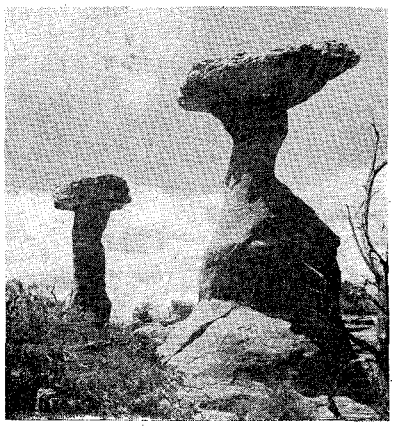
ENGINEERING AND SCIENCE

IN THIS ISSUE



On the cover this month—some rock formations discovered by William C. Miller, official photographer for the Mount Wilson and Palomar Observatories. Mr. Miller's avocation is to look for prehistoric Indian ruins in Arizona, and he came across the two objects pictured on our cover when he was exploring in the Navaho country of northern Arizona several summers ago.

These distorted shapes, which look like giant mushrooms, have been formed by centuries of falling rain. The tops are actually fragments of the hard cap rock of the mesa, which fell from cliffs centuries ago. The stems are soft sandstone, which has survived under the protection of these durable umbrellas.

Officially, Bill Miller has been with the Mount Wilson and Palomar Observatories since 1949. Unofficially, he worked as a volunteer observer on Mount Wilson for 15 years before that. He was an optical engineer then, designing optical instruments and, during the war, periscopes and bombsights. On weekends and holidays, though, he worked on Mount Wilson, photographing the stars.

In recent years, Bill Miller's spare time has been devoted to exploration—mostly in the inaccessible areas of Arizona's Navaho country. These are never mere pleasure trips—as almost any of the Caltech graduate students who have accompanied Miller can tell you. In fact, Miller and his companions did

CONTINUED ON PAGE 6

PICTURE CREDITS

Cover, p. 6	William C. Miller
p. 17	Mount Wilson-Palomar Observatories Photo
pps. 22-25	William C. Miller
p. 27	Nolan Patterson

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CONTENTS

In This Issue 3

Books 12

The Birth and Death of a Star 17
Astronomical studies of the life histories of the stars lead to some interesting speculations about our own future.
by Allan Sandage

Part-Time Explorer 22
William C. Miller, photographer for the Mount Wilson and Palomar Observatories, leads a double life. Here's a look at the other one.

Vitamins Are Here to Stay 26
Vitamin studies boomed from 1930 to 1945. The field may be quieter now—but the research is as active as ever.
by Herschel K. Mitchell

The Uniqueness of Man 34
Man's evolutionary future—biologically and culturally—is unlimited. Even more important, it lies within man's own power to determine its direction.
by George W. Beadle

The Month at Caltech 44

Personals 48

STAFF

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Expedition to Navaho Canyon, 1955. Top row: Bill Miller and Barclay Ray, geology grad student. Seated: Dr. Robert C. Euler, archaeologist, and Ronald Shreve, geology grad student.

such impressive work that, in 1952, their annual expeditions began to be made in conjunction with the Museum of Northern Arizona in Flagstaff.

Bill Miller's major objective, since then, has been to survey the intricate canyon network in Navaho Canyon, and to locate, map, and record all the prehistoric ruins he could find. A few samples of his extensive photographic record of these explorations are shown on pages 22-25.

"The Birth and Death of a Star," on page 17, was originally given as a talk by Allan Sandage, before the trustees and staff of the Carnegie Institution of Washington, last month. Dr. Sandage, who was graduated from the University of Illinois in 1948, received his PhD in astronomy from Caltech in 1953. He served as an assistant in astronomy here from 1949 to 1952, when he became a staff member of the Mount Wilson and Palomar Observatories.

Herschel K. Mitchell, who wrote "Vitamins Are Here to Stay," on page 26, came to Caltech from the staff of Stanford University in 1946. He is now professor of biology here.

A good part of Dr. Mitchell's early research was done on the B-complex vitamins, and he played a major role in the isolation and identification of the vitamin, folic acid. He was also one of the group which first determined the structure and then worked out the synthesis of pantothenic acid, another important member of the Vitamin-B group.

"The Uniqueness of Man," on page 34, is the text of a speech given by George W. Beadle at the annual meeting of the American Association for the Advancement of Science in New York City last month. This was, in fact, Dr. Beadle's retiring presidential address before the society. Chairman of the Division of the Biological Sciences at Caltech, Dr. Beadle was president of the AAAS in 1955-56.