% of the foreign population of the cities in which the children lived were Korean and the rest were mostly Chinese.

The children were interviewed by Japanese under Dr. Goodman's direction.

The American does have some good features, too. In particular, the Japanese five-year-old finds appealing the American's reputed inclination to buy the child something or take him somewhere such as to the zoo or to the movies. Americans, particularly American women, are described as "good," "interesting," or even as "gentle" or "kind," and this last is the highest tribute a Japanese child can pay.

Looking at the pictures, 55% of the children picked the Japanese as the one they liked best, 32% put the American first.

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MEDICINE

Low Salt Diet Helps Cirrhosis Sufferers

➤ SOME PATIENTS with cirrhosis of the liver can be helped to a more normal life by a diet low in salt, or sodium, if they stick to the diet for long periods and if no complications develop.

Studies showing this are reported by Dr. Charles S. Davidson of Harvard Medical School and Boston City Hospital, Boston, in the *Journal of the American Medical Association* (Nov. 26).

The salt restriction helps the patients lose the ascites fluid that fills the abdomen in severe cirrhosis. The fluid-filled belly and the "spindly" legs and arms that result from the undernutrition also common in cirrhosis give the patient a shape like a spider, Dr. Davidson points out.

The low-salt diet not only reduced the fluid accumulation but led to better nutrition in more than half of 30 patients, 28 of whom were chronic alcoholics. Liver function also improved.

The high pressure in veins leading to the liver was reduced. This suggests that the diet might be substituted for surgical operation in some cases.

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CHEMISTRY

Irradiated Nylon Films Have Two Reaction Rates

➤ ALTHOUGH NEW QUALITIES of toughness are induced in nylon films by irradiation with mercury vapor arc light, and these new qualities are increased by storing the films in the dark after irradiation is completed, the explanation is that two reactions take place at different rates, not that different compounds are produced in the dark and under illumination.

Dr. Roger A. Ford of the research department of British Nylon Spinners, Ltd., has found by spectrographic analysis that changes in structure produced by irradiation of many polymerized materials, including nylon and a number of the new kinds of rubber-like synthetics, is due to combination with oxygen to form unstable, temporary compounds.

Rates of formation and recombination of these oxygen derivatives proceed at different speeds, he reports in *Nature* (Nov. 26). The reactions begun by irradiation go on at apparently increased rates after the light is cut off, but no new compounds are formed because of the darkness, as was assumed in some earlier work on these new plastic products.

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ENTOMOLOGY

Insects Compete With Man for Supremacy

➤ INSECTS pose a constant threat to man's position of supremacy on earth, Dr. George C. Decker of the Illinois Agricultural Experiment Station said in his presidential address at the Entomological Society of America meeting in Cincinnati.

Insects appeared on earth very early in geological time. Through the exacting processes of evolution that weeded out the maladjusted, they had taken a place of dominance in the animal world long before man came on the scene, Dr. Decker said.

Man's chief competitors for food are insects, he said, of which some 800,000 separate species have been discovered and named. This figure probably represents only from 40% to 80% of the actual number of insect species in the world.

As world populations increase, competition between insects and man will become even keener, with insects continuing to change and adapt themselves to new conditions whether natural or man-made, Dr. Decker pointed out.

Leading the fight against insects in this country are some 5,000 scientists, employed in different branches of entomology. These insect-fighters and their predecessors have scored many victories.

Orchardists are now able to produce fruit crops 90% free of insect damage, instead of crops damaged 50% to 90% such as were produced in past years and are still evident in unsprayed orchards, he reported.

The Colorado potato beetle, which came close to wiping out the potato industry about 10 years ago, is no longer regarded a serious pest.

Grasshoppers, Mormon crickets and chinch bugs, which less than a century ago caused many Midwest farmers to abandon their farms in despair, can now be controlled with comparative ease, Dr. Decker said. Disease-transmitting insects that have altered the course of history have been brought under control, bringing the hope of complete extermination of such scourges as malaria, yellow fever, cholera and bubonic plague.

Looking to the future, Dr. Decker predicted the large-scale forecasting of insect conditions, just as rain, hurricanes, ocean currents and crop prospects are now forecast.

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PUBLIC SAFETY

Electronic "Brains" to Assess Bomb Damage

➤ LIVES can be saved if the dead are counted quickly following a nuclear attack on the United States.

This grim fact was reported by Dean Pohlenz, deputy assistant administrator for planning of the Federal Civil Defense Administration, in revealing plans to use electronic "brains" to assess the nation's losses after an attack.

Electronic computers, he said, proved in recent tests that they may be the means of ascertaining the number of fatally injured, surviving injured, dwelling units damaged and other information for the more than 50 "target cities" in the nation.

"Hand figuring can be dangerously slow. The sooner we know how hard we have been hit," he said, "the faster we can begin to recover."

Their use, he pointed out, might work this way to compute the destruction of homes: operating from a central headquarters, the attack factors are set up on the computer. Assuming a single weapon was used, factors are its size, height of the burst, and "ground zero" of the explosion. These factors become coordinates for figuring damage.

The computer "scans" the area around ground zero and quickly determines the number of homes destroyed, printing out the figures faster than they can be read.

Mr. Pohlenz also revealed that the Atomic Energy Commission and the U. S. Bureau of Standards are at work developing a special computer technique to determine fallout patterns.

"Although test results are not conclusive so far," he said, "we feel reasonably sure that fallout can be figured by computers."

Mr. Pohlenz reported that government agencies are developing a system of automatic transmission for post-attack information to reach computer headquarters.

Computers and the automatic transmission system are both being developed by the Stanford Research Institute.

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IN SCIEN

RADIO ASTRONOMY

Discover 1,936 Sources Of Radio Waves in Sky

➤ AT LEAST 1,936 heavenly sources are beaming radio waves into space that have been picked up here on earth by sensitive receivers known as radio telescopes.

Dr. Martin Ryle of the Cavendish Laboratory, Cambridge, reported this result of a thorough sky survey to a Royal Astronomical Society meeting in Oxford, England.

Four antennas hooked together were used to spot the sources sending out radio waves with wavelength of one meter, or about 39 inches. Radio waves for frequencies in the middle of the standard AM broadcast band are about 1,000 feet long.

The great majority of the radio sources are not identified with any visible object, he said. About 500 of them now have accurately known positions. Some 30 were found to be quite large-sized, and several are thought to be galaxies in collision. A few others are the expanding remnants of supernovas.

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MEDICINE

New Clinic to Remake Disfigured Faces

➤ A CLINIC where damaged faces will be made over and their owners restored to society as useful citizens is to be established at the Manhattan Eye, Ear and Throat Hospital in New York.

It will be called the Clinic for Reconstructive Plastic Surgery of the Face and is said to be the first of its kind in the United States. It is being established by the Society for the Rehabilitation of the Facially Disfigured. Dr. John Marquis Converse of New York University College of Medicine and the Manhattan Eye, Ear and Throat Hospital is the clinic's surgeon director.

Patients to be treated will be men, women and children whose faces have been disfigured as the result of accident, by disease such as cancer, or by birth abnormalities such as harelip and cleft palate.

Included will be such conditions as abnormalities of eyes, ears and nose, nerve defects, burns, defects of the skin, and malformations of the jaws, teeth and bones. Not only will the defect itself be treated, but so also will the patient's whole personality. Vocational problems will also be handled.

Establishment of the clinic was announced by the sponsoring society's president, Lawrence D. Bell, president of Bell Aircraft Corporation, Buffalo, N. Y.

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E FIELDS

VETERINARY MEDICINE

Tranquilizing Drug Helps Neurotic Canines

➤ NERVOUS OR NEUROTIC PETS can be calmed with the new "tranquilizing" drug, chlorpromazine, which has been used successfully for soothing mentally disturbed humans, a team of scientists from the University of Pennsylvania reported at the Pennsylvania State Veterinary Medical Association meeting in Harrisburg.

Use of the drug may make a visit to the veterinarian a less painful procedure for all concerned, the scientists said. They reported that administration of chlorpromazine to dogs by their owners before a visit to the clinic seemed to calm the animals while not masking symptoms.

Chlorpromazine, trade named Thorazine, is also useful in preventing carsickness in animals, Drs. James H. Mark, John D. Beck, James E. Martin and Joseph F. Skelley concluded. The report was presented to the meeting by Dr. Mark.

The scientists told of two cases of dogs showing abnormal or "neurotic" behavior that reverted to their "normal personalities" following chlorpromazine medication.

Just as in human beings, chlorpromazine is not a cure, but an aid in the treatment of animals whose behavior pattern becomes abnormal, they said. Use of the drug may permit an animal to adjust to a new set of conditions or to relax long enough for necessary treatment, the scientists said.

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ASTRONOMY

No One Should Own Outer Space

➤ WHO OWNS outer space?

No one owns outer space. No one should own outer space. These are the answers of Andrew G. Haley, director and general counsel of the American Rocket Society, who is writing a book on space law.

Outer space, Mr. Haley believes, may be claimed by man only "for the benefit of all mankind and to the detriment of no other intelligent creature."

All humanity is directly involved in solving the problem of ownership of regions beyond the "aeropause," defined as the altitude at which the atmosphere ends and space begins.

Many people believe the United Nations should lay claim to outer space. Mr. Haley agrees that, for the present, UN organizations are the only ones available to handle the problem. But he warns that, in the long run, outer space cannot belong to anyone.

Meanwhile, he recommends, the UN should set up a commission to study the problem's legal aspects, trying particularly to reach an understanding among all nations on the question of jurisdiction. He suggests UNESCO should collect all scientific information on space flight.

Mr. Haley thinks that July 29, 1955, was a "momentous day in history," not only because international announcement was made then of United States plans to launch several small unmanned satellites, but because no nation protested the plans. (See SNL, Aug. 6, p. 85.)

Under existing international law, Mr. Haley says, any nation could have declared that no man-made earth satellite could circle over its territory, and that violating the territory, even 200 miles in space, would be an act of war. Any nation could have insisted that international agreement precede planning the launchings, or that the very planning would require invoking international sanctions.

"Quite to the contrary," Mr. Haley points out in his report on space law to the American Rocket Society, "none complained, none protested and the program is proceeding. The scientists have benefited mankind as a whole in a field where the lawyers might well have failed."

Space law will have to be based on natural law, defined by Aristotle as "that which has the same authority everywhere and is independent of opinion," Mr. Haley said.

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MEDICINE

Negative Response May Detect Pancreas Cancer

➤ A NEGATIVE RESPONSE to stimulation by a hormone will help detect hard-to-diagnose early cancer of the pancreas, it is the hope of Drs. Martin M. Nothman, Joseph H. Pratt and Allan D. Callow of the New England Center Hospital and Tufts Medical School, Boston.

Research supporting this hope was reported by the three at the American Medical Association meeting in Boston.

The pancreas is best known as the insulin-producing organ of the body. Cancer of the pancreas makes up about five percent of all cancers and takes sixth place in frequency. It is a type of cancer that tends to spread.

The pancreas also is a source of an enzyme chemical called lipase. When injections of the pancreas-stimulating hormone, secretin, are given to normal persons, more lipase is excreted in the urine. When given to cancer patients, the secretin failed to result in increased lipase excretion.

In seven patients with cancer, the secretin injections resulted in decrease or disappearance of lipase. This was the only test, the doctors reported, which supported a diagnosis of cancer of the pancreas in these patients. The fact that they did have such cancers was later proved when surgeons operated and found the cancers.

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MEDICINE

Cathartic Irritation May Mimic TB or Colitis

➤ WHEN AN X-RAY shows changes that suggest diseases such as ulcerative colitis, enteritis and tuberculosis, the trouble may have been caused by long use of vegetable or chemical cathartics, Drs. Norman Heilbrun and Charles Bernstein of the University of Buffalo School of Medicine, N. Y., reported at the American Medical Association meeting in Boston.

Doctors at the meeting saw X-ray pictures of such changes in the intestines.

The patients had been taking irritating cathartics for at least 15 years, with constant and continuous overdosage.

Chemical or vegetable cathartics have an irritating and stimulating effect on the mucous lining of the small and large intestines. Bulk or salt cathartics do not cause abnormalities such as these patients had, the Buffalo physicians said.

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BIOCHEMISTRY

Some Frustrations Fail to "Fire" Adrenal Glands

➤ DISAGREEABLE SITUATIONS and frustrations, contrary to general opinion, do not always "fire" the adrenal glands to produce more of their hormones for meeting the stress.

This finding comes from tests of nine paid male volunteers.

They were confined in an air-conditioned cubicle only eight by four by six feet. They wore goggles that let a little light through but otherwise blocked their vision. Gloves and cardboard tubes from shoulders to fingertips kept them from perceiving anything through the sense of touch. They lay on a bed except when eating or going to the bathroom, at which times the tubes and gloves were removed but not the goggles.

They were given a number of psychological tests involving solving problems but no entertainment.

The men gave up when they felt they could no longer endure the circumstances. The challenge of the situation and the opportunity to earn money as well as praise kept them trying as long as possible. The length of stay was from one and a half to six days. Some of the men were openly distressed and complained of hallucinations.

The situation was therefore considered stressful, but chemical tests of kidney excretions showed no consistent signs that their adrenal glands, producers of cortisone and other hormones, had been activated by the stressing situation any more than by the "minor" stresses of everyday life.

The studies are reported by Drs. C. W. Murphy, E. Kurlents, R. A. Cleghorn and D. O. Hebb of McGill University, Montreal, in the *Canadian Journal of Biochemistry and Physiology* (Nov.).

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PHYSIOLOGY

Learning Why Noses Know

University and industrial laboratories from coast to coast are trying to find what makes one substance smell different from another.

By D. H. RADLER
Science Service Correspondent

➤ FOR SHEER MYSTERY, few things compete with the sense of smell. How it works, only the nose knows . . . and so far, it has kept the secret well.

But, now scientists are launching an all-out research attack that makes your nose a new frontier. The reasons for "Operation Sniff" are many:

We have little idea what makes one substance differ in smell from another. There is no standard unit measure for odors, like the ounce for weight or the decibel for sound. No generally accepted odor classification has been adopted. And there are no "smelling aids" equivalent to eyeglasses and hearing aids.

Our noses help us select foods, and the sense of smell contributes even more to the enjoyment of eating than the taste buds do. The nose detects contaminations of all kinds. It sometimes saves our lives by discovering dangerous gas leaks or warning us away from spoiled foods and toxic drinks. Few things arouse nostalgia as much as a faint smell that reminds us of a past event. And nothing is more repulsive than a really bad smell.

Manufacturers of many products, especially foods, perfumes and cosmetics, are deeply concerned with how their merchandise strikes our noses. Entire industries are devoted to making things, and people, smell better.

Odorous By-Products

Some industrial processes exude bad smells as by-products. The effects of these odors on employees and the public are vital to production efficiency and acceptance in the community.

Such problems help prompt the flurry of odor research, but scientists have additional reasons for making your nose a new frontier. They suspect that finding some answers about odor will set off a chain reaction of discovery, just as the invention of the microscope did.

From coast to coast, in university and industrial laboratories, work is in progress aimed at making "the nose on your face" as plain as the saying has it.

One beehive of such activity is Purdue University, where biophysicists, engineers, pharmacists, biochemists and food technologists are attacking separate sectors of this new frontier.

Biophysicist L. J. Mullins is working on how we smell things, the most basic and least understood area of the field.

Using 20 to 30 subjects and taking thousands of measurements, he is cataloguing the smallest concentrations of many different odors that can be smelled. Comparing these "thresholds" with the makeup of the odorous materials themselves is the next step. Finding what accounts for threshold value differences might then indicate something about the nature of our "receiving set" for odors.

Prof. Mullins has found that the size, shape and "stickiness" of the molecules in a compound contribute to its odor. The various members of the butane family, for example, have smells of distinctly different strength and character. The difference seems to lie in how their molecules are put together. Reshaping the butane molecule a certain way yields a chemical 180 times stronger in smell than butane itself, Prof. Mullins finds.

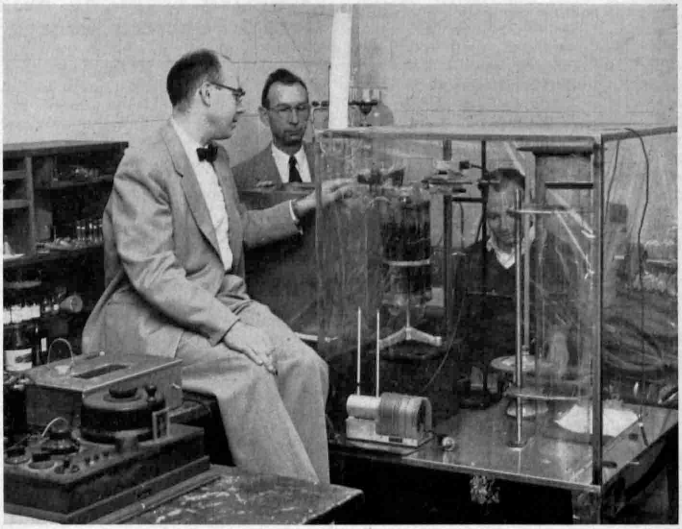
To be smelled at all, a substance must be volatile, that is, some of its molecules must enter the surrounding air. Then, they must stick to the olfactory nerve endings by means of electrical attraction. Finally, if their size and shape are right, they seem to "fit" the nerve endings, in much the same way that a key fits a lock, and the odor registers.

These findings, supported by studies of actual olfactory nerve tissue, can indicate a great deal about how the sense of smell must work. To Dr. Mullins, they suggest some new theories about olfaction, which he is now readying for publication by the New York Academy of Sciences.

Odor Measurements

Stepping from the physiological approach to the problem of measuring odors, we find Prof. J. R. Eaton of Purdue's school of electrical engineering. In 1950, Prof. Eaton developed a device to measure small quantities of air contamination. This "odor meter" is still in use, although the engineering professor is now hot on the trail of an electrical gadget to do the job better.

The earlier odor meter detected the presence of air contamination by measuring the changes in surface tension of a liquid drop. It produced results that correlated with actual sniffing by human controls and, in



ELECTRIC SNIFFER—As part of "Operation Sniff," C. R. Chapman, Prof. J. R. Eaton and J. O. Kopplin of the University of Purdue, Lafayette, Ind., discuss an experiment with their electric "odor meter." This mechanical and electrical nose detects air contamination as slight as one part in 20,000,000. It cannot catch cold either.

some cases, detected contaminations almost too weak to reach the smell threshold.

Prof. John E. Christian of the school of pharmacy is still working with the device. He finds that although the number of odors it can detect is limited, the liquid drop method is accurate and reliable for many purposes.

And it's much less subject to error than your nose. For one thing, it cannot catch cold!

Aided by a graduate student, Prof. Eaton is now developing an electrical tester many times more sensitive than the liquid drop device. It detects air contaminations by the changes they produce in surface potential, an electrical characteristic that can be measured.

First "Electrical Nose"

With camphor and alcohol, this invention has detected contaminations as small as one-tenth of a part per million parts of air! If it can be used to identify contaminants as well as detect them, which it promises to do, we will have the first "electrical nose."

In the field of odor control, biochemists R. E. Henze and F. W. Quackenbush and their graduate students have studied the effects of odorous gases produced by apples stored in warehouses on the apples themselves. They find that these volatile substances, which give apples their mouth-watering aroma, can have a bad effect, too. Accumulating in the air where apples are stored, they create a condition that spoils the apples, known as apple storage scald.

The biochemistry researchers have captured these gases and analyzed them. Their conclusion is that the delicious odor must be kept away from apples in storage. Of course, in the food market or in your home, that pungent smell is entirely an asset.

Cannery Waste Odors

Prof. N. W. Desrosier, a food technologist in the horticulture department at Purdue, with his graduate students, is working on measuring odors from cannery wastes, using a chemical contraption called a stinko meter.

Samples of the waste material are passed through a series of vessels, where they are broken down chemically. The analysis of these samples can tell exactly how bad the waste products smell and, in the case of cannery waste lagoons that do not smell too badly yet, it can predict when the odor will hit an unpleasant level. This gives canners warning in time to start treatment.

Prof. Desrosier's methods also provide an objective means of telling how effective the various odor masking systems used by canneries really are. They can be applied to malodorous wastes from other types of industry as well, where they should contribute greatly to better public relations.

With other findings in American laboratories, these researches at Purdue University are helping push the frontier of knowledge forward, by a nose, at least.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADDITIONS TO VIRGINIA MINERAL LOCALITIES—Richard V. Dietrich—*Virginia Polytechnic Institute*, Engineering Experiment Station Series No. 105, 31 p., paper, 25 cents.

ASPECTS OF SYNTHESIS AND ORDER IN GROWTH—Dorothea Rudnick, Ed.—*Princeton University Press*, 274 p., illus., $6.00. Containing the written versions of papers delivered at the Thirteenth Symposium of the Society for the Study of Development and Growth.

THE BOOK OF POISONS — Gustav Schenk, translated from the German by Michael Bullock—*Rinehart*, 310 p., $5.00. An interesting account of poisons, both those growing in common wild plants at our doorsteps and deadly drugs from distant places. One chapter describes poisons of the future.

COLOR TELEVISION STANDARDS: Selected Papers and Records of the National Television System Committee—Donald G. Fink, Ed.—*McGraw-Hill*, 520 p., illus., $8.50. Reporting the events leading up to the adoption of present standards.

CROP PROTECTION—G. J. Rose—*Philosophical Library*, 223 p., illus., $10.00. A practical book for those who need to protect crops from weeds, insects, fungi, rodents and other hazards.

DE NATURA FOSSILIUM (TEXTBOOK OF MINERALOGY)—Georgius Agricola, translated from the first Latin edition of 1546 by Mark Chance Bandy and Jean A. Bandy—*Geological Society of America*, Special Paper 63, 240 p., illus., $3.00. Until this book appeared, existing mineralogy was a "spreading structure of theories supported by fables."

EDUCATION FOR PARENTS OF EXCEPTIONAL CHILDREN—Dorothy Davis Debald and others—*Porter Sargent*, 30 p., paper, 65 cents. Reprinted from "Special Education for the Exceptional." (See SNL, Nov. 12, p. 316.)

THE GEOMETRY OF GEODESICS—Herbert Busemann—*Academic*, 422 p., illus., $9.00. A "geometric approach to qualitative problems in intrinsic differential geometry."

GUIDE TO THE REPTILES, AMPHIBIANS AND FRESH-WATER FISHES OF FLORIDA—Archie Carr and Coleman J. Goin—*University of Florida Press*, 341 p., illus., paper, $6.50. An appendix contains first-aid treatment for snake bite.

GUIDE TO THE STARS—Hector Macpherson—*Philosophical Library*, rev. ed., 141 p., illus., $2.75. Showing the beginner how to identify important stars and constellations and telling of modern discovery and research.

A HANDBOOK OF TEXTILE FINISHING—A. J. Hall—*Chemical Publishing Co.*, First American ed., 244 p., illus., $6.75. For students, textile workers, and all those who use textiles and are interested in how they are produced.

HANDBOOK OF TROPICAL AQUARIUM FISHES—Herbert R. Axelrod and Leonard P. Schultz—*McGraw-Hill*, 718 p., illus., $10.00. A reference book for the lover of tropical fish, beautifully illustrated by drawings by the Japanese fish artists, Mitsui Shirao and Dr. Tokiharu Abe, and by Dorothea B. Schultz.

INSECTS OF WISCONSIN FORESTS—Roy D. Shenefelt and Daniel M. Benjamin—*University of Wisconsin College of Agriculture*, 110 p., illus., paper, 25 cents. Explaining the complex relationship between forest trees and their environment and between forest and insects in order to provide an understanding of the hazard presented by insects.

INTERNATIONAL ENCYCLOPEDIA OF UNIFIED SCIENCE: Volume 1, Nos. 1-5—Otto Neurath, Rudolf Carnap and Charles Morris, Eds.—*University of Chicago Press*, 339 p., $6.00, with Nos. 6-10, $11.00. An attempt to bring harmony between philosophy and empirical science.

INTERNATIONAL ENCYCLOPEDIA OF UNIFIED SCIENCE: Volume 1, Nos. 6-10—Otto Neurath, Rudolf Carnap and Charles Morris, Eds.—*University of Chicago Press*, 420 p., $6.00, with Nos. 1-5, $11.00. Completing volume one with discussions of the theory of probability, foundations of physics, cosmology, foundations of biology and the conceptual framework of psychology.

AN INTRODUCTION TO REACTOR PHYSICS—D. J. Littler and J. F. Raffle—For the United Kingdom Atomic Energy Authority, *McGraw-Hill*, 196 p., illus., $4.50. Based on a set of declassified lectures given by the authors at the Reactor School of the Atomic Energy Research Establishment, Harwell.

INTRODUCTION TO THE STUDY OF CHEMICAL REACTIONS IN FLOW SYSTEMS—S. S. Penner—For the Advisory Group for Aeronautical Research and Development, NATO, Butterworths. (*Interscience*), 86 p., illus., $3.00. An introduction to the study of chemical reactions in moving ideal gas mixtures.

IONIC INTERPRETATION OF DRUG ACTION IN CHEMOTHERAPEUTIC RESEARCH — Alexander V. Tolstoouhov—*Chemical Publishing Co.*, 276 p., illus., $10.00. Presenting problems from a physicochemical approach.

MENTAL HEALTH AND GUIDANCE FOR EXCEPTIONAL CHILDREN—Warren T. Vaughan and others—*Porter Sargent*, 78 p., paper, $1.25. Reprinted from "Special Education for the Exceptional." (See SNL, Nov. 12, p. 316.)

MICHAEL REESE HOSPITAL, MEDICAL RESEARCH INSTITUTE 26TH ANNUAL REPORT—*Michael Reese Hospital*, 35 p., illus., paper, free upon request direct to publisher, Chicago, Ill. Reporting research conducted during the year.

THE MODERN BUILDING ENCYCLOPAEDIA: An Authoritative Reference to All Aspects of the Building and Allied Trades—N. W. Kay, Ed.—*Philosophical Library*, 768 p., illus., $15.00. An encyclopedic reference book covering all aspects of building and architecture from abacus to zoophorus.

ON THE WINGS OF THE WIND—Commander David C. Holmes and Marvin Pitkin—*McBride*, 204 p., illus., $3.50. This account of the outer atmosphere, and the weather and electrical phenomena that have their birth there, is for the non-technical reader.

ORGANIC CHEMISTRY SIMPLIFIED: Based Completely on the Electron Theory—Rudolph Macy—*Chemical Publishing Co.*, 2d rev. ed., 611 p., illus., $12.00. For students of organic chemistry who find that most textbooks dive into the subject too suddenly.

ORGANIC REAGENTS FOR METALS AND OTHER REAGENT MONOGRAPHS—W. C. Johnson, Ed.—*Chemical Publishing Co.*, 199 p., illus., $4.00. For analytical chemists.

THE PETROLEUM ACIDS AND BASES—H. L. Lochte and E. R. Littmann—*Chemical Publishing Co.*, 368 p., illus., $9.00. For petroleum engineers and industrial users.

PRIMITIVE ART—Franz Boas—*Dover*, 378 p., illus., paper, $1.95. An unabridged republication of a classic in anthropology by the late Prof. Boas, first published in 1927.

RAND MCNALLY COSMOPOLITAN WORLD ATLAS—*Rand McNally & Co.*, Centennial Edition, 375 p., illus., $13.95. Includes all map and index revisions made necessary by the international agreements, political revolutions, world-wide censuses and population movements of the past ten years.

TOPSOIL AND CIVILIZATION—Tom Dale and Vernon Gill Carter—*University of Oklahoma Press*, 270 p., illus., $3.95. With the advent of civilized man, about 6,000 years ago, the soil-building process was reversed, and the quantity and quality of soil, as well as the amount of life the soil supported, all began to decline.

WHY PATIENTS SEE DOCTORS: Results of the Washington Sickness Survey, a Statewide Study of Patients Seen by Doctors in Private Practice—Seymour Standish, Jr. and others—*University of Washington Press*, 94 p., illus., $2.50. Preventive medicine is a substantial part of a Washington physician's practice, with colds, 'flu and other respiratory ailments most common among illnesses.

THE WORLD OF BEES — Gilbert Nixon — *Philosophical Library*, 214 p., illus., $4.75. By a man who loves bees for the student who wants to learn about them.

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Kodak reports to laboratories on:

looking through the microscope with movie film and camera . . . what darkroom craftsmanship can now accomplish . . . half-second butyrate on the road

Cinephotomicrography

That motion pictures made through the microscope might have much value both as an investigative technique and as an aid to scientific communication and instruction doubtless occurred to thoughtful men in earliest nickelodeon days, if not before. Certainly the art has been widely and effectively practiced and improved since then, but how many laborers in the various vineyards have had too many other important and more difficult matters meriting their attention to give thought to what cinephotomicrography could do for them?

Therefore, with no loftier motive than moving a little merchandise, it may be that by publishing a new revision of the booklet, "Motion Pictures Through the Microscope," we shall accomplish the greater good of a seed dropped in the right place at the right time.

The booklet speaks of how to use a motion-picture camera to alter the apparent rate of events on a microscope stage, making them many thousand-fold faster or four times slower, as desired; of the details of aligning camera with microscope; of illumination, exposure, color rendition, the defeat of vibration, and a hundred other petty points that distinguish exasperation from proud achievement.

A copy of "Motion Pictures Through the Microscope" (Kodak Pamphlet N-2) is obtainable without charge from Eastman Kodak Company, Sales Service Division, Rochester 4, N. Y.

Cinephotomicrograph by E. J. Farris.

Color prints while you wait

The day when you can ask one of the boys in the darkroom to bang out a few color prints before lunch has just about dawned.

Just like reaching into the drawer for *Kodabromide Paper*, they can now reach for a new paper bearing the name *Kodak Color Print Material*. It comes in *Type R* for making prints directly from Kodachrome or Ektachrome transparencies and *Type C* for color negatives such as are obtained with *Kodak Ektacolor* or *Kodacolor Film*.

There is, frankly, still a little more to it than making black-and-white prints. There are quite a few more processing steps, and the instructions for them must be followed rather carefully. When the directions read 75 F for the developing bath, they don't mean 76 F. The warning that the paper should be given two hours to reach room temperature after removal from the refrigerator means that the operator had better not slip a sheet into the enlarger easel while condensation is still visible on the outside of the package. The enlarger light source should be tungsten, properly filtered.

Because the acceptability of a color balance is influenced by an intricate set of psychological, physical, and chemical factors, there is plenty of room for creative craftsmanship in the selection of filter combination, lamp voltage, and exposure. The more painstaking the craftsmanship, the more pleasing the results are likely to be. Yet it is possible to slack off on the craftsmanship a bit and still get color prints on paper that convey more information than even the best monochrome could ever give.

If you use color photography in your business, we would deem it an honor to have you among the first on board. For a more precise idea of what's involved in the use of Kodak Color Print Material, *write Eastman Kodak Company, Professional Color Sales Division, Rochester 4, N. Y.*

Skin for aluminum

This is the freshly washed side of an aluminum truck trailer. The portion on the left had once been sprayed for demonstration with a clear lacquer made from *Eastman Half-Second Butyrate*, and the portion on the right left bare. Note the difference brought out by 16 months and 128,000 miles of weather, flying gravel, and road salt. There was also a dent that penetrated the lacquer but failed to start it peeling or chipping.

In summary, aluminum resists the elements till kingdom come, but a coat of Egyptian Lacquer Company's (South Kearny, N. J.) new Half-Second Butyrate*-based product helps to keep it clean and unpitted while waiting. Full information about* Eastman Half-Second Butyrate *is obtainable from Eastman Chemical Products, Inc., Kingsport, Tenn. (Subsidiary of Eastman Kodak Company).*

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are . . . *serving laboratories everywhere*

Kodak
TRADE-MARK

MEDICINE

Pain in Neck Hits More Women Than Men

➤ MORE WOMEN than men suffer from pain in the neck and shoulders.

Among 800 cases, 60% were women and 40% were men, Dr. Edward M. Krusen of Baylor University Hospital, Dallas, Tex., reports in the *Journal of the American Medical Association* (Nov. 26).

Dr. Krusen thinks these patients are often not properly handled in diagnosis and treatment. Often they are told there is nothing wrong with them because there are no marked X-ray or neurological findings of anything amiss.

Among the 800 patients, 328 had a history of injury. Many, 149, were in automobile accidents. A few were bizarre. One lady caught the feather of her hat in a door, one man hurt his neck when his finger was yanked and another was butted by a ram while bending over.

By far the largest group, 317, had "tension neck." In this group, women outnumbered men by more than three to one.

Those who had acute fibrositis, which is an inflammation of the muscle sheaths and fibrous tissue in muscle, almost all (over 90%) recovered dramatically with only a few treatments. Among those with pain in the neck and shoulders related to injury, 40% made good improvement and of the non-injury group, 42% did.

Treatment in general consisted of heat, massage, traction with gentle manipulation for one to three minutes, and neck exercises.

Science News Letter, December 10, 1955

BOTANY

NATURE RAMBLINGS
by Horace Loftin

Poinsettias

➤ MOST TRADITIONAL OBJECTS that together make up the typical flavor of our Christmas festival had their beginnings in the old, pre-Christian past of Europe: Christmas trees, mistletoe, yule logs, holly, even Santa Claus himself.

Yet there is at least one contribution to the Christmas "dressing" that originated in tropical America, the well-loved flowering plant, poinsettia. The brilliant green and red colors of this plant have come to be as much a part of Christmas to many Americans as the green and red of holly and its berries.

The poinsettia, *Euphorbia pulcherrima,* is a native of Mexico and Central America. It was named for the first U. S. minister to Mexico, Joel Poinsett, who is supposed to have introduced the plant into the United States in the early part of the 19th century.

Most people in this country think of the poinsettia as a small potted plant, for that is the only way they get a chance to see it. But in the warmer parts of the U. S., where the plant can be set out in the yard without danger of killing cold in winter, the poinsettia gets a chance to show something of its true size. It is actually a shrub, and in tropical climates grows to be ten feet or more in height.

A gift of poinsettia at Christmas can, with care, become a gift that lasts and grows over many years. As the leaves begin to dry in January or February, one half of the growth should be cut off. The plant should then be put in the cellar or other such spot where the temperature is relatively constant and watered every few weeks, just enough to keep the wood from shriveling.

In early June, the plant should be cut back severely, repotted and planted out of doors in partial shade. The poinsettia should be lightly fertilized about once a month after growth starts. About the first of September in most regions of the country, the plant should be brought indoors.

In the house, poinsettias should be kept at about 65 degrees Fahrenheit. Temperatures below 60 degrees F., drafts and drying out of roots may lead to yellowing and dropping of the bottom leaves. New plants can be propagated by rooting new-growth stems.

Science News Letter, December 10, 1955

Questions

ANTHROPOLOGY — What clashing cultures have learned to live in peaceful coexistence in the past? p. 374.

☐ ☐ ☐

ENTOMOLOGY—How are insects entering the U. S. from Mexico in spite of strict border inspections? p. 372.

☐ ☐ ☐

MEDICINE—How is a clam's heart helping to find the cause of headaches? p. 372.

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PHYSICS—How fast does one moving foot pass the stationary foot in walking? p. 374.

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PUBLIC HEALTH—How can poultry now be made to stay fresh longer? p. 373.

☐ ☐ ☐

VETERINARY MEDICINE—How can nervous or neurotic pets be calmed? p. 377.

☐ ☐ ☐

PHOTOGRAPHS—Cover, U. S. Navy; p. 371, General Motors; p. 373, Hugelmeyer; p. 375, MacLean Dameron; p. 378, Purdue University; p. 384, Eastman Chemical Products, Inc.

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 808. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

PAINT STICKS for youngsters can be used dry or wet. Wetted, they produce water colors. Dry, they are crayons. Non-toxic, the colors can be removed from any washable surface.

Science News Letter, December 10, 1955

FIRE ESCAPE designed for emergency use is a lightweight, collapsible British safety ladder. Housed in a compact cube, one end is lodged under the inside window sill. To use, the concertina-like equipment is pulled out and thrown out the window; it becomes rigid automatically as each section interlocks.

Science News Letter, December 10, 1955

NEW CAKE COVER has a lock lift that makes it easy to carry the cake about. Made of unbreakable plastic, the frost-white cover locks onto a rigid red or yellow plastic tray. Knob on top allows carrying.

Science News Letter, December 10, 1955

FISHING KNIFE is both a scale for weighing fish and a scaler for cleaning fish. By means of a locking pin release, the two-edged steel blade is moved out of the handle to form a scale beam for one, two or four pounds. An S-hook to hang the fish and leather sheath are provided.

Science News Letter, December 10, 1955

TEST TUBES AND BEAKERS, shown in the photograph, are made of a tough plastic that is virtually unbreakable and chemically inert. The beakers are graduated

in sizes up to 1,000 milliliters. The test tubes are said to take much higher centrifugal forces than conventional tubes.

Science News Letter, December 10, 1955

DRAFTING DESKS are built around 14 basic models that can be put together and interchanged. The steel units have plastic and linoleum work surfaces and aluminum drafting boards. Drawing board is mounted on nylon rollers, permitting vertical height adjustment up to 12 inches.

Science News Letter, December 10, 1955

BABY-DINER is a portable, all-wooden combination chair and table for tiny tots. Assembled by dad, the knockdown diner has no sharp corners or hardware. Designed for traveling, picnicking and home use, the baby furniture weighs only ten pounds.

Science News Letter, December 10, 1955

BANKING TOY helps children save money and learn banking procedure as well. A miniature replica of a bank interior, the toy is complete with teller's cage, bankbook, deposit slips and checkbook. Steel banking counter takes and saves deposited coins.

Science News Letter, December 10, 1955

Do You Know?

Ringworm of animals can easily be transmitted to humans.

Photographic *film speeds* may increase as much as 100 times in the next 75 years.

The amount of *meat* eaten by the average American in 1955 will probably exceed his own weight.

World production of *soybeans* in 1955 is expected to reach an all-time high of almost 764,000,000 bushels.

World *cotton* production in 1955-56, estimated at 39.8 million bales of 500 pounds gross weight each, is a new record high.

Examination of *iron ore* deposits in St. Andrew Parish, Jamaica, have revealed over 1,000,000 tons of magnetite and hematite ore, 12 to 13 feet thick, with an iron content of 60% to 67%.

Since the tranquilizing drugs, such as reserpine, have been used in the Mississippi State Hospital, shock treatments given *mental patients* there dropped from 11,320 given in 1953-54 to none at all since January, 1955.

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