

Figge, associate professor of anatomy at the University of Maryland Medical School and Rockefeller Foundation Fel-

lows at Yale, when they discovered the dramatic fluorescence under ultraviolet light.

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ASTRONOMY

# British Astronomer Presents New Theory of Solar System

## Planets May Be Born of Triple Star Constantly Picking Up Matter in Space; May Not Be Very Rare

**P**LANETARY SYSTEMS, like that of the earth and its neighbor world which revolve around the sun, may not be nearly so rare as astronomers have thought!

According to a new theory, just presented to the Royal Astronomical Society in London by Dr. R. A. Lyttleton, of St. John's College, Cambridge University, planets may be born of a triple star which is constantly picking up matter from the cosmic clouds in space.

Not in every triple star, of course, would the components be arranged in exactly the right way to bear a set of planets. However, as many such triplets are known in the sky, there would doubtless be large numbers arranged properly, and this would make the formation of a solar system much more common than with most recent theories. These require the exceedingly rare event of one star passing close by, or even colliding with, another.

During most of the 19th century, the nebular hypothesis was accepted. This taught that a primordial nebula gradually condensed into sun and planets. It had to be given up when it was shown conclusively that the present distribution of energy in the solar system could not possibly have resulted from such a cause.

Then came various forms of the encounter theory. These held that the sun was originally a single star in space by itself. Another star passed close by, perhaps actually grazed the solar surface. As the other star went on, a filament of gas was pulled out of the sun, and this condensed to form the planets. However, difficulties arose with this also, as regards energy distribution.

To overcome these objections, Dr. Lyttleton, while at Princeton University a few years ago, proposed the binary star theory. The sun, according to this, was originally part of a double, or binary, star, two orbs revolving around the center of the pair. He suggested that an-

other star came by, and actually hit one of the pair. As with a billiard ball that hits another, not exactly on center, the invading star bounced off in one direction, the star that was hit in another. Between them, as they separated, was drawn a filament of gas. This, he proposed, remained behind as the two stars went on. It started to revolve around the remaining star, and condensed to form planets.

An objection to this theory was raised by Dr. Lyman Spitzer, then of Harvard College Observatory, now at Yale University. He showed that such a filament of extremely hot gas out in space would dissipate, rather than condense, because the forces of expansion would exceed the gravitational forces that tend to pull it together.

In Dr. Lyttleton's account of his new theory, published in the latest issue of the Monthly Notices of the Royal Astronomical Society, which has just reached here, he answers Dr. Spitzer's objections. It is true, he says, that a filament of gas left to itself would behave in such a way. However, in the events envisioned in his theory, the filament would remain for a time between the two separating stars, and their combined gravitational pull would be enough to keep the filament together. By the time they had moved on, the filament would have cooled enough that it could contract by its own gravitation alone.

In the new Lyttleton theory, it is suggested that the sun was originally a rather distant companion of a double star with the two parts very close. As the pair of stars picked up matter from the cosmic clouds in interstellar space, their mass would increase, and the stars would come closer, finally touching, and merging into a single body. But this new star would be highly unstable, and would break again, the two components being thrown apart with such high velocities that they would fly away from the

third star, the sun. As they separated, the filament of gas would form, start revolving around the sun, condensing into planets, as with his earlier theory.

Since "triple systems are by no means rare in space," says Dr. Lyttleton, "the formation of planets by this process may therefore be of very much more frequent occurrence than formation by any mechanism of the encounter type."

In proposing his triple star theory, Dr. Lyttleton does not withdraw his older one, but presents the new as an alternative. "Any theory of the origin of the solar system is necessarily a theory of the past and therefore its initial hypotheses cannot be subjected to any direct experimental test," he writes. "In other words, no decision can be made as to whether or not, given a consistent theory of the origin of the solar system, our planetary system came into existence in the manner described by the theory; the theory can only show that the system could have been formed in a certain way."

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GENERAL SCIENCE

## Stores Science Exhibits To Give Space For Defense

**P**UTTING in storage "for the duration" the scientific exhibits that have attracted thousands to its monumental building, the National Academy of Sciences has converted its exhibit halls into offices for use of scientists working on national defense.

Dr. Frank B. Jewett, president of the Academy, in announcing this action, explained that two sections of the Office of Scientific Research and Development created by President Roosevelt a few months ago will be housed in the building and that other science defense functions may require space in the near future.

These two sections are the Medical Committee headed by Dr. A. N. Richards and Section A of the National Defense Research Committee headed by Dr. Richard C. Tolman. The work of the National Research Council, a part of the Academy, has also increased due to the defense effort.

Science Service, the institution for the popularization of science, trustees of which are nominated by the Academy, this summer removed its offices which had been in the Academy building for 17 years in order to give more room for defense activities. Science Service is now housed in a building of its own at 1719 N St., N. W., in Washington.

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