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STATIONS FOR THE STUDY OF EARTHQUAKES

THE great central valley of this continent and the West Indies region are the two areas most in need of further development of seismological stations, Captain N. H. Heck, earthquake expert of the U. S. Coast and Geodetic Survey, told his hearers at the meeting of the eastern section of the Seismological Society of America meeting at Columbia, S. C., on June 11. The parts of the country best equipped for earthquake study are the Atlantic and Pacific Coasts.

Along the Atlantic coast there is a string of stations all the way from Maine to South Carolina. In the latter state there is a brand-new station, established and operated jointly by the University of South Carolina and the U. S. Coast and Geodetic Survey. Two outstanding stations in this string are those of Fordham University, in New York, and Georgetown University, in Washington. These are equipped with the latest instruments for detecting the minute up-and-down movements of the earth caused by distant quakes, as well as the east-west and north-south movements.

This line of stations is advantageously situated for the study of earthquakes originating in the Caribbean region and on the west coast of South America. The recently modernized station of the U. S. Coast and Geodetic Survey at San Juan, Porto Rico, and the new station of the Carnegie Institution of Washington at Huancayo, Peru, serve as valuable southward extensions of this chain, particularly with reference to earthquakes that might affect the Panama Canal and the projected Nicaragua Canal. Captain Heck suggested the desirability of new equipment for the seismological station at Balboa, in the Canal Zone.

Outstanding work in the central region of this country is being done by the Jesuit Seismological Association, with headquarters at St. Louis University, and branches in Jesuit educational institutions all the way from Canisius College, Buffalo, N. Y., to Regis College, in Denver. Another prominent station is that of the University of Chicago, operated under joint arrangement with the U. S. Coast and Geodetic Survey. New instrumental set-ups have been installed at the University of Pittsburgh and Montana State College at Bozeman. More earthquake study centers are needed in the Midwest, especially in the area stretching from Minnesota to Texas.

REDUCTION OF LOSS OF LIFE IN EARTHQUAKES

REDUCTION of loss of life in earthquake disasters to great cities, such as the destruction of San Francisco in 1906 and of Tokyo in 1923, is one of the practical goals sought by scientists. At the meeting of the eastern section of the Seismological Society of America at Columbia, S. C., Professor Alexander McAdie, of Harvard University, suggested lines along which work can be done to ameliorate earthquake harm.

Earthquakes can not be prevented, Professor McAdie said, but they can be predicted, and it is worth while to make the special effort required to get the necessary data.

The first step toward minimizing earthquake damage and death in regions where earthquakes can be expected is the planning of quake-resistant buildings. In the Tokyo earthquake, buildings designed by Professor Naito came through practically undamaged, in striking contrast to the general demolition of other structures. The Japanese are constantly at work on this problem, and engineers on our own west coast have also been giving the matter much attention.

But the greatest loss of life following an earthquake, even a very destructive one, is very likely to result from secondary causes, such as fire, exposure to the weather and pestilence. The greatest factor in life losses following quakes, Professor McAdie said, is congestion of population. This aggravates the action of all the other factors of destruction, and should be the thing most vigorously guarded against.

Other safety measures include sanitary regulations for the prevention of typhoid and other bacterial diseases, adequate water supply and fire protection and provision for the protection against the weather of a population suddenly rendered homeless.

RESEARCH INTO INSANITY

A PRACTICAL program for research into the causes and possible cure of the type of insanity known as dementia praecox was submitted to members of the American Medical Association meeting at Philadelphia on June 11, by Dr. Roy G. Hoskins, director of research at the Memorial Foundation for Neuro-Endocrine Research, Boston, and the Worcester State Hospital, Worcester, Mass.

Dementia praecox, or schizophrenia, as it is sometimes called, is a dire mental disorder which develops in childhood or adolescence. There are 140,000 subjects of this disorder confined in mental hospitals to-day. Each of these represents a wrecked life and a grave social maladjustment.

The disease costs the United States alone over a million dollars a day. For less than one-fifth of this daily cost, or $200,000, a complete research unit of 120 beds can be maintained to carry out the program proposed by Dr. Hoskins.

Dr. Hoskins's plan for research is based on the theory that dementia praecox does not represent one single disorder, and that there is a physiologic basis for the disease. He considers the term dementia praecox a loose one which probably takes in numerous more or less independent disorders. "The term is, perhaps, comparable with the word fever, which may signify pneumonia, typhoid, acute arthritis, or what not."

Research must determine whether the condition is one single disease and if so must characterize it definitely. If it is made up of a group of separate disorders, these must be characterized and distinguished one from the other. The investigator of this problem should take into account at least 16 classes of factors which may cause the disease, with corresponding diagnostic and curative procedures. For example, possible causes are emotional conflicts or bad mental and physical habits, which may be discovered by psychological tests, personality studies or other diagnostic methods and treated by reeducation, religious counsel, or simplified environment, among other things.

On the other hand, the cause may be sought in structural defects of the body, in which case physical examination, X-ray examination, special tests and autopsies are among the methods of diagnosis, while treatment would be carried out with surgery, mechanical appliances or physical therapy.

The investigator can not hope for results from attempting to deal with the problem as a whole, according to Dr. Hoskins.

"To the practical investigator the actual problem is primarily one of strategy—of selecting an angle of approach that offers most promise of significant returns for the labor involved. He must deal individually with the workable portions of the total problem."

TO FIND JOBS FOR DEAF

A PLACEMENT center in every significant city in America, to find work for every deafened person who wants work, is the proposal made by Dr. Martin Hayes Bickham, superintendent of the Central Placement Bureau for Handicapped Workers, Chicago, speaking at the meeting in Chicago, on June 2, of the American Federation of Organizations for the Hard of Hearing.

Dr. Bickham urged the establishment of such centers not only for the sake of the deafened and other handicapped workers, but for the sake of the economic organization of the country as a whole. He stated that the way to secure a sounder economic order is to seek the economic welfare of disadvantaged workers such as these with hearing defects. As we solve one such problem after the other, we shall approximate more fully to our ideals of economic security and stability for all.

Dr. Bickham found, from countless interviews with deafened persons seeking work, that these people are laboring under a sense of resentment and injustice.

"Our ideals of personal independence and self-maintenance seem to be waning," he said. "Many of these deafened workers hunt in vain for work opportunities that will enable them to realize such ideals. They are rebuffed and driven back into themselves. No man will hire them. The result is burning resentment at the patent injustice of this industrial order."

Dr. Bickham stated that in 157 instances deafened workers had been able to secure employment through the Central Placement Bureau for Handicapped Workers. The total number of deafened persons seeking work through the bureau between its organization late in 1929 and the close of 1930 was 235.

Workers with hearing defects do not differ from the mass of workers. When young and strong of body and up in experience and skill, the industrial system absorbs them. But in the later decades, if they drop out of the organized system they are simply lost wanderers in the midst of a highly disorganized labor market.

CUTOVER TIMBER LANDS

PUBLIC land problems are assuming a new aspect in many of the states. The pressing question used to be how to find land enough for all the applicants who wanted it; now officials are wondering what to do with the thousands of acres that are being dumped on their doorsteps *via* the tax delinquency route. Once bearing a valuable growth of virgin timber and with possibilities as fertile farm lands, these areas have been stripped of their trees and through neglect and fire robbed of their soil fertility; and now that they are squeezed empty of most of their value they are being abandoned by their exploiters to be a burden upon the community that gave them away in the first place.

Dr. Raphael Zon, director of the Lake States Forest Experiment Station of the U. S. Department of Agriculture, discusses the problem of the "new public domain" in American Forests.

"It is true that the new public domain is no longer the direct concern of the Federal Government," according to Mr. Zon. "The abandoned lands come back to the township, county or state, depending upon the prevailing state laws governing the reversion of tax-delinquent lands. In recent years, this drift of abandoned cutover and farm land into public ownership has assumed such large proportions as to become a national problem, touching the economic life of many communities.

"The physical and historic contrast between the old and the new public domain is undoubtedly great, but the social and economic aspects of the two are not unlike. The old unreserved public domain lies almost exclusively in the arid and semiarid regions of the Western States. The land now limping back into public ownership lies mostly in the humid region of the Eastern States. The old western public lands are suited for the most part only for grazing. The new public domain once supported magnificent forests. It is still admirably suited to timber production and in spots even to one or another form of agriculture.

"Legally the western public land is owned by the government; actually it is a 'no man's land,' neglected by its owner and abused by its users. The land now in the process of reversion to public ownership is also 'no man's land.' The local governments by various devices resist the transfer of the title to the public. It is not welcomed either by the state or county and is poorly protected against fire and trespass. It is not only 'no man's land' in a physical sense but often in a legal sense as well. This new public domain is also unreserved and

unappropriated land. Like an abandoned child, it is left on the steps of the county courthouses or of the state capitols to be disposed of in the best way possible."

Abandoned farms as well as abandoned timber lands are reverting to state and county ownership, making the communities "land poor," Mr. Zon continues. This is not entirely because the lands are poor and incapable of yielding paying crops. It is at least partly due to the fact that the tax-delinquent owners of cutover timber lands have by their failure to contribute their share of the cost of community government increased the tax burden of the farmers to the point where farming no longer pays, and the farmers in their turn abandon the land and drift into the cities seeking work at wages.

Mr. Zon offers no panacea for the reverted timber-land ill. If the land-poor timber states are to become healthy again they must find means for getting the land back into its natural crop—trees—and also find uses for the inferior tree growths that have taken possession of much of the cut-over, burnt-over land. Added to this will be the use of these new public forests as recreation and vacation areas by the growing populations of our great cities.

ITEMS

PRUSSIA has just completed a celebration of the twenty-fifth anniversary of the establishment of its organized nature protection system. Reservation of natural "monuments," begun in 1906, has been carried out consistently until now there are more than 300 of such protected areas in Prussia. Some of them are very small, comprising merely a grove, or even a single tree, but others comprise many scores of square miles of heath or mountain-top. More than half of the areas have been set aside primarily for their botanical interest. Twenty-four of the "monuments" were established for the protection of birds and animals, and there are a number whose importance is mainly geological. Although the great majority of the reservations are state property, a considerable number are still private property, and there are others that are owned by associations interested in nature.

LAKE SUPERIOR is now the shrunken remainder of a larger Lake Algonquin that was left in the same area by the melting ice of the great Ice Ages, it has been proved by excavations for a dam of the Algoma District Power Company, on the Michipicoten River that empties into northeastern Lake Superior. Dr. E. S. Moore, geologist of the University of Toronto, reported to the Royal Society of Canada that his examination of this engineering work confirms the geological idea that there was a much larger prehistoric lake filling the Superior basin. As he followed the ups and downs of the geological history of this most northern of the Great Lakes, Dr. Moore found also that during the glacial era there was a smaller lake where Lake Superior now lies.

INCREASED efficiency in wind tunnels for testing model airplanes and findings important to the science of heating and ventilating have been realized through a research project conducted by the National Research Council of Canada at Ottawa. In constructing a new wind tunnel to assist in the design and construction of airplanes in Canada, J. H. Parkin, assistant director of the Division of Physics, in charge of aeronautics, took advantage of the recent discovery that tunnels with square corners, when fitted with vanes, offer less resistance to air currents than do rounded corners. By simplifying the vanes, the staff of experimenters appointed to the work constructed a tunnel which is more economical and efficient than the ordinary tunnel. The experiments were conducted by George J. Klein, K. F. Tupper and Dr. J. J. Green. While the object of the research was primarily to perfect methods for testing the effect of air currents on high speed craft, the new data on air flow has been thus seized upon by manufacturers of equipment for heating and ventilation.

THE pitch of a large bell like the Dorothea Carlile chime at Smith College is actually quite misjudged by listeners, according to Professor Arthur T. Jones, of the department of physics. The fifth partial or overtone, which is the most prominent part of the sound at the moment of striking is picked up most readily by the ear but judged to be an octave lower than it really is. The overtones are those higher components of the sound which accompany the lowest or fundamental tone of the bell. Professor George W. Alderman, of the Massachusetts State College, has collaborated with Professor Jones in measuring the vibrations from a number of church and other bells including the Harkness chime at Yale. An oscillograph, radio amplifier and moving photographic film were used in this work as well as 400 hours of the time of a computer who analyzed the curves obtained. The strike note, that is the predominating tone heard when the bell is struck, is apparently not something that is out in the air. When the bell is struck, the fifth partial is actually the most prominent part of the sound. The ear picks that up at once and, for some reason as yet unexplained, judges the pitch of the bell to be an octave lower than this fifth partial. The clapper is in contact with the bell for about one ten-thousandth of a second.

A DEVICE that takes the fire risk out of turning over in an automobile by cutting off the ignition when the car tips at a dangerous angle has been invented by V. E. Yaw, of Indianapolis. Thus the possibility of sparks showering from a broken live wire into spilled gasoline is eliminated. The safety circuit breaker is essentially a rocker arm to which is attached a two-inch lead ball free to swing like a clock pendulum. The upper end of the arm contains sliding contact brushes that rest on stationary battery and generator terminals. The device is expected to find wide application. Mr. Yaw pointed out that, according to newspaper clippings, during the six months when he was perfecting his invention 21 motorists were burned to death in automobile accidents within a radius of 50 miles of Indianapolis.