SCIENCE NEWS

Science Service, Washington, D. C.

THE SCIENTIFIC AND EDUCATIONAL ORGANIZATIONS OF WARSAW

AS the smoke of devastation slowly clears away from the ruins of Warsaw, the world of science and learning is anxious to learn what has happened to the centers of scientific research and education in what was once the capital of the Polish republic.

No word has come out, during all the days of the furious siege, of what was happening to the University of Warsaw, alma mater to 10,000 students, with its magnificent library of 800,000 volumes. Has it shared the fate of Louvain University in the World War, of the University of Madrid during the Spanish insurrection?

However, even if by some miracle it escaped total destruction by bombardment and fire, the university is certainly ruined, and with it the dozen or so other special and technical schools that brought the total academic population of Warsaw up to about 20,000. For research and education must have students and teachers and both faculties and student bodies must now be either dead or prisoners or in exile.

Although the University of Warsaw is only a little more than a century old it has had a checkered career. It was founded in 1816, only to be closed in 1831. Reopened in 1862, it ran for only half-a-dozen years before it was closed again in 1869. Reorganized as the Imperial University of Warsaw in the following year, and renamed simply the Polish University in 1915, it has continued in operation and grown rapidly since the end of the World War and the repulse of the Bolshevik invasion in 1920.

Similar disruption of activities must have been the lot of other Polish institutions, notably the ancient University of Krakow; although at that place there probably was no major destruction of physical equipment because of the quick capture of the city by the Germans.

Because Krakow was the ancient capital of Poland, the Polish Academy of Sciences had its headquarters there. This organization, corresponding to the National Academy of Sciences in the United States and the Royal Society in Great Britain, is another scientific casualty of the new war.—FRANK THONE.

WEATHER FORECASTS IN EUROPE

WEATHER, which regularly migrates from west to east, is proving an ally of the Allies in the present war, as it did in 1914–1918. Britain and France know what the weather is going to be like over Germany before the Germans themselves know, and can plan their military operations accordingly.

The British and French have this private foreknowledge of German weather because they get the same weather first. Storm centers and areas of fair weather that eventually reach Germany cross Britain or France on the way, or at least some stretch of ocean patrolled by Allied warships and open to non-German commercial shipping, from all of which weather information can be obtained for Allied use but denied to Germany.

To be sure, German submarines may possibly be sending weather information home by radio, but that would be a risky procedure, with British and French destroyers and aircraft constantly on the alert to pick up any hint of a U-boat's whereabouts. And if the anti-submarine campaign succeeds completely, as the British Admiralty claims it will, even this slender source of weather information would then be lost to the Reich.

In the meantime, every effort is being made in Britain to deprive the Germans of any possible crumb of weather information. Publication and broadcasting of weather data are strictly forbidden; not even the occurrence of a local thunderstorm may be mentioned. Public forecasting in the islands has undergone a complete black-out, lest the enemy glean any helpful information from it.

Weather broadcasts are still being radioed from such places as the Azores, Greenland and of course the United States; but these are too remote to give German meteorologists any real help. And the coastal countries—Belgium, the Netherlands and Denmark—are too near and too small to be of any use.

Weather knowledge has become of immense value in war. Before a major offensive is launched the general staff wants to be assured that it will not bog down in mud. Before an air raid takes off, or a naval move is undertaken, the chances of storm, cloudiness, fog and high wind must be determined. Chemical warfare is notoriously dependent on wind and the chances of rain. Meteorologists have taken the place of the augurs and soothsayers who used to go with the armies of antiquity.

Accounts of the successful British air raid on the Kiehl Canal area indicate that it was timed on a knowledge of weather probabilities. The pilots' stories of taking off in clear weather, flying into rain and swooping out of clouds to loose their bombs on German warships and shore works all suggest rather strongly that English weather men knew where a helpful storm area might be centered.

The converse of this story is one from World War days, of a pair of Zeppelins that started from their German base in what looked like good flying-and-bombing weather, but ran into a storm of which they had no warning and were both lost in the North Sea.

In old sailing-ship days, a fleet about to go into battle sought to get the "weather gage" of its opponent, that is, to maneuver into a position to his windward. The geographic position of England and France would seem to give them a permanent weather gage of Germany.—FRANK THONE.

THE NUTRITIONAL PROBLEMS OF GERMANY

GERMANY'S new brightly colored food cards limiting rations of meat and other staples are likely to spell malnutrition.

The new tightening of the belt imposed on the civil population—the second notch drawn in since the war started—means that Germans will have a diet less adequate in fats and milk than the subsistence diet worked out in America. Nutritionists here emphasize that the subsistence level of diet is for emergency only. It shows the

best apportionment of small funds to buy food, but may not maintain health over any protracted time.

The American subsistence diet calls for a pint of milk a day for children; and for adults, half a pint or more than two ounces of cheese such as American cheddar type. Germany now restricts its milk ration to children, allowing those under six a full pint and a half a day, those between six and 14, a half pint a day. Older teen age boys and girls whose bone formation is in rapid progress get no milk allowance. Like adults, they have only a cheese allowance, and that is a mere two ounces for a whole week. One egg a week is recommended on the subsistence diet by American nutritionists, and one egg a week is about what Germans can buy, although there is no ration card limiting purchase.

The protective foods, such as milk, green vegetables, oranges, tomatoes, are important in any diet for warding off malnutrition, and are included even in the most economical budgeting by American nutritionists. Germany's garden crops are something of a question mark here, but it is considered unlikely that farms and freight trains are supplying civilian markets with adequate amounts of green produce, though Germany's community gardening may help out.

Americans, while not faced with Germany's ration card problems and shortages, are increasingly interested in warding off malnutrition. Farmers' Bulletin 1757, which discusses "Diets to Fit Family Income," is a "best seller" of the Department of Agriculture's current publications. As a free document it is now exhausted and a new free printing is in the presses, but orders at five cents a copy are being received and filled at the Government Printing Office. This is the publication of 1936 in which Dr. Hazel Stiebeling worked out four diet levels for American guidance: the emergency or subsistence diet, the minimum diet (not recommended for America, but the best apportionment of money at the lowest level to maintain health), the moderate diet and the liberal or more attractive and expensive diet.

CANALS LINKING THE ATLANTIC AND THE PACIFIC

IF plans for the Nicaraguan Canal, now revived, actually get to the digging stage, America will have achieved three out of four much-talked-of canals for linking the Atlantic and Pacific.

The four main canal routes which have at various times been considered by American engineers are: *First,* the Panama route, now a 25-year-old reality. *Second,* the route across southern Nicaragua, linking in the San Juan River and Lake Nicaragua. Planned as far back as 1825, this project is now being studied in conference by the Nicaraguan Government and its neighbor Costa Rica, while American engineers are again at the task of surveying the ground problems. *Third,* the route across the narrowest part of Mexico, the Isthmus of Tehuantepec. A canal at this point, so much nearer the States than Panama, would bring Honolulu more than 1,200 miles closer to New York. *Fourth,* a route farther south than any of these, across Colombia near its Panama border. This route actually has once been dug—dug and practically forgotten. It was America's first achievement in joining the oceans, undertaken with no thought of this significance, by a Spanish monk, Antonio de Cereso, and Indian laborers back in 1788.

Recent discovery of an old map showing this canal is reported by the WPA historical records survey. Premilas F. Becnel, going over historic documents at Tulane University's Department of Middle American Research, unearthed this map, and realized its historic value. Continuing the search for more records of the Canal of Raspadura, as it was called, Mr. Becnel and a research student assistant have since found eight more maps showing the canal and have traced its history. It joined the San Juan River, which has an outlet on the Pacific, with a tributary of the Atraro River, which flows into the Gulf of Darien on the Atlantic side.

America's first ocean-to-ocean canal was dug, not for trade, but to settle a boundary argument between two families. It was a shallow ditch, but during periods of high water Indians began to find the route handy in their canoes, thus unknowingly becoming first to take a short-cut water route from one coast of America to the other. Cacao beans for Indians and white people were the early commercial cargoes that crossed the continent *via* this canal.

A Philadelphia engineer in 1852 found the Raspadura ravine route so filled up that even his light-draft canoe had to be dragged through a canyon on dry land before he could get to the San Juan River and the Pacific.—EMILY C. DAVIS.

THE TREATMENT OF INSOMNIA

VITAMINS are replacing sleeping medicines in the newest treatment of insomnia or sleeplessness, reported by Dr. Louis J. Karnosh, Western Reserve School of Medicine, in the *Journal* of the American Medical Association.

The vitamin treatment may, in fact, be looked on as a cure, since it attacks an underlying cause of the condition, whereas the sleeping medicines are palliative. The physician using this treatment, however, does not rely on a glass of fruit juice at bedtime to put his patient to sleep. The vitamins are given like medicine, sometimes injected into veins, and in large doses, rather than merely as part of the diet.

B_1, the anti-beriberi vitamin of yeast, and C, or ascorbic acid, the citrus fruit and tomato juice vitamin, are the ones particularly recommended in this report of the newest ways of attacking both ordinary sleeplessness and the insomnia that accompanies certain diseases, including delirium tremens.

"Vitamin B_1 should be looked on as the perfect sedative for delirium tremens," Dr. Karnosh declared. Ascorbic acid, the vitamin C principle, is a serious rival of vitamin B_1 as the "ideal sedative" for exhaustive states, such as occur in patients with the severe thyroid disease or goiter known as thyrotoxicosis. Ordinary insomnia, irrespective of its cause, also yields to large doses of this vitamin. This treatment produced a "sound and normal sleep," there were no undesirable after-effects and in some cases a normal sleep rhythm was established for a week or more, Dr. Karnosh says, summing up a report of another physician who treated more than 100 insomnia sufferers with the C vitamin.

Dr. Karnosh advises treatment with both vitamins B_1 and C to ward off the insomnia incidental to hardening of the brain arteries and senile decay, particularly because old people are likely to be short on vitamins. Rather than giving large and continued doses of ordinary sedatives, Dr. Karnosh believes vitamins should be used to treat sleeplessness in heart disease, in the weakness following infections and in all exhaustion states which deplete the nervous system.

THE CHEMO-SCORE

AT Kansas State College, where a new system of examination grading is in vogue, if the student's answer is wrong it turns red; if it is correct the answer turns blue.

This method of grading, known as the Chemo-Score, was invented by two brothers, Dr. H. J. Peterson, of State Teachers College, Hattiesburg, Miss., and Dr. J. C. Peterson, of Kansas State College. Printed with two moisture-sensitive black inks, the correct and incorrect answer spots are initially indistinguishable, but when moistened they change color immediately. The student records his choice of answers by touching with a fountain pen which contains water instead of ink, or with a moistened paper clip, the spot which represents his chosen answer to each question. If his choice is correct the answer spot turns blue, if incorrect, it turns red.

A transparent answer sheet is used in correspondence work. To develop the answer spots on such a sheet the student dips a roughened pin in water, thrusts it through the sheet at the desired location and works it up and down a few times. The pin is removed and the perforated spot pressed between the thumb and forefinger. This causes the color to spread.

This self-instructor type of lesson calls for no writing whatsoever on the part of the student. For a three-hour course in psychology, the student works out 10 sets of problems and questions, using 10 accompanying self-instructor cards to record and check the answers.

After studying the assignment, the student takes up the problems one by one and checks his answers on the self-instructor cards. If his first answer is wrong, he will be informed of that fact by the red color reaction which issues from the spot. Directions call for him to re-read the relevant text material, study more intensely than before, and make another trial answer. The student continues until he gets the blue color reaction, signifying the correct answer. The uniqueness of the method compels and holds interest.

A "Play Your Way Reader" utilizing the same principle, has also been prepared by the Peterson brothers. With practically no assistance the child eagerly "plays his way" into a reading acquaintance with 120 common words. Each line in the book contains a problem and consists of a picture and four words, one of which names the pictured object. The word in each line which names the pictured object turns red and the others turn blue. Thus, the child can test his own solution to each problem.

This immediate check-up on every response serves to intensify interest and hold attention. It presents to the child, just when the word and its meaning are most vividly associated in his mind, the assurance that they belong together, or, if his choice is erroneous, he sees his mistake. This assurance, accompanied by the interest it creates, is probably the most powerful factor in learning that is known to psychology.

ITEMS

THE number of World War soldiers who are patients in hospitals for mental disease is still going up and will continue to increase, it is estimated, for another eight years. In 1929, a decade after the war, 18,393 veterans were hospitalized for mental disease. Now, another decade later the number has gone up to 29,000. By 1947, it is estimated by the U. S. Veterans' Bureau, the peak will be 40,000. This figure does not include a much larger number suffering from mental and nervous diseases, but who are kept out of hospitals. The total number of World War veterans receiving compensation for neuropsychiatric disease on January 1, 1929, was 54,785. It is now 89,119, of which 67,366 cases are directly traceable to the war.

A NEW departure in weather forecasting is being tried at the district office of the U. S. Weather Bureau at the Kansas City airport. If it works out satisfactorily it may be extended to other Weather Bureau stations throughout the country. The new procedure, which went into operation on October 1, consists of making aviation and general weather forecasts at the same station, by the same staff. Hitherto, aviation weather forecasts have been made by special staffs working at airports, while the general forecasts were made independently at the old downtown Weather Bureau offices. The new system, it is hoped, will save expense through elimination of duplicate equipment and through a better scheduling of the time of the personnel. A possible drawback, which must be avoided if the new system is to function properly, might be simultaneuos demands for both aviation and general forecasts.

GLOWING colors in autumn leaves are due mainly to three kinds of pigment. Reds and purples come from a substance called anthocyanin, in solution in the cell sap. This is the same coloring matter present in beets, red cabbage and most deep red flowers, like dahlias and cannas. Yellow tones come from tiny solid pigment bodies made up of either xanthophyll or carotin. These are always present in the leaves, but during the summer are masked by the stronger hue of the green chlorophyll. When the latter pigment breaks down and becomes colorless the yellow hues come into their own.

WILT-RESISTANT alfalfa varieties, developed under a long-range breeding program by the U. S. Department of Agriculture, will be available to limited distribution in 1942. The new alfalfas are being produced by crossing resistant strains, brought from Turkistan by H. L. Westover, with varieties already established in the United States. Alfalfa wilt began to become a serious problem in this country about 15 years ago. Up to that time, a good stand of alfalfa could be counted on to last from 6 to 12 years without reseeding, but lately the wilt organism has been wiping out alfalfa fields in from two to four years.