GENERAL SCIENCE

STS Winners' Reports

HAUGHT WRITES

"1. Introduction

"I was attracted to the study of catalysis, particularly intermediate products in catalytic reactions, because it is one of the most controversial and least understood areas in the field of chemistry. Scientists disagree as to the mechanism of catalysis. Some hold the theory that intermediate products are formed by the catalyst, while others believe that the catalyst does not enter into the reaction but merely lowers the energy of activation of the reactants.

"By spectrographic means, I am seeking to determine whether intermediate products are formed during catalytic reactions.

"Spectrographic analysis, because of its sensitivity and the fact that unlike other methods it permits analysis of a reaction in process without disturbing the reaction, affords one of the most valuable means of studying catalysis. A search of the A.S.T.M. Indexes to the Literature on Spectrochemical Analysis for the period 1920 to 1945 inclusive, however, disclosed little reported spectrographic research on this subject."

DADE WRITES

"Introduction

"It is well known from the study of elementary differential calculus that a differentiable function of one variable is also continuous. There are also several simple examples of functions continuous and non-differentiable at a point. For example, $f(x)=x\ sin(1/x)$ at $x=O$ or $f(x)=|x|$ at the same point. However, the construction of a function that is continuous and non-differentiable over a closed interval *is a more difficult task. In fact, the existence of such functions was not settled until 1875 when Weierstrass' proof for one of them was published. After this, several others were found, and even some general theorems, such as this one, were proved. One of these functions is associated with the name of Van der Waerden. It is a special case of the theorem that follows, which arises when we set M(subscript 2M)=1, M (subscript 2V+1)=O. . . .*

"The theorem is, as far as I know, original. There is a theorem by Knopp, given in Hobson, The Theory of Functions of a Real Variable, v. 2, p. 407, of slightly different generality which includes some, but not all, of the cases covered by this proof."

Science News Letter, March 13, 1954

• RADIO

Saturday, March 20, 1954, 3:15-3:30 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Waldo E. Smith, executive secretary, American Geophysical Union, will discuss "Sciences of the Earth."

AERONAUTICS

Air Industry Still Booms

➤ DESPITE TALK of a business recession, the aircraft industry "still has everything up but the mains'l," and that, the Aircraft Industries Association reports, is reserved for war emergencies.

Post-World War II employment hit a peak in December, 1953, when an estimated 750,000 workers supplied the brains and brawn to meet America's aviation requirements. But Adm. DeWitt C. Ramsey, president of AIA, has predicted that employment will begin dropping gradually in April. This is because the industry has nearly completed its expansion.

As production approaches a maintenance level, aircraft output will drop from about 1,000 to 500 military planes a month. Since military planes represent about 90% of the industry's business, employment also is expected to drop to about 700,000 by the close of December, he estimates.

The aircraft business, second only to the automobile industry as a manufacturing employer, has always had a stop-and-go, peak-and-valley, feast-and-famine character through its 50 years of existence. To prevent a drastic shutdown after the Korean armistice, the industry began alerting Congress, the Department of Defense and the public to the need for long-range procurement policies and programming.

Admiral Ramsey reports that "high military officials and Congressional leaders, recalling the mistakes of the past, have gone on record in favor of such policy and programming, yet specific action to accomplish this objective remains to be taken."

As blocked out by the AIA president, such programming should include:

A strong research program; a sufficiently broad production base within the industry to permit rapid expansion in an emergency; a rate of production sufficient to maintain an important nucleus of engineering and production teams and to provide the armed services with the newest weapons, and a financially strong private aircraft industry.

U. S. aircraft production in 1953 touched 16,200 which was far below the World War II peak when the industry's "mains'l" was up. In 1944, the all-time high of 96,318 aircraft was attained.

In addition to developing a program to ward off atrophy, the aircraft industry is seeking a way to stimulate interest in the aeronautical sciences among America's youth. As one AIA spokesman put it:

"The greatest long-range manpower problem of the aircraft industry is the acute shortage of qualified engineers and scientists. Today, one in 11 aircraft employees is an engineer. This proportion grows larger constantly as the need for research accelerates and increasingly complex military aircraft requires greater numbers of engineering man-hours.

"With requirements mounting, an alarming factor in the engineering picture is the prospective decline in the rate of graduating engineering students. In 1949, for example, 47,000 engineers were graduated from the nation's engineering schools. In 1954, less than one-half of this number are expected to be graduated."

The industry attacked this problem in 1953. It produced two teacher-prepared textbooks for use in elementary schools. "Look to the Sky" promptly drew thousands of orders (see SNL, Oct. 31, 1953, p. 286). The AIA reports that the second book, "Jets," is now being distributed.

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