increased needs can be met if all forest land is put under good management. About one-fourth of the forest land in this country is not growing nearly as much timber as would be possible under good management.

Insects, disease, and fire each year kill 13 billion board feet of sawtimber, an amount equal to one-fourth the net sawtimber growth. In addition they weaken big trees, delay natural restocking, and cause other serious losses in growth.

Of the timber cut, 25 percent is not used at all, the Forest Service study showed. Some residue will always be left in the woods and at the mills, but development of new uses for wood residues and improved methods of logging and sawing can reduce such losses.

According to the Forest Service, improved methods of forest management are most needed on the farm and other nonindustrial private timber holdings, most of them less than 100 acres in size.

The progress made in the last decade, the booklet points out, indicates what can be done. The growth of softwoods in the East now exceeds the cut of softwoods. Productivity is relatively good on forest industry and public lands. Gains are being made in forest-fire prevention and control. Wood is holding its own as an industrial material with consumption at an all-time high.

Korean Mineral Assay Laboratory

The Taejon Mineral Assay Laboratory, built and equipped by the United Nations Korean Reconstruction Agency (UNKRA) to help Korea utilize its mining resources to best advantage, has been formally turned over to the Ministry of Commerce and Industry of the Republic of Korea.

Since its official opening in March 1954 the laboratory, under the supervision of UNKRA technicians, has tested and examined Korea's mineral deposits and trained Korean mining graduates in various metallurgical processes. In the past year its capacities were extended to include facilities for mine owners and professors who wished to carry out individual research.

In making the formal transfer at a ceremony held at Taejon, John B. Coulter, agent general of UNKRA, described the activities of the laboratory and said, "Korea has many sources of mineral wealth, the full extent of which has yet to be measured. We know that gold, graphite, tungsten, lead, and copper deposits exist, which may aid in the industrial development of Korea and earn foreign exchange.

"To assist in the exploitation of these resources, the United Nations Korean Reconstruction Agency built this assay laboratory at Taejon and installed the most modern equipment for conducting mineral analyses and metallurgical tests.

"The laboratory has now been operating for over 2 years, often analyzing more than 300 samples a month, to determine the commercial value of existing mines and to evaluate new deposits. It is fully manned with a trained Korean staff, and is already meeting the essential needs in this field. It is the best equipped laboratory of its kind in the Far East."

Acetoglyceride Process Patented

A basic patent on the preparation of the chemically modified fats known as acetoglycerides has just been granted and is now available for licensing without cost. The patent was granted to Reuben O. Feuge, Earl J. Vicknair, and Klare S. Markley, as a result of work done at the Southern Utilization Research Branch of the Agricultural Research Service, U.S. Department of Agriculture. It is U.S. Patent No. 2,745,749, "Glyceridic mixtures exhibiting unique properties and process for their production"; copies may be purchased for 25 cents each from the U.S. Patent Office, Washington, D.C.

Investigations leading to issuance of the patent were concerned with cottonseed, soybean, peanut, and other vegetable oils. It was found that acetylation of monoglyceride mixtures of these oils with fatty acids containing two to four carbon atoms yielded products with a number of unique and desirable properties. Some of these products are flexible, waxlike, and nongreasy in texture and appear to have many possibilities for use in the food industry, such as coatings for meat products, cheese, candies, ice-cream bars, and other foods. Melting points of acetoglycerides can be varied for special requirements, and some of the products hold the desired texture over a relatively wide range of temperatures. Another advantage of the acetoglycerides is their resistance to oxidation, or rancidity. Aside from food and cosmetic uses, they also have possibilities as plasticizers, lubricants, and the like.

Peabody Museum Expedition

The Peabody Museum of Salem, Mass., is the sponsor of an expedition to the South Seas by the yacht *Varua,* captained by William Robinson. Robinson is accompanied by the photographer, Eliot Eliosofohn, and the entomologist, David Bonnet.

During a lengthy cruise among the Pacific islands, the expedition will attempt to trace the origins of the Polynesian people and solve a problem that has interested scientists and laymen alike since the first Pacific explorations of Captain Cook in 1768. Interest on the part of the general public has been stimulated lately by the voyage of Thor Heyerdahl and his assistants on the balsa raft *Kon Tiki* in these waters.

A new approach will be used in an endeavor to determine the possible origin of the Polynesians. Recent findings of entomologists and research workers indicate that a particular type of filaria, apparently confined to people of the Polynesian race, is distributed throughout the archipelago and also extends across the Pacific to the mainland of southeast Asia.

The route that the expedition will follow was planned at the museum by Donald S. Marshall, research anthropologist for Polynesia, and Ernest S. Dodge, director, in consultation with Bonnet. During a 6-months' cruise, stops will be made at each of a series of selected islands, where information about the natives, as well as blood samples for filaria, will be gathered.

Messages by Meteor Trails

A Canadian Defence Research Board team has developed a new communications technique that uses the trails of single meteors to transmit messages over long distances. Called "Janet" on its inception 4 years ago, the project's principles have just been declassified by the Canadian Department of National Defence.

P. A. Forsyth, of the Radio Physics Laboratory at Shirley Bay near Ottawa, first visualized the practical possibilities of using individual meteor trails from the ionosphere as a communications aid. Hundreds of meteors enter the earth's atmosphere every hour. They leave behind, at a height of about 60 miles, trails of charged particles that can reflect radio waves. Forsyth and his associates discovered that these trails can be used for communicating between distant points on the earth's surface. Experiments have proved that the signals can be transmitted by the "Janet" method for distances up to 1000 miles.

Although large meteors occasionally flash through the atmosphere, those used in the "Janet" system are tiny particles about the size of a pinhead, which leave a trail of electrons. The equipment required for the transmission of messages by this new technique is relatively simple. Because the method is reliable and uses low-power equipment, efficient and economical long-range communication systems for all-season use are a possibility.

The system employs frequencies previously used only for short-distance transmission, such as television broadcasts. Because these frequencies are considerably less crowded than those now being

used for long-distance communication, this in effect opens a new band for long-distance use.

The equipment at each of the two widely separated ground stations employs many of the recently developed computer, or "electronic brain," techniques. When the circuit detects a suitably located meteor trail in the upper atmosphere, the message previously stored at one station is transmitted automatically and rapidly to the other end of the circuit.

Because each meteor can be used only for about a second, transmission must take place in short bursts at very high speeds. The actual transmission speed is much too high to be received by standard teletype equipment. The incoming information, therefore, is held in storage and printed at normal speeds during the intervals between transmission bursts.

This high-speed "burst" transmission technique and the frequent presence of meteors in the upper atmosphere permit the passage of lengthy messages between stations in a relatively short time.

Because the signals reflected from the trails are largely independent of ionospheric conditions, such as disturbances caused by the aurora borealis, meteor trail transmissions will be particularly valuable for Canada with its vast distances in the aurora belt.

Tranquilizing Drugs and Behavioral Disorders

The behavioral disorders that commonly afflict mentally retarded children —ranging from destructiveness and breath holding to psychogenic vomiting and teeth grinding—have responded in many cases to treatment with tranquilizing drugs, particularly chlorpromazine ("Thorazine") and meprobamate ("Miltown"), according to a report in the June issue of the *International Record of Medicine and G. P. Clinics,* by I. N. Kugelmass, consultant to the Departmet of Health and Hospitals, New York City. The degree of relief varied with the type of disorder, but the two drugs were of value in from 40 to 80 percent of the cases in most disorders.

Meprobamate appeared to be more effective in relieving teeth grinding, nail biting, head banging, tics, phobias, anxiety, destructiveness, and sleeplessness. Chlorpromazine proved more helpful in relief from vomiting and abnormal appetite, restlessness, lip sucking, hyperactivity, anger, cruelty and aggression, negativism, sleepwalking, and night terrors.

Kugelmass emphasized that the drugs are not cures, that they "merely suppress the overt manifestations without eliminating the underlying pathology."

The study involved 250 mentally retarded children, treated individually and in institutions over a 5-year period. Ten drugs in all were evaluated for their effectiveness in treating 25 spearate symptoms, but only chlorpromazine and meprobamate were effective in relieving most of the symptoms.

Irrigation and Power in Australia

According to the National Geographic Society, a major irrigation project is under way in New South Wales, Australia. The Snowy River, which drains the Snowy Mountains of the Australian Alps and flows south to empty into the South Atlantic at a rate of 0.5 million gallons per minute, will be diverted through the mountains by means of a network of dams, tunnels, and canals, so that it will feed into the Murray and Murrumbidgee rivers, which flow through the arid plain northwest of the Snowy Mountains. The latter rivers are already being used to the maximum for irrigation. When the project is completed, it will consist of seven major dams, ten smaller dams, 85 miles of mountain tunnels, and 400 miles of canals.

It is expected that the entire construction project will require about 20 years, The system, when completed, will provide annually some 2,333,000 acre-feet of water for irrigation and about 3 million kilowatts of electricity for power. The latter will be developed by 17 power stations, some of which will be fed by water passing through penstocks that will pass vertically through as much as 1000 feet of rock.

Scientists on TV

Scientists from Harvard University and Massachusetts Institute of Technology will take part in a filmed series of 23 television programs designed to introduce viewers to the scope and methods of physics, chemistry, astronomy, and geology. The films are for national distribution to educational TV stations.

The series has been organized by Philippe LeCorbeiller, professor of general education and of applied physics at Harvard University. It will be produced by the Lowell Institute Cooperative Broadcasting Council in the studios of WGBH-TV, channel 2, Boston, under contract with the Educational Television and Radio Center, Ann Arbor, Mich.

Each program will focus on a single idea essential to an understanding of modern scientific thinking. The presentation will include experimental demonstrations and graphic illustrations. Some of the topics will be: "Science and common sense"; "The size and age of the universe"; "Are atoms real?" "How science grows"; "Nature and the laboratory"; and "The role of scientific imagination."

"My objective in giving this series on TV," LeCorbeiller points out, "will be to try to bridge the gap between the scientists and the public. It is out of the question to inform everybody about the endless intricacies of laboratory science. It is all the more important to find some way of making the American public a partner in the never-ending conquest of the unknown. The ideal way for that is television."

LeCorbeiller will be joined in the presentation of the programs by Gerald Holton, Leonard K. Nash, I. Bernard Cohen, Bart J. Bok, Harlow Shapley, Kirtley F. Mather, all of Harvard, and Sanborn C. Brown of Massachusetts Institute of Technology.

Laboratory for Gulf Fisheries

Problems related to finding, catching, and processing Gulf of Mexico fish and shellfish will be studied at the new fishery laboratory that is to be constructed this year at Pascagoula, Miss., for the U.S. Fish and Wildlife Service. The contract for the construction of the new laboratory and auxiliary buildings has been awarded to the Oden Construction Company of Hattiesburg, Miss., for $165,000. Engineers of the service's regional office in Atlanta, Ga., will exercise general supervision of construction.

Research on methods and techniques for providing the highest quality pack of shrimp, oysters, tuna, and other South Atlantic and Gulf seafoods will be one of the main tasks of the new laboratory. Heretofore technologic work for the Gulf and South Atlantic areas was handled through the service's laboratory at College Park, Md.

The new installation will provide facilities for the exploratory fishing and gear development program that is already being conducted in the Gulf area. The service's exploratory fishing vessel *Oregon,* which operates in the Gulf of Mexico, is based at Pascagoula in connection with this program.

Irregular Milking Schedule

According to a report to the *New York Times,* studies carried out during a period of 2 years at the Ruakura Animal Research Station in New Zealand show that carefully matched herds of cows produce as much milk and butterfat per day when they are milked at 16- and 8-hour intervals (at 8 A.M. and 4 P.M.) as when they are milked at the