

real in appearance are some of the Indians portrayed on these walls that archaeologists can point out detail after detail of costume and belongings, known by other lines of evidence. Even the possibility of identifying some of the old figures with modern ceremony and everyday customs of Hopi Indians has been

seen by the Harvard archaeologists.

A series of eight murals, Mr. d'Harnoncourt said, will be a feature of a comprehensive exhibit of America's Indian art, ancient and modern, to be shown to the public at the Museum of Modern Art in New York, in January.

Science News Letter, August 31, 1940

PUBLIC HEALTH

War Menaces Europe With Several Deadly Epidemics

Shortages of Food, Fuel, Medicines and Sanitary Supplies Cause Grave Concern to Health Authorities

EUROPE'S chances for escaping war-born diseases this winter are not too bright. Like the prospects of famine, a hazardous health situation hangs on some vital "ifs."

If this winter proves severe, as last winter was, fuel shortages will join forces with weather to promote disease. Supplies of fuel for household heat are expected to be even shorter than last winter. A mild winter would minimize misery from this cause, but cold waves would render people already weakened by malnutrition and other war experiences a ready prey to disease.

If health and sanitation services disrupted by war are not resumed, with sufficient medical supplies, there will be weak spots in health defense where trouble may spread. Speed with which French refugees are returned to their homes is important for health. Pneumonia and other respiratory diseases are rated as the chief risk which Europe's population faces, as conditions are now. Tuberculosis is likely to take heavy toll, if the work of careful organization is undone, and masses of people are permitted to spread the disease through overcrowding, and other poor living conditions.

If Europe is acutely short of food supplies, as some observers claim, or if Nazi Germany will not share and apportion supplies equably, a train of well-known malnutrition evils is in store.

Another "if" in the food situation concerns transportation. Food en route from one area to another may be delayed or cut off by transportation breakdowns, all too frequent. If this occurs widely, due to fuel shortage or slowness to resume and repair transportation services, even food available will not be used to best advantage to nourish hungry people.

So far as epidemics go, this war has thus far—fortunately—failed to make sensational history. Typhus has been endemic in Poland and the Balkans. There is always some typhus in eastern Europe. The experiment in which several thousand doses of two new American-developed vaccines were given in Hungary and Rumania, to test their effectiveness as protection against the fever, has been hampered by political changes in Rumania. Since the area of Rumania where the tests were made has since become subject to Soviet Russia, the physicians in charge have presumably withdrawn. But in several months, a report of the effectiveness of the vaccines is expected to come from the Hungarian group.

Science News Letter, August 31, 1940

ORNITHOLOGY

Starlings Show Sex Change in Autumn

FEMALE British starlings "go masculine" in autumn, Dr. W. S. Bullough and R. Carrick of the University of Leeds have reported. Singing, and a yellow beak, are distinctly male characters, dependent on the secretion of male hormone by the male sex glands.

Yet in late October, female starlings' bills turn yellow and their owners begin to sing, continuing through November, when they stop singing and their beaks resume the natural dark color. Apparently during this period their ovaries are secreting the male hormone.

Female starlings from continental Europe, some of which are always present in the British Isles, do not have this period of temporary masculinity.

Science News Letter, August 31, 1940

ARCHAEOLOGY

Chemical Spray Facilitates Reading of Ancient Tablets

SCHOLARS can now read cuneiform tablets of the Babylonians in one-tenth the time formerly required, thanks to a simple trick of blowing powdered ammonium chloride on the ancient surface. The process, introduced by Dr. Neilson C. Debevoise, research associate of the Oriental Institute of the University of Chicago, is finding extensive use at the Institute for reading and photographing writings on clay.

While almost everything that the ancients wrote on clay has been preserved, the surface of business documents, letters, and other "papers" is usually discolored.

To aid in reading, Dr. Debevoise pointed out, a slanting light is thrown across a tablet. Although this brings out the wedge-shaped characters, it is still often impossible to read the writing because of the discoloration.

"The great advantage of the ammonium chloride, which condenses when it is blown across a tablet," he explained, "is that it provides a dull surface of an even color, so that a tablet may be read with ease or a photograph made of very low relief."

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POPULATION

Netherlands Indies Seen As Gravely Overcrowded

ADDED on to much-advertised war troubles, millions of natives of Netherlands Indies are heading toward a serious internal situation, the result of overcrowding.

So dense is the population of Java, that the world's only agricultural areas rivaling this island's crowding are the Nile valley, parts of the Ganges valley, and some regions in China, says a report in the *Population Index*, issued by Princeton University's School of Public Affairs and the Population Association of America. A 1930 census showed 817 persons per square mile, with 1,274 in the densest area. At the present rate of growth, by the year 2000 Java, including its close-linked neighbor island, Madura, will be thronged with 116,000,000 people which the population experts flatly call "an impossible figure." Actually, before that time, population increases will probably force down the living level, so that from bad living conditions rates of disease and death will rise.

To forestall this misery, Dutch officials developed agriculture and industry until limits were virtually reached by 1930.

Inducing Javanese natives to colonize the less densely inhabited Outer Provinces of the Indies is the only other way out which officials have evolved. This colonization has the added merit, for the Dutch, of filling empty space, thus removing temptation from land-hungry Japan.

Seriousness of the situation is increased, the report points out, by vulnerability of

Netherlands Indies economy to changes in world trade. The richly endowed islands produce important quantities of rubber, tin, sugar, coffee, tea, cinchona for quinine, and other agricultural and mineral trade goods. But if trade demand falls, as it did during depression times, the islands are severely stricken.

"One hesitates to contemplate the situation," says the report, "if the extension of hostilities in the Far East should cut Java from Western markets, on which the actual lives of the natives depend."

Science News Letter, August 31, 1940

INDUSTRY

War Causes Shortage of Jewels Used in Watches

WAR in Europe threatens to cause a shortage of synthetic sapphires used as the jewels in fine American watches. These tiny bits of very hard material are essential as the bearing surfaces of pivots and other parts of watches, chronometers, and such scientific apparatus as balances and meters.

The supply from Switzerland, Germany and France, where they are made, has been cut off by the war. There is no American industry established because of the low cost at which the European manufacturers were able to furnish satisfactory watch jewels, the price being about a cent and a half each.

Costume Jewelry Curtailed

Costume jewelry, largely made of synthetic gems and even cheaper glass imitations, is also being curtailed by the war.

It is known that at least one leading watch manufacturer has appealed to government agencies for help in meeting the shortage. An attempt may be made to establish an American industry to meet the need.

Since 1902 synthetic rubies and sapphires have been manufactured by the Verneuil process, which fuses alumina (Al_2O_3) in an oxyhydrogen blowpipe to produce a substance that chemically is the same as the naturally-occurring rubies and sapphires.

Synthetic gems are chemically and physically identical with the natural stones, except for minor internal structure that does not affect their usefulness. Rubies or sapphires, either natural or manufactured, differ only in their coloring; red stones are called rubies and all others are

sapphires. The red of rubies is caused by chromium oxide in small amount; the blue of sapphires is due to iron or titanium. Synthetic white sapphire is the same as natural colorless corundum.

In the process of manufacture extremely pure, finely powdered alumina must be used. The fusing process results in a pear or carrot-shaped mass of alumina of from 300 to 400 carats. This boule, as it is called, is split into halves and then sawed into watch jewels and instrument bearings. The hardness of rubies and sapphires is 9 on the usual scale of hardness, ranking next to diamonds with a 10 rating.

The most important centers for the manufacture of the various types of synthetic rubies, sapphires and other gems are Locarno and Monthey, Switzerland; Annecy and Jarrie, France; and Bitterfeld and Zwickau, Germany. These plants are stated to have a daily capacity of 750,000 to 1,000,000 carats. Three-quarters of the output finds industrial use.

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RADIO

Television Relayed; Networks Now Possible

BY MEANS of radio relay stations at two intermediate points, RCA television programs have been transmitted to Riverhead, Long Island, 70 miles from New York City. As a result of these developments, engineers state that it is now feasible to provide radio networks for television over wide areas.

Science News Letter, August 31, 1940



FROM AN ANCIENT FLYTRAP

Millions of years ago, a fly fell into the soft mud on the edge of a lake in what is now the northern Caucasus region, in the USSR. Buried and hardened into stone, the insect's remains have just been brought to light.

PALEONTOLOGY

Fossil Insects Found In Russian Deposits

FOSSIL remains of insects that lived 13 million years ago in what is now the northern Caucasus region of the USSR have been found in large numbers by an expedition of the Russian Academy of Sciences. About 3,500 specimens have already been removed, it is reported by Tass, official Soviet telegraphic agency.

The finds were made near the town of Voroshilovsk. The region is arid and highly saline now, but in Miocene times there must have been abundant freshwater pools, for the insect fossils are those one would expect to find on the shores of summer ponds: flies, dragonflies, and a great many mosquitoes.

The soft, silty mud, which hardened into stone ages ago, must have been in exactly the right condition then to hold the insects it caught and to preserve the imprints of their bodies perfectly. Notable among the specimens collected are 60 butterflies, in which not only the wing-nerves are in perfect condition, but the outlines of the scales with which the wings were covered.

Perfection of this degree, in fossil insects, has hitherto been found only in the rock strata of Florissant, Colo., and the region around Spokane, in this country, and in some of the great lignite pits near Halle, Germany.

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About 15% of a perfume is flower oil, as a rule.