

PUBLIC HEALTH

Retarded Children Now Helped in 46 States

► FORTY-SIX STATES are now offering clinical services for retarded children, as opposed to only four states in 1957, the Children's Bureau testified in hearings of the subcommittee of the House Committee on Appropriations in Washington, D. C.

Dr. Arthur J. Lesser, director of the Children's Bureau division of health services, said there are now 82 special clinics for retarded children in the United States, and 50 of these have been developed through the maternal and child health program.

Milk-free diets for infants with phenylketonuria, a metabolic disorder among the new-born, usually prevent a very severe form of mental retardation, and Dr. Lesser said particular attention has been given to this problem in the past year.

In well-baby clinics at least 25 infants under one year of age were found to have phenylketonuria and placed under treatment in 1960 so they have a chance to grow up normally.

From an economic standpoint alone, Dr. Lesser said the results are estimated as saving about \$2,000,000 through prevention of retardation of this small group of children.

The Children's Bureau reported that approximately 200,000 mentally retarded children and adults are being given residential care away from home. More than 90% are being cared for by 104 state institutions operated by 49 states at an annual cost to these states of more than \$250,000,000.

• Science News Letter, 80:40 July 15, 1961

EDUCATION

Two-Way System New to TV Teaching

► A NEW SYSTEM of electronic instruction attempts to combine televised lectures with the person-to-person, "coach-pupil" technique of individual tutoring.

The equipment, called Teletest Communications, was demonstrated in Washington, D. C., by Dr. Robert E. Corrigan, president of Corrigan Associates, Inc., Garden Grove, Calif. It was shown to members of a House subcommittee on communications and power, now considering proposed legislation on educational television.

With Teletest, students not only watch and listen to lectures, but actively participate by responding at intervals to the teacher's questions. Their answers to multiple-choice queries are recorded on an IBM card, inserted in a small machine at each listener's desk.

In the studio, the teacher gets an immediate tabulation of the number and percentage of correct answers. He knows at once if his material is "getting across." Students also know at once if their answer was correct, from a signal transmitted from the "answer selector console" for reading by three photoelectric cells at the bottom of

each receiver, and subsequent relay to each "student station."

Present "student answer" mechanisms are about the size and shape of a small adding machine. Newer models, however, will be "approximately the size of a telephone pad," Dr. Corrigan said.

Teletest may be used with either closed-circuit or open-circuit transmission, with any standard receiver. It is now in use on a test basis in the Anaheim, Calif., School District Television Program and at San Jose, Calif., State College.

Dr. Corrigan estimates cost at about \$3,700 for a transmitting and receiving set-up serving 30 students. Mass production may bring prices down, he said.

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FORESTRY

Soviet Method Treats Wood of Standing Trees

► AFTER TEN YEARS' research, a Russian scientist has disclosed new methods of treating trees on the stump so that they can be preserved, tinted, air-dried, and made fire-resistant and pliable.

The four-stage treatment outlined by P. S. Zakharov, who worked with the Soviet Ministry of Forest Production, causes wood dried while still standing to lose about half its weight, with no warping or cracking. Drying time is shorter than that of cut wood.

The tree is first girdled—that is, a ring of bark is removed from its butt part.

Next, canals are drilled along the girdle to stop assimilation of water from roots, and a network of glass or metal tubes inserted.

Chemical solutions are then introduced into the tubes from a bag hung on the tree. Main component of the solution, Mr. Zakharov reports, is powdered sodium fluoride, dissolved in pure, filtered water and laced with Petrov contact to decrease leaching of preservatives.

Finally, the tree and its canals stay "on the stump for a certain length of time with or without treatment," Mr. Zakharov explains. Wood dries in three to four summer months, compared to about a year for felled logs.

Other chemicals can be added to impart special properties to the wood, he said. Sodium dinitrophenolate is a preservative, but makes wood more combustible. Antipyrone makes it fire-resistant. Silica salts will harden a tree so it cannot be chopped or sawed. Acetic acid gives an orange coloring to birches and beeches. Treatment with dicyanodiamide and urea made a birch so flexible, in one experiment, that "after long treatment . . . (it) was bent in an arc with the green crown touching its own root."

Mr. Zakharov claims the simple techniques and apparatus, plus ready availability of most solutions used, make his methods economical and of wide interest to those in the wood-treating field.

His full report, translated from the Russian, has been published by Consultants Bureau.

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IN SCIENCE

DENTISTRY

Dental Instruments Transmit Hepatitis

► DENTISTS as well as physicians can transmit viral hepatitis to patients by using needles and syringes contaminated with another patient's blood.

Instruments should be thoroughly sterilized, Dr. Holmes T. Knighton of the Medical College of Virginia, Richmond, reported in the Journal of the American Dental Association, 63:21, 1961.

Amounts of blood so minute as to be nearly invisible from a patient with serum hepatitis have produced viral hepatitis in human volunteers. Larger but still minute amounts of diseased blood from a patient are needed to produce infectious hepatitis.

Dr. Knighton said "very good circumstantial evidence" has been offered in previously reported hepatitis cases to show that some dentists have been guilty of negligence in sterilizing their instruments sufficiently.

Dentists should use every possible precaution to sterilize all instruments capable of "transferring blood or blood products from one patient to another."

"Although the use of needles and syringes is the most likely avenue of such transfers, it should be remembered that instruments such as scalpels, forceps, periodontal instruments and others that are used to penetrate tissues are always potential carriers of the viruses in the blood or blood products unless they are adequately sterilized," Dr. Knighton said in his report, prepared at the request of the ADA Council on Dental Therapeutics.

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METEOROLOGY

U. S. Weather Bureau Celebrates 70th Birthday

► THE U. S. Weather Bureau is now 70 years old.

Although the butt of many comments about weather prediction, the Weather Bureau has actually "kept pace with the developments of the space age," Secretary of Commerce Luther H. Hodges told the Weather Bureau. No other agency of Government is put to the test of ability with such frequency yet comes out with such high grades, he said.

When the Weather Bureau was organized as a civilian agency on July 1, 1891, by an Act of Congress, weather men based their forecasting on limited surface weather observations. Today, huge mobile and stationary networks span the country and surrounding seas, guarding against hurricanes and other destructive weather until the weather satellite network is lofted in the near future.

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E FIELDS

PUBLIC SAFETY

Safer Design of Vehicles Would Lessen Accidents

► CAR DESIGN is to blame for many traffic deaths, autopsies of accident victims in Birmingham, England, have revealed. But careless behavior of pedestrians is also a factor.

The current trend of car design, researchers have noted, is toward increasing power over weight. Yet there should be a minimum standard for the strength of the passenger compartment.

Other suggestions that would make for fewer and less severe car-pedestrian collisions:

Make the hood slope so the driver can clearly see even small children in front of the car.

Improve the steering and general control of the vehicle.

Eliminate sharp external fittings.

Bring truck bodies closer to the ground to avoid the possibility of rear wheels running over persons ejected from other vehicles.

Secure fixation of all seats and cushions and the wearing of safety belts. None of the casualties studied had been wearing such belts.

The first of a series of road death studies expected to continue for the next six years is reported by Drs. William Gissane and John Bull of the Birmingham Accident Hospital in the British Medical Journal, June 17, 1961.

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PUBLIC HEALTH

Polluted Air Causes Rise in New York Deaths

► AIR POLLUTION in New York caused a marked increase in deaths while a blanket of smog hung over the city.

A statistical check of the death rate during a smoggy period in November, 1953, showed an upward surge that could only be attributed to air pollution, reported a study group headed by Dr. Leonard Greenburg, chairman, Department of Preventive and Environmental Medicine, Yeshiva University's Albert Einstein College of Medicine in New York.

Weather conditions leading to smog entered the New York area on Nov. 12 and lasted until Nov. 21. The death rate jumped up on Nov. 15, three days after the air pollution weather pattern arrived, and stayed high until exactly three days after the pollution diminished.

During the high period, the average daily death rate rose to 244, whereas the average during two three-year control periods was between 218 and 227.

The smog was caused when a warm air mass hovering over the city, acted as a lid,

preventing the surface polluted air from rising and escaping. Numerous complaints of eye irritation and coughing were reported by city residents during this period.

"The study was the first of its kind in the United States," a U. S. Public Health Service expert said. Previous studies were mostly confined to comparisons of urban and rural groups because of the absence of air-sampling data.

The New York City air-pollution control department has maintained an air-sampling network for many years, and the Public Health Service coordinated their system in 1957.

The New York study was initiated to show how "air pollution affects health even when the degree of pollution is not so intense and the amount of illness not so dramatic as to demand instant public attention," the report stated. "Numerous studies along these lines are now in progress."

The study was financed by a grant from the U. S. Public Health Service.

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PUBLIC SAFETY

Standards to Undertake Extended Fire Research

► THE NATIONAL Bureau of Standards is now testing the rate and temperatures of "burning walls," using a computer to do it instead of burning the wall.

The Bureau has been asked by the National Academy of Sciences to take over a national program of fire research to study the "mechanisms" of fire: why do things burn, and how can fires be extinguished. Such research will deal with the whole problem of unwanted fires that cause loss of life and property.

In order to test how walls burn without burning them, a computer is programmed with the properties of the wall. Then the mathematics of the rate of burning and temperature are fed into the machine, and the requested answers are given by the computer.

An expanded program of fire research will be undertaken by the Bureau at its new \$104,000,000 home that is scheduled to be finished between 1963 and 1965.

Ground has now been broken at Gaithersburg, Md., for the new Bureau site.

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ENGINEERING

Engineers Found Still in Demand

► WITH THE MARKET for graduating engineers reportedly tight, a survey of 1961 graduates in 49 schools shows engineers are still in demand. The Engineering Manpower Commission found 83.8% definitely committed to jobs, military service, graduate studies or other plans.

The 1960 figure was 84.4%. A three percent drop among those with jobs is offset by a two and one-half percent increase in those going into graduate study and a nine-tenths of a percent increase in those slated for military service, the Commission reported.

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HORTICULTURE

Less Lighting Cuts Cost Of Plant Growth Control

► GROWTH OF PLANTS under artificial light can be controlled by applying the light at short, regular intervals totaling only 12 minutes during the night, U. S. Department of Agriculture researchers have found.

By using alternating cycles of light and darkness, plant growth can be regulated to save nurserymen as much as 95% of their lighting costs. Four hours of continuous light are now used in most commercial greenhouses to get the same results.

Since it will greatly reduce lighting costs, the new concept of "cyclic lighting" is expected to lead to controlled growth of many more plant species, including crop plants, trees and shrubs. Currently, only valuable plants such as chrysanthemums get the control treatment so they will mature at times when they are most in demand.

Phytochrome—the light-sensitive pigment found in all plants—reacts to darkness by slowly changing form, gradually losing its growth-controlling effectiveness.

Working at the Agricultural Research Center in Beltsville, Md., horticulturist H. M. Cathey and plant physiologist H. A. Borthwick learned that controlled growth would continue unhampered if dark periods did not exceed one hour, after each period of artificial light during the middle of the night.

Acting accordingly, they used such lighting cycles as three seconds of light every minute for four hours, 30 seconds every ten minutes for four hours, or 90 seconds every 30 minutes for four hours—each totaling 12 minutes.

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MEDICINE

Open Heart Operation Saves Pregnant Woman

► FOR THE FIRST TIME, an expectant mother survived an operation in which a heart-lung machine handled the patient's total blood circulation. This is called total body perfusion.

The machine takes over the work of the heart and lungs while the heart is being operated on.

The infant was born five months after the operation but had a number of defects and died four months later. The mother later gave birth to a healthy son. Drs. Robert Leyse, Milford Ofstun, David H. Dillard and K. Alvin Merendino of the University of Washington School of Medicine, Seattle, report the case in the Journal of the American Medical Association, 176:1009, 1961.

A severe congenital heart defect in the 23-year-old patient that was associated with an unusual combination of circumstances made the operation necessary. Fortunately, the physicians state, the need for total body perfusion for correction of a heart defect in an expectant mother is extremely rare.

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