

alms from every person who lets them approach, and when food is not forthcoming they try to find it in their natural way—which means with their claws. They are not vicious, but they are stupid, and the injuries they may inflict in their blundering greediness are no less painful than if they were intended.

Science News Letter, September 11, 1943

GENERAL SCIENCE

Science Books for Blind Developed by Westinghouse

➤ SCIENCE BOOKS for the blind are being developed by the Westinghouse Electric and Manufacturing Company through cooperation of its research staff and school service department. An experimental Braille edition of the first booklet has been printed and distributed to 85 schools for the blind throughout the United States.

Children at the Western Pennsylvania School for the Blind, who acted as judges, were enthusiastic because it put science on the level of their everyday experience, B. S. Joice, superintendent of the school stated.

Braille editions of other booklets are now being considered for distribution. The project developed from the Little Science Series, a group of booklets on subjects ranging from microscopic life to the planets of our solar system, which have been already distributed in the ink-print edition to about 600,000 junior and senior high school students.

Science News Letter, September 11, 1943

Freight canoes 22 feet long are used in northern Canada's brush country.



MILITARY SCIENCE

Pattern for Invasion

Air Forces officer believes invasions should start only when pre-invasion strategic bombing has acted to reduce the cost in casualties to a minimum.

➤ PRECISION bombing will set the pattern for invasions and reduce United Nations casualties in the final stages of the war, Brig. Gen. E. P. Sorensen, assistant chief of the Army Air Forces Staff Intelligence, declares. (*Mechanical Engineering*, August)

Larger ground forces and very high casualties would be the price of neglecting strategic bombing, he states in support of a scientific program of selecting industrial targets.

"Invasion should start when to delay longer would waste effort, but when its cost has been reduced to a minimum," Gen. Sorensen suggests, outlining four phases of pre-invasion bombing.

The first shallow penetrations are primarily aimed at reducing air-defense power of the enemy, hitting aircraft factories and flying fields along with other targets on the schedule. Little or no effect from such attacks is seen in the front lines.

When the enemy is no longer able to increase his defenses and when a steadily growing bomber force can withstand the losses of deeper penetration, the second phase is entered. After this period the internal decay of the enemy will be well under way, but production is normally so far ahead of war use, Gen. Sorensen points out, that only isolated evidences of shortages will be noticeable.

Even during this period there would be little lowering of the ground-force requirements and losses in case of invasion.

Getting down to knocking out the heart of enemy production capacity is the third phase—daily headlines telling of

a chemical plant shattered, a synthetic oil plant in flames.

Gen. Sorensen likens the Air-Force's pin-pointing of enemy vitals to "a skillful surgeon removing a tumor from a vital organ. But in this case, the work is to create the cancer in the enemy vitals—to cause the internal decay—eventually leaving but a shell similar to a pie crust which crumbles away when pushed even gently."

Invasion started during this period would require much less force and experience much less loss, but if time permits it should not be attempted while there are prospects of further reducing the forces required and losses to be expected, Gen. Sorensen maintains.

The last phase of the bombing program starts when the initial destruction of selected vitals has been completed and the cleaning-up process has started, with special attention to production units that may have been rebuilt from the ruins.

"We hope and fully expect," declares Gen. Sorensen, "to prevent most of the enormous losses which would be suffered on our side without this bombing, a saving beside which the most severe air losses will be infinitesimal."

Science News Letter, September 11, 1943

● RADIO

Saturday, Sept. 18, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Miss Margaret Patterson, secretary of the Science Clubs of America, will discuss the plans of Science Clubs for developing scientific talent and ability among science students.

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