

to form systems unfavourably circumstanced for the accommodation of globes approaching the terrestrial model. Boundless variety, it is true, prevails throughout the sidereal scheme; and this variety may only afford scope for the display of the contriving power of Infinite Wisdom in smoothing away apparent obstacles to life, and so vitalising the seeming deserts of the universe.

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TO THE EDITORS OF KNOWLEDGE.

SIRS,—Dr. A. R. Wallace's biological investigations have been elevated and illuminated, throughout their long course, by his strong appreciation of the incomparable moral dignity of Man. And this, too, is the inspiring thought of his recent article in the *Fortnightly Review*. It rises beyond discussion; welcome assent is the only fit attitude of mind towards it. But the profound significance of human life would be no whit impaired by assigning to the scene of its expansion an eccentric position in the universe; and a central position, as Mr. Maunder has shown in *KNOWLEDGE*, and Prof. Turner in the *Fortnightly Review*, can belong only momentarily to a moving body. Nor can it reasonably be supposed that the conditions of vitality deteriorate with remoteness from the centre. In the actual throng of the Milky Way, indeed, a peopled planet might be exposed to perils from "furious driving," or subtler obstructions to traffic. Within its ambit, however, there is "room and verge enough" for the unimpeded travelling of many millions of globes, freighted though they may be with superhuman destinies.

But has the universe a centre? In other words, is it of limited dimensions? Dr. Wallace avers that it is. His arguments are, nevertheless, contravened by the high astronomical authorities just referred to. The all-pervading illumination of the sky-ground, which should attest the shining of infinitely numerous suns, would be prevented, they agree in considering, by the intercepting action of an *equally infinite* number of dark bodies. These, however, cannot be supposed to screen off gravitational influences; they should, on the contrary, reinforce them. Hence, every body in space would be acted on by infinite forces, soliciting it to move in every direction at one and the same time. Cosmical paralysis would result; the "constellated suns" would stand stock still; unless we make the hazardous assumption that a finite attraction, super-added to an infinite sum of attractions, might avail to determine velocity. That is to say, neighbouring stars might exert effective pulls upon each other irrespectively of the equilibrating pull of a measureless universe.

There is, however, little profit in dwelling upon this baffling aspect of the question; clearer evidence is before our eyes. Everywhere in the heavens structural relations are manifest. Architectural design is traceable in them; they have parts fitted in together to form a vast yet limited whole. The Galaxy has shape and boundaries, and we have no assured knowledge of anything lying outside those boundaries. It seems, then, a gratuitous exercise of the imagination to conjure up abysses stored with stars, energetic and effete, one set cutting off the radiations of the other.

Undeniably, Dr. Wallace's contention that our earth is unique as being the abode of intelligent life corresponds, in a measure, with the recent trend of astronomical research. The conditions indispensable to organic existence which he has admirably defined are perceived, more and more plainly, not to be present on any of our sister-planets with the possible exception of Mars. Moreover, a large proportion of the stars have been ascertained