DEMOGRAPHY

American Industries Move To Middle-Sized Cities

Trend Is Away From Largest Population Centers, But Equally Away From Small Towns and Villages

AMERICAN industry is not leaving the big cities for the small towns. Instead, it is shifting both from big cities and small towns to medium-sized centers of population. During a period of over a generation, from 1899 to 1933, American industries have shown this tendency, steadily and strongly.

This is the conclusion of Daniel Creamer in a report just issued by the Study of Population Redistribution, and made public by the Wharton School of Finance and Commerce, University of Pennsylvania.

Widespread decentralization of industry to small villages would be a "revolutionary reversal of the trends thus far observed," according to Mr. Creamer.

If the Government were to foster the decentralization of factories to very small towns, it would be bucking the tide of natural trends, he says, pointing out that "the relative shrinkage in wage jobs over the period 1919 to 1933 was greatest in towns under 10,000 population.

Since 1933, there has been a slight deviation from the previous trend, in some industries. Four industries—men's clothing, knit goods, silk and rayon, and boots and shoes—showed absolute gains in number of jobs located in "non-industrial" counties of scattered population and small, isolated towns.

Union control and resistance to wage cutting was less in these industries than in any others, Mr. Creamer points out, and this movement to small towns was probably an attempt to escape paying high wages and submitting to unionization.

For the purposes of the survey, an industrial shift in the 200 leading "industrial" counties from large cities to their outskirts has been termed "diffusion." Nearly three-fourths ot all the wage jobs in manufacturing are concentrated in these 200 counties.

In contrast, "dispersion" is the name applied to movements of factories into the more than 2800 non-industrial counties having no cities over 100,000 population and with few inhabitants depending on manufacturing for a living

During the 34-year period from 1899 to 1933, diffusion rather than dispersion was the rule, the report states.

Directed by Dr. Carter Goodrich, the population study will concern itself in a later publication with a more detailed account of the movement of particular industries during the past several decades.

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PLANT PATHOLOGY

Parasite Fungus of Pines Itself Victim of Parasite

THE WHITE pine blister rust fungus, most formidable enemy of this valuable timber tree, is itself the victim of another parasitic fungus, Dr. Ernest E. Hubert of the University of Idaho school of forestry points out (*Journal of Forestry*, June).

This parasite upon a parasite forms purple patches on the blister rust's outbreaks on the pines. It invades their tissues and prevents the rust from forming spores to reproduce itself. In the meantime the purple spores are spread by the wind and by insects to other masses of the blister rust.

Prof. Hubert states, however, that previous observations in Europe, and his own in this country, do not encourage him to expect material results from this purple fungus as a practical control of the blister rust epidemic. He feels that its attack is too erratic and uneven. Present methods of control will therefore continue to be necessary.

Science News Letter, August 24, 1935

PALEONTOLOGY

Siwalik Hills Yield Evolutionary Data

THE SIWALIK Hills of northern India, that lie between the headwaters of the Indus and Ganges, close to the Himalaya frontier, are yielding new clues to the evolution of races of animals that are no longer found in Asia. The fossils of these early forms, left in the rocks of the Siwaliks from fifty million years ago up to the beginning of the great Ice Age of the pleistocene, have been examined at the American Museum of Natural History by Dr. Edwin H. Colbert. His studies will be published soon in exhaustive monograph form.

One riddle toward the solving of which the Siwalik fossils have helped is the line of descent of the hippopotamus. The popular notion that this huge animal is related to the pigs has received a good deal of scientific agreement, for there are certain anatomical similarities, as well as general superficial resemblance. But Dr. Colbert has shown that the hippopotamus may have closer kinship with a long since extinct animal family known as the anthracotheres. The hippo is a

AN ENCHANTED WORLD AFLOAT

Reflecting in mirror perfection the snow-striped beauty of its own walls and the peak of its enchanted island, Crater Lake lifts itself out of an overheated summer world into a magic kingdom of the upper air.

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kind of zoological second-cousin to the pig, but not a direct descendant.

Another line of animals which like the hippopotamus now exist only in Africa but are represented by fossils in the Siwaliks are the giraffes. Some of the extinct giraffe-like animals that once lived in this part of India had astonishing arrays of horns on their heads, instead of the pair of rather insignificant little stumps that crown modern giraffes.

As traced by Dr. Colbert, the earliest ancestors of the giraffe line originated in Asia. Their first offspring-genera migrated into Asia Minor and Europe. Some of their descendants, in turn, went back into Asia, as the bizarre, many-horned species of the Siwalik Hills, while two other lines of descent passed into Africa, where they still survive as the giraffe and the okapi.

Science News Letter, August 24, 1935

PALEONTOLOGY

Giant Turtle and Mosasaur Found in Alabama

GIANTS that were deadly enemies in the warm seas of the world 70,000,000 years or so ago have been found as fossil skeletons in the rocks of Alabama by Dr. Walter B. Jones, state geologist and director of the Alabama Museum of Natural History.

They were a tremendous sea turtle, whose bones still bear the marks of an enemy's teeth, and a mosasaur. Mosasaurs were kin-beasts of the great dinosaurs that ruled the land, and they were themselves no less the tyrants of the sea. They were huge, short-necked, paddle-limbed reptiles, with powerful jaws like crocodiles and long, snaky, flat-tailed bodies built for speed and maneuverability in the water. The tooth-marks on the turtle's bones were doubtless inflicted by a mosasaur, which either caught and slew the turtle or found and devoured its body after death from some other cause.

Discovery of the fossil remains of these two sea giants in what has long been solid land in Alabama shows how far the sea transgressed the Gulf slopes of America during the Cretaceous, or Great Chalk Age, when they were living. The wide central valley of this continent has been invaded by the sea many times during the long ages of geology, and the records of these millions of years of ebb and flow are written in the sedimentary rocks.

Both skeletons were in a more or less broken-up condition when found, but the pieces have been carefully cleaned and fitted together, and are now on display.

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ENGINEERING

Sodium Lighting System Will Illuminate New Bridge

Upper Deck to be Bathed in Light Equivalent to That of Thirty-Five Full Moons; New Lamps Very Saving of Power

THE LARGEST installation of sodium vapor lighting in the world will be installed on the new San Francisco-Oakland Bay bridge.

More than 35 full moons would have to shine simultaneously to give the same average intensity of light on the upper roadways of the bridge, which will be reserved for passenger high speed vehicles. General Electric engineers who designed them claim the golden yellow light of the sodium units has the greatest optical efficiency of any lighting system in existence.

Small objects can be seen at low intensities with greater ease under the soft, diffused light of the sodium lamps than under any other kind, tests indicate, and at the same time they are far more economical than ordinary lights.

The 10,000 lumen lamps used on the upper level of the bridge will produce approximately two-and-a-half times as much light as ordinary lights of the same energy consumption.

On the lower deck the 6,000 lumen units which will be installed to light the way for trucks and slower traffic will produce twice as much light as that obtained from incandescent bulbs of the same energy consumption.

Low Power Input

Lamps adding up to 6,720,000 lumens will be installed on the upper deck, and 1,500,000 lumens on the lower deck, making a grand total of 8,220,000 lumens for the entire bridge, the largest single order ever placed for sodium lights.

The new golden sodium lamps giving out 10,000 lumens require an energy input of only 220 watts, of which 185 watts or less goes to the lamp, the rest being used by transformers and other equipment. In comparison, ordinary incandescent lamps would require approximately 550 watts to produce 10,000 lumens.

Consisting of a special sodium-resistant glass, the bulb of the 10,000 lumen sodium lamp contains a small quantity of sodium and some neon gas.

When the lamp is cold, the first application of the current causes the neon gas in the lamp to glow brilliantly with its characteristic red color. Thirty minutes is needed to store up enough heat to vaporize the sodium fully and cause the lamp to shed its characteristic orange-yellow light.

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GENERAL SCIENCE

Scientific Expedition Scales Hawaii's Highest Mountain

MAUNA KEA, loftiest of Hawaiian mountains, is being explored by an expedition of the Hawaiian Academy of Science. The slopes rising to its 13,784-foot summit are thickly crowded with dense forests and undergrowth, making the ascent difficult but at the same time affording unparalleled wealth to searching naturalists.

Data sought by the expedition are many-sided. The personnel includes students of botany, zoology, geology, geography, archaeology, forestry, and number of other sciences.

Amateur short-wave radio carried word of the Mauna Kea expedition to Station W3BWT in Washington, D. C., from Station K7EFW at Hilo, Hawaii. The message was signed by Dr. Constance Hartt, one of the botanists of the expedition.

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PHYSIOLOGY

Muscle Tone Differentiates Living Man From Corpse

BESIDES the heart and the vasomotor mechanism — the system of blood vessels and the sympathetic nerves controlling them—there is a third factor important in maintaining the adequate blood circulation. It is the system of muscular reactions which promote the flow of blood back to the heart through the veins.

This is pointed out by Prof. Yandell Henderson, professor of applied physiology, Yale University.