

and the force is itself the cause of the orbiting motion, according to Newton's laws.

It is a pity that there should be scope for confusion over this basic principle of mechanics, as a scientific venture has rarely captured the interest of the public to the extent of the present space program (or spent as much public money). Furthermore, the interest will be greatly increased by the first Apollo mission, and there will then be a fundamental difference. The gravitational forces on an Apollo crewman will be very weak for much of his journey, and his weightless condition will indeed be due to his remoteness from the earth and moon.

Perhaps science writers, in view of the great public interest, should take care to make the distinction between the two different kinds of "weightlessness."

F. E. M. LILLEY

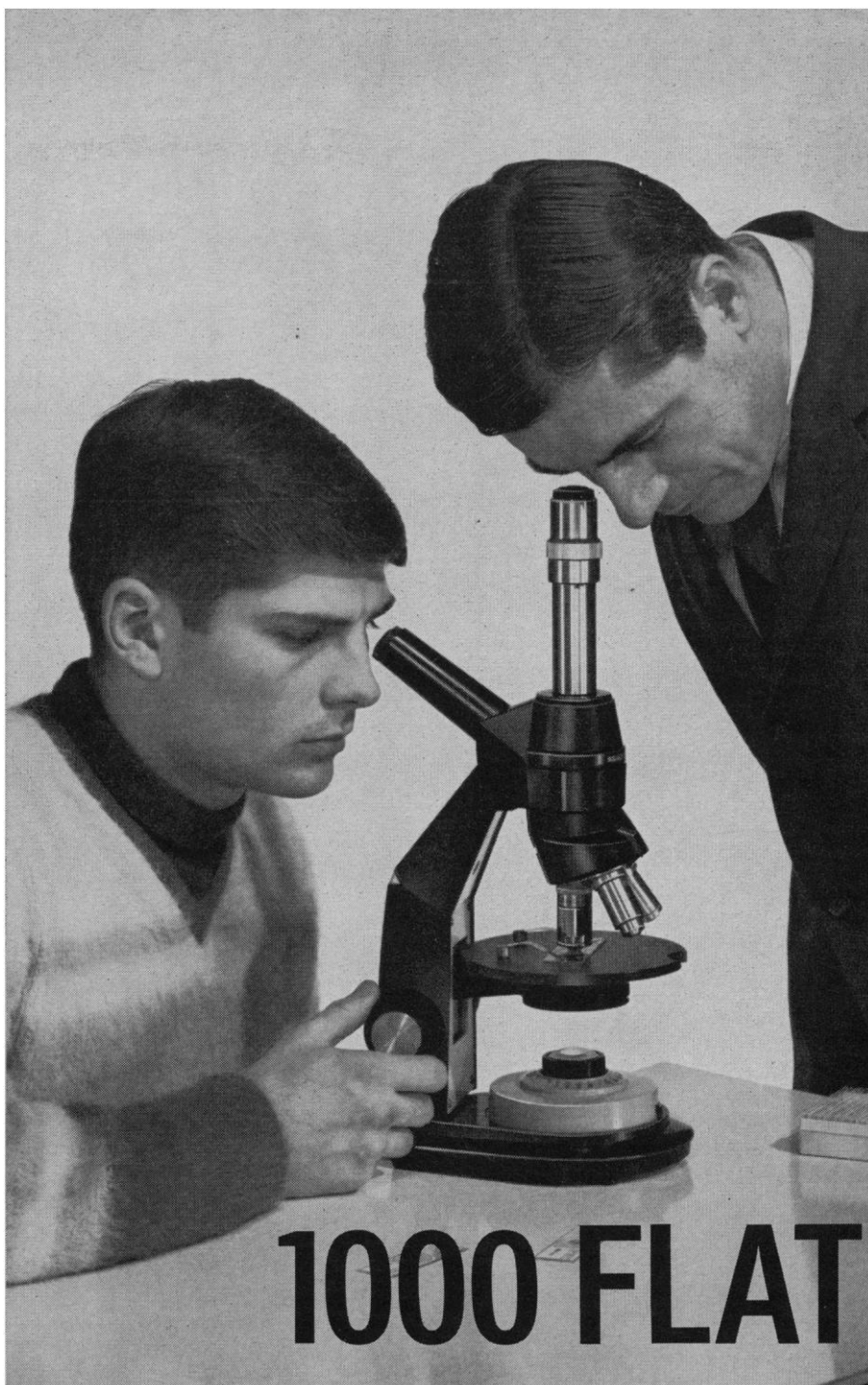
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### A Trained Eye on UFO's


Correspondence in your columns on UFO's points to a grievous lack of trained observers. For the elucidation of these rare and mysterious objects, first-class observations are necessary, and very few people, even among those supposed to be scientifically trained, can observe. The following drill, commonly used by observers of meteors, fireballs, and so on, is applicable and deserves to be better known. It is assumed you can transfer your whole attention to the phenomenon.

On becoming aware of the object, stand still and start counting seconds. Kick with your heel to mark your position exactly. Hold a hand out at arm's length and gauge the angular size of the object. (The thumb in width subtends  $2\frac{1}{2}^\circ$ , the open hand,  $20^\circ$ .) Note the brightness of the object, compared to other visible objects, and any changes that may occur. Establish the beginning and the end of the object's path with reference to marks on the horizon. Determine whether the object passes behind or in front of any landmark. Try to fix the position of touchdown on earth, if you think that has occurred. After the object has disappeared, make written notes of the above details. Transfer the seconds count to accurate time by your watch. Listen critically for sounds as-

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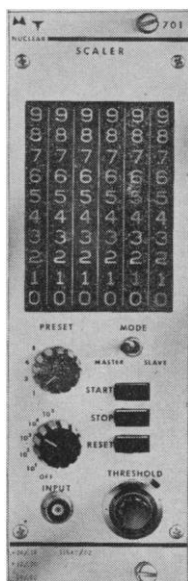


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sociated with the object and time them. Proceed to the position of touch-down and search for material objects. Notice any smell, as of ozone, at this point. Feel for a temperature gradient. Pace off the heelmark from a permanent landmark for later transfer to a map reference. Obtain a watch correction to the nearest second, preferably from a radio time signal. Forward a fair copy of the notes to the nearest observatory.

Practice this for a few evenings on meteors, to get the hang of it. And next time Venus is a daylight object, go to a busy intersection with a companion and point it out to him. (Look! A flying saucer! See how fast it goes, past those clouds!) The reports in the press the next morning will be very entertaining.

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## A Poverty of Spirit in Underdeveloped Nations

Parsegian made some valuable points concerning the factors that spur underdeveloped nations toward greater productivity and self-reliance (Letters, 21 Apr.). But he fails to consider the problems of a population debilitated by chronic diseases such as malaria, vitamin deficiency, intestinal parasites, semistarvation due to insufficient food, and, worst of all, by a poverty of the spirit, the result of living for generations at an animal level of existence.

One does not have to leave the limits of the United States to find areas where, a generation ago, the population suffered from malaria, vitamin deficiency, and all the other conditions that lead to debilitation. In various military training camps in the South during World War II, there was a constant alert for the presence of the anopheles mosquito, a malaria carrier. The state of Missouri closed its trachoma hospital about 1950, only because of the availability of antibiotics. The derogatory appellation of "red-neck" usually describes one of the symptoms of pellagra, a vitamin deficiency disease.

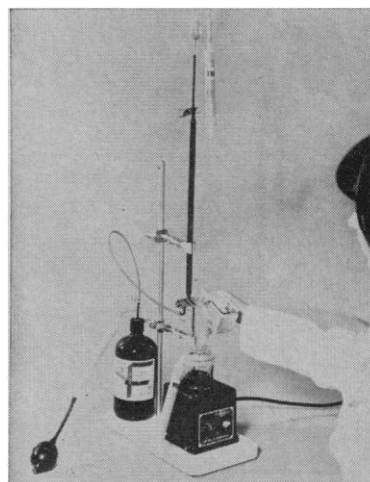
Debilitation in parts of the South, in earlier years, led to the conclusion that the people were lazy, good-for-nothing, and that there was no need to help, for the money would be wasted. Many conditions have been



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