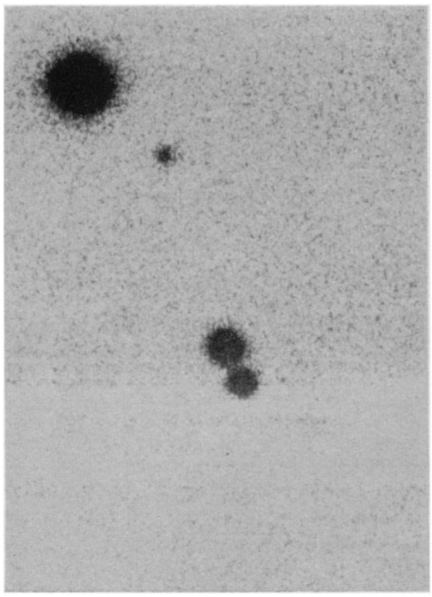
QUASARS

Distances in controversy



Mt. Wilson/Palomar

3C-287—bridge between or not?

Until last year, Dr. Thomas A. Matthews of the University of Maryland had been an advocate of the theory that the distance to quasars was measured in billions of light years. However, in the course of a program of high resolution photography of optically identified radio sources, he examined two plates taken of quasar 3C-287, one plate with a 100-inch telescope in 1965 and one with a 48-inch Schmidt in 1966.

Between the two component stars of 3C-287, Dr. Matthews found what appeared to be a glowing, nebulous bridge that had significantly changed in intensity during a period of one year (SN: 12/23/67, p. 607). Interpretation of the phenomenon, he now says, puts the distance to this quasar at only 260,000 light years, very close, astronomically speaking.

Matthews' finding could not be disregarded. But it had to be verified.

Following his report, astronomers at Mt. Wilson and Palomar Observatories took four new photographs of 3C-287, two each with the 48-inch and 200-inch telescopes. They also assembled all plates of the object available at the observatories.

They now have a total of 12 photographs taken with the 48-inch and four with the 200-inch, taken with a number of emulsion-filter combinations in the years 1950, 1964, 1967 and 1968.

They find no evidence that what Dr. Matthews saw exists.

Drs. Jerome Kristian and John V. Peach report the results of their examination of these photographs in the June Astrophysical Journal (Letters). They conclude: By a combination of visual and photographic effects, a pair of stellar images can "take on the appearance of the plates obtained by Matthews and that conclusions drawn by him are consequently open to serious doubt."

Dr. Matthews, on the other hand, finds that the photographs Drs. Kristian and Peach use to illustrate their points "reinforce my position that something peculiar is going on in 3C-287, something that cannot be explained in the manner" outlined by the two Palomar astronomers.

The only other possible explanation, he says, is a very unusual plate flaw, which he considers improbable.

Following his December report, Dr. Matthews made microphotometry scans of the two stellar images in 3C-287 and of the space between them on both the 48-inch and 100-inch plates. For the latter, he reports in a paper prepared for publication in the Astrophysical Journal (Letters), the excess of density between the two components is only "marginally believable."

For the 48-inch photograph, however, "there is a significant amount of unexplained density" that Dr. Matthews attributes to the glowing bridge.

The Palomar astronomers, on the other hand, report that all four 200-inch plates "show the images of 3C-287 and its faint companion clearly resolved, with no trace of nebulosity between or around them." Two of the four were taken last January in a specific search for the bridge, one a year before the reported changes and the fourth two years later.

"In view of the far-reaching conclusions drawn by Matthews from his plates and our inability to observe any structure of a similar kind on 200-inch plates with higher resolution and fainter limiting magnitude taken both before and after his observation," they state, "we have been led to an alternative interpretation of his data." Their interpretation is that the image structure Dr. Matthew found is due to a combination of visual, photographic and instrumental effects.

Drs. Kristian, Peach and Matthews agree with each other and with other astronomers on one thing—they would like to uncover another photograph of 3C-287 taken during the time for which Dr. Matthews finds evidence for a change in its optical structure.

Even if Dr. Matthews' observations are confirmed for 3C-287, making it an extremely close object, others of the many known quasars could still be at cosmological distances. Each may have its own yardstick, unless the quasars' energy production can be explained.

GENERIC DRUGS

Three on the list

Although each of two drugs may have the same chemical ingredients, one brand may show a higher concentration in a person's blood, depending upon a host of factors. The crystal size of the drugs may be different, the hardness of the tablets may vary or the nature of the capsules may spell the difference.

Last week another compound was added to the list of those showing equivalency problems, and by 1970, the Food and Drug Administration hopes to get the answer to the different drug effects through human testing. Volunteers at Federal institutions will be guinea pigs.

In studies of chloramphenical made last December, it was found that several brands produced lower blood levels than the original brand called Chloromycetin (SN: 12/9/67, p. 560).

Last spring erythromycin, another antibiotic, showed blood level discrepancies in certain cases, and some batches were withdrawn from the market.

Now the generic types of a sulfa drug called sulfisoxazole have been found to reach lower blood levels than the brand name drug Gantrisin. But sulfisoxazole has differed so slightly that it is not being withdrawn, FDA says.

Dr. Herbert L. Ley Jr., Commissioner of the Food and Drug Administration, believes the generic drugs will hold up under tests over the long run. Any batches or brands that don't will be taken off the market, he says. Generic drugs have been consistently cheaper than brand named drugs.

APS VOTES NO

Politics and physics

By an overwhelming vote the American Physical Society has rejected an amendment to its constitution that would have permitted it to take official stands on public policy and political issues (SN: 12/16/67, p. 585).

The amendment, introduced by Prof. Charles Schwartz of the University of California at Berkeley, was prompted by concern over the war in Vietnam.

The opposition, which included many opposed to the war, declared:

- Physicists as physicists have no special expertise on political questions.
- If the society began taking political stands, members who disagreed might feel compelled to resign and thus be deprived of professional membership for political reasons.
- If the society embroils itself in United States politics, citizens of other countries might feel they could no longer retain membership.