

CARNEGIE INSTITUTION OF WASHINGTON
MOUNT WILSON OBSERVATORY
PASADENA, CALIFORNIA

mm - mm 11/30/28
TA T.A. @
wwB
1032

November 21, 1928

Dr. Max Mason
Rockefeller Foundation
61 Broadway, New York City.

My dear Mason:

I meant before now to report to you on the situation here, but after my return I was kept in bed a good while and since getting up I have not been able to work much, partly in view of our great worry over the case of Mr. Pike, the brilliant International Research Fellow, whose serious condition shows no sign of improvement. We have done everything we could, and have obtained the advice of Dr. Simon Flexner and of Dr. George Dock, who fortunately now lives in Pasadena and has given us the splendid aid of his long experience and wise counsel at critical times. Ten days ago, partly as the apparent result of three blood transfusions and the arrival from Leeds of Mr. Pike's fiancée, Miss Garstang (daughter of the well-known zoologist), there seemed to be some evidence of improvement. This encouraged us sufficiently to send for his mother, but she had to find a home for her old father and cannot sail until day after tomorrow on the "Leviathan". Dr. Dunham, the National Research Fellow from New York, who has devoted himself unsparingly to Pike, and contributed (before my return) far more than he could possibly afford toward his heavy medical, surgical, and hospital expenses, has written Mr. Lund several times about the case. Mrs. Pike has nothing to live on but the pension of

November 21, 1928

her husband, a captain in the British Army, who died when Pike was a child. I am very gladly providing (of course anonymously) for the expenses of her trip, and taking care of Pike's expenses here, but I trust your Board can remunerate Dunham and Adams for what they spent before I knew the circumstances, not to speak of what it costs Dunham to board Miss Garstang. Dunham wanted to contribute \$250. toward Mrs. Pike's expenses, but of course I would not allow this. It is a very pitiful case, but if there is any possibility of saving Pike we certainly mean to utilize it.

As for the Observatory project, we were much pleased to receive from Mr. Brierly the formal action of the Executive Committee, which we owe so directly to your careful study of the problem and the cordial support given by Mr. Arnett. You may be sure that every effort will be made to find the most favorable site in the United States. While Adams and I were away Hubble made preliminary studies of four sites in Arizona, at three of which tests are going on daily, using our scale of "seeing". We are preparing for a much more extensive campaign at ten or more points in California and Arizona, to be begun as soon as the (inexpensive) instruments can be completed and the observers trained. As for the southern hemisphere, Shapley says in a recent letter to me: "The second 100-inch or 200-inch should of course go south; but not the first one". Russell agrees, and I think there is no difference of opinion about this.

Dr. F. E. Ross, the ablest man we know in calculating

* This I am sure he would not accept.

lens combinations, was called here from the Yerkes Observatory in the summer to aid in the optical design of the 200-inch telescope. As you know, the only objection to the use of a paraboloidal mirror of ratio $F:3.3$ is its small field of sharp definition. Such a mirror is decidedly worth using in any case, because we may reasonably expect in its principal focus to photograph stars one tenth as bright as the 100-inch Hooker telescope can record. But a material enlargement of this sharp field would be an immense advantage. The enclosed copy of a letter from Ross leads us to believe a way has been found, as he seems to have solved already the first problem we gave him: that of devising a correcting lens to fix in front of the plate and to reduce the arrow-headed images away from the center of the field to sharp points. Anderson thinks this an advance comparable with Dolland's discovery of the achromatic lens. After it has been tested with the 60-inch reflector, its full possibilities with the 200-inch (including the chance of devising a lens giving the enormous concentration of light attainable with a ratio $F:2$), will become known. We have given Ross (who is working half-time at the Yerkes Observatory on our optical problems) a computer, and will see that his rare qualities are fully utilized in the design of our various instruments.

In this connection an editorial remark in the New York Herald-Tribune, which we have not thought worthy of reply, may be mentioned. They say (October 30):

"It is an open secret that the 100-inch reflector at Mount Wilson,

now the world's largest telescope, has been something of a disappointment".

This "secret" has never before been sufficiently "open" to reach us here. As stated in my article in the April Harper's on "The Possibilities of Large Telescopes",

"Fortunately we have found, after several years of constant use, that on all good nights the gain of the 100-inch telescope over the 60-inch is fully in proportion to its greater aperture".

When the "seeing" is 3 or better on a scale of 10, which happens on a great number of nights annually at Mount Wilson, the 100-inch thus gives us the benefit of all the additional concentrated light its increased area gathers up, in direct photography, spectrographic work, and other observations, and in spite of the fact that both mirror discs are of the same kind of glass.

Fused silica, on account of its very low coefficient of expansion, should be greatly superior, and the change of focal ratio from F:5 to F:3.3 will also mean a great gain. This is why Adams, Anderson, and I think that instead of getting four times as much light concentrated in sharp star images we shall get about ten times as much. Such English astronomers as Turner, Dyson (Astronomer Royal), and Jeans have written to express their strong approval of the project.

I have worked out the general design for the spectrograph, coelostat telescope, and auxiliary apparatus that fix the character of the Astrophysical Laboratory, so the task of planning the building will now be a simple matter, though we shall give every detail close study. The design for the shop is well advanced, but we

Dr. Max Mason

-5-

November 21, 1928

are obtaining expert advice from various quarters before turning it over to the architects. All other phases of the work are also making good progress.

With warm regards and thanks for all the time and trouble you have given to this project,

Yours very cordially,

George E. Hale