

ferred to the gods. The new fire was placed in the square from which the women gathered brands to light their extinguished hearths.

Afterwards, a period of feasting and celebration reigned for several days, with dancing, games and mock battles. The Creek thanksgiving lasted eight days in all.

The world over, from the most primitive tribes to the greatest and most modern of people, mankind has always found it good to rest a while, count its many blessings, and offer thanks for them. It seems that this thing we call Thanksgiving is in the hearts of all men.

Science News Letter, November 22, 1952

## AERONAUTICS

## Self-Starters for Jets

► THE PROBLEM of a self-starter for turbo-jet engines, the power plant in jet-propelled airplanes, is approaching solution by developments both in America and England.

In both countries the solution seems to be a tiny rocket-type engine within the plane electrically started by push-button to provide the power to start the main engine into operation.

The self-starters used with piston engines in conventional planes cannot be used for jet engines because of the large amount of power needed. The use of jet-propulsion in aircraft has been held back by the necessity of outside power at airports to put their engines into operation.

With satisfactory self-starters built into them, they will be able to take off from emergency fields in combat and other areas where outside electric power is not available.

Several types of self-starters for jet engines have been developed during the past few years, but few were successful enough to be generally adopted. The newest types use a small jet engine within the plane to start the main power plant. The small jet engine uses a liquid or a solid fuel and operates somewhat like a rocket engine.

The new British type of self-starters is described as a miniature gas-turbine with a combustion chamber, a turbine and a shaft. For fuel it uses a little-known liquid known

## TECHNOLOGY

## Improve Riveted Joints By New Design Formula

► RIVETED JOINTS can be 85% as strong as the unbroken metal, according to a new formula painstakingly worked out by a University of Illinois graduate student.

After conducting 130 tests and studying more than 2,000 others, Frederick W. Schutz, Jr., worked out a means of designing rivet patterns to achieve an 80% to 85% efficiency. Efficiencies now run around 75% for patterns from present formulas.

Science News Letter, November 22, 1952

as propyl-nitrate. When ignited, it produces power to drive the small turbine. This is geared to produce up to 10,000 revolutions per minute on the shaft, sufficient to start the main engine.

The most recently announced American self-starter is a development of Bendix Aviation Corporation, Teterboro, N. J. It is a typewriter-sized 75-pound starter, which burns a mixture of high-pressure air and jet fuel. It is already in production and is being installed on Sapphire jet engines, power plant of the new Air Force F-84-F fighter-bomber.

A self-starter revealed recently by General Electric uses a solid fuel to operate the small jet-engine type of starter. The fast-burning solid, in a replaceable cartridge, is ignited electrically.

British officials claim the liquid propyl-nitrate fuel system is better than the solid fuel system, because the latter is limited by the number of cartridges available while the liquid propellant is limited only by the size of its carrying tank.

Science News Letter, November 22, 1952

## VETERINARY MEDICINE

## Cows Can Fatally Over-Eat Green Corn

► WHAT CANDY is to kids, new or soft corn is to cows. And like kids, cows will over-eat their favorite foods if given a chance.

For this reason, the American Veterinary Medical Association has put out a warning to farmers, advising them to keep their cattle out of the cornfields until the grain has had a chance to dry out.

Wait until a light snow has fallen before turning cattle into the fields, the veterinarians suggest. If they must be allowed to forage early, let the animals fill up on hay a few days beforehand.

If stock does manage to become gorged on soft corn, it should be kept off water for 48 hours to prevent fatal bloating, and a veterinarian should be called.

Science News Letter, November 22, 1952

## Philosophical Library Publications

## Development of the GUIDED MISSILE

by KENNETH W. GATLAND

This book presents factually all the main information now available on the development of guided weapons in Britain, the United States, Germany, the U.S.S.R. and elsewhere, and outlines their present and future possibilities.

A unique feature is the appendix showing the characteristics of all the more important powered missiles known to have been designed or constructed—a total of 90. Air Chief Marshal Sir Alec Coryton, former Chief Executive (Guided Weapons), Ministry of Supply, has contributed a foreword to this important book, and it is very fully illustrated.

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## HARWELL

THE BRITISH ATOMIC ENERGY RESEARCH ESTABLISHMENT 1946-1951

Prepared by the Ministry of Supply and the Central Office of Information

This book presents the first connected story to be published of the work and problems of the Atomic Energy Research Establishment, Harwell, from its inception in 1946 until the end of 1951.

After giving a brief account of the events leading to the formation of the British Atomic Energy Research Establishment in 1946, and a review of its organization, there is an outline of the main tasks on which Harwell is working. These are treated under four heads: (1) the production program; (2) isotopes; (3) nuclear reactors, and (4) particle accelerators.

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## HOW TO WRITE A BOOK

by CECIL HUNT

This is an up-to-the-minute book containing all the things the apprentice author must know. Subject-matter, local color, composition and how to acquire all relevant information are handled with expert knowledge. The author's wide experience of the world of books in all its aspects qualifies him to give first-hand advice on how, when and where an author may place his work. The viewpoint of a publisher is also dealt with, and notes on the law as it affects authors are included.

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