

Books

The Black Cloud

by Fred Hoyle

Harper & Brothers, N. Y. \$2.95

Reviewed by Robert S. Richardson
Mount Wilson and Palomar Observatories

Fred Hoyle has written books on astronomy and philosophy, and while his fellow scientists may disagree with his statements, or even find them downright annoying, I think most would admit that they are also stimulating and thought-provoking. At least people read them. It is awfully hard to ignore Hoyle.

The Black Cloud represents Hoyle's first venture into fiction. As might be expected, it is science-fiction laid a few decades in the future, dealing with a group of astronomers confronted by a mysterious menace from outer space. In this instance, the menace is a black cloud, or simply "the Cloud," which is heading straight for the Sun. (They name it Joe later on.) The earliest story of this type I can recall is "The Star," written some 50 years ago by H. G. Wells. But whereas H. G. Wells was content merely to tell what happened as the menace came rushing sunward, Hoyle creates these happenings in vivid detail.

The discovery

The scene opens on Palomar Mountain, where the first plates of the region around the Cloud are taken by a young astronomer at the 18-inch Schmidt telescope. The Cloud itself is not discovered till several days later when the plates are examined in the office of the Observatory. A senior staff member checks on the strange object. He considers it sufficiently important to ask the Director to call a meeting in the library at once. A theoretical astronomer estimates the Cloud should reach the Sun in about 18 months.

The action then shifts to London where British astronomers arrive independently at the same conclusion. The disturbing part is the density of the Cloud, which appears to be

high enough to blot out the Sun entirely. What to do? The astronomers get together and after some debate decide to inform their respective governments. Difficulties follow thick and fast, with the government officials bungling badly, and the Cloud getting more menacing and behaving more erratically every day.

It is not until we are about a third of the way through the book that the author finally settles upon Chris Kingsley, 38, a professor of astronomy at the University of Cambridge, as his lead character. This shifting point of view in the early chapters is often disconcerting.

Anonymous astronomers

Astronomers at Caltech and Mount Wilson who peruse the book hoping to find themselves or their friends therein will search in vain. Hoyle does not write from character. He gives his characters certain tags sufficient to distinguish them in fairly obvious ways, but to me they never emerge clearly. You have the feeling the author is so eager to get on to the next complication that he has scant time to waste in character building.

A wholly unforeseen development occurs toward the end of the book which I will not reveal, as this would spoil it for other readers. It must suffice to say that it is somewhat reminiscent of the Voice in the Whirlwind from the Book of Job.

The Black Cloud moves at a fast pace, never failing to hold your attention, and is recounted with so much authentic detail that you almost begin to believe it after a while. Incidentally, I found Hoyle's astronomers the most lively, enterprising lot I have ever encountered. Would there were more of them in real life.

Although fiction allows a writer much more freedom of expression than prose, in my opinion it also makes much greater demands upon his ability as a writer. I sincerely hope that Hoyle will not be content

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to let *The Black Cloud* be a one-shot in the fiction field, as his first novel is so good that it surely deserves a second.

Fred Hoyle is a visiting professor of astronomy at Caltech, and a staff member of the Mount Wilson and Palomar Observatories.

Basic Feedback Control System Design

by C. J. Savant, Jr.
McGraw-Hill, N. Y. \$9.50

Reviewed by C. H. Wilts
Professor of Electrical Engineering

In spite of the good potential indicated by material selection and organization in this book, the reviewer is forced to conclude that this is not just a poor book but a bad one. This is unfortunate, for the content seems well balanced for an introductory course, with a proper emphasis on the simpler modern techniques of analysis. However, careful examination indicates that it was put together with great haste and little care. The author has borrowed liberally from others, but has made many copying errors in doing so. In the author's own writing there are many small errors, far too many major errors, and also a strong indication of confusion in the author's mind on important points. Several proofs are wrong and many of the theorems and principles are stated incorrectly. For example, the statements of the important Nyquist, Hurwitz and Routh criteria are all incorrect.

Superficial treatment and inadequate explanations of various topics are scattered throughout the book. This appears to be primarily due to Dr. Savant's attempt to simplify the subject to the point where an average college sophomore can understand it. As a matter of fact, many of the subjects he attempts to treat can only be properly understood if the reader has a thorough understanding of ordinary linear differential equations and a good back-

ground in complex variable theory. An example is provided by the Nyquist theorem and its various modifications; the incorrect statement of the theorem coupled with the very inadequate explanation would lead to hopeless confusion on the part of a reader not already conversant with the subject. Such sections are in sharp contrast to others where the discussion is excessively lengthy and almost trivial.

Typical examples of carelessness are the errors made in copying figures 6-11, -13 and -20 from someone else's work. Typical examples of incorrect thinking are found in figure 10-25 and its explanation, and in the root locus proof on page 102.

Even the illustration on the cover jacket (taken from chapter 10) is in error.

Factors such as these seriously detract from the usefulness of the book in an elementary course, or as a general elementary exposition on the subject. The casual reader, or a student without close supervision, will find the book unsatisfactory unless already exposed to the subject. On the other hand, since the book is aimed at the beginning student, the advanced reader or student will not find it useful either.

C. J. Savant got his BS in electrical engineering from Caltech in 1949, his MS in 1950 and his PhD in 1953.

STOWAWAYS

One of the scientists in charge says he thinks they will soon get the bugs out of the Vanguard — News item.

Our scientists have worked for days
With insect powder and with sprays,
But still, inside the satellite,
It seems the bugs are sticking tight.

Why get them out? Just leave them in
And send them on a little spin,
Thus we shall win at least the race
For this: a buggy ride in space.

—Richard Armour