

HARVARD COLLEGE OBSERVATORY

Cambridge 38, Massachusetts

July 3, 1956

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Dear Merle:

I received yesterday your letter of June 29, of which copies were sent to our Panel and to Drs. Waterman, Seeger, Goldberg and I. S. Bowen. Since the July 10th date is now very close, full discussion can wait until then, but I feel that I should make clear just where I stand on one or two points.

Before I comment at any length, let me say that I was saddened by your letter, which states your case clearly and which may mean the end of the dream of a National Radio Observatory - or at least postpone action for many years to come.

To indicate in briefest form the plan of action that I had hoped might come out of the July 10 - 12 meetings, here is the course that I support and defend:

1. NSF should proceed promptly with the purchase of the land at Greenbank on which we have options.
2. Vigorous and prompt attempts should be made to settle the administrative arrangements. AUI should be given preference as the contractor, but only if it proves possible to work out an arrangement for control that proves satisfactory to the observatories and universities from the Middle West and South East which are seriously considering taking part in the Greenbank operation.
3. We are now ready to come to final decisions with regard to tolerances and we should make now the necessary final decisions for the 140-footer.
4. We shall need one more basic engineering study - for an equatorial mounting for the 140-footer. Perhaps the studies by Dr. Faldt and by your group are sufficient as preliminary engineering studies and we might even come to a decision now to proceed with an equatorial mount - this so especially because of the Cal Tech support and because of the success of the equatorially mounted 60-foot George R. Agassiz Radio Telescope. I attach to this letter as a document with special relevance a copy of a letter that was written to me at my request by Donald S. Kennedy.
5. A Director should be appointed, whose first assignment it should be to ask for bids for the 140-footer and proceed with its construction.

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6. The Director should be authorized to begin immediately after his appointment with the building up of his staff. Steps should be taken soon by the Director and staff toward building or purchasing the basic electronic equipment. The Director should also undertake promptly a simple program of basic construction of the facility.

7. The NSF should increase rather than decrease its support of the active university enterprises in radio astronomy and welcome and encourage additional support that has come and will come from ONR, OOR and the Air Force. Attempts should be made to widen the base for industrial and private support - as well as support from Foundations.

I am coming now to the writing of a few specific comments on your letter of June 29th. I shall comment section by section. In case I do not comment specifically, the understanding is that comments might well wait until we discuss these matters in Washington next week.

Section B. I do not agree that our Panel has helped to widen the gulf between radio astronomy and optical astronomy. The contact may not be a close one for the radio astronomers working in and near Washington D. C., but at the universities the contact is a really intimate one, and in practically all cases an optical astronomer is either running the show, or acting as a co-director. I am thinking here of Harvard, Cal Tech, Michigan and Ohio State. To show you how close the liaison is between radio and optical astronomy I am enclosing for you to keep my one and only copy of the proof of an article that I wrote recently for Nature, in which article I stress the close interrelation between the different areas. Just to make sure that everyone who receives this letter will know what I have in mind, I shall attach a mimeographed version of my article to every copy of this letter.

Section C. I am strongly opposed to the plan of building the National Radio Observatory right close to the National Optical Observatory at a site near Phoenix, Arizona. The reasons which our Panel advanced originally in favor of a site within three hundred miles of Washington D. C. still seem like sound reasons and I need not restate them here. Some of your people in Washington, fairly remote from university contacts, do not apparently realize the terrific boon to the development of student interest in the Eastern United States in radio astronomy that has already come as a result of the preliminary announcements regarding the Greenbank operation. Without the Greenbank plan, I would not now have at Harvard twelve young people actively participating in the research project at Agassiz Station and there would not have been expressed as many preferences for the study of radio astronomy in our graduate student applications. A National Radio Observatory in the Far West would automatically shift the center of attraction for future graduate students from the Eastern and Mid Western parts of the United States to the South West. The Eastern and Mid Western graduate students deserve access to equipment of similar scope and power as those available in the Far West. Since optically, because of obvious climatic disadvantages, one can not and should not provide large equipment in the East, it seems only fair that the largest radio telescope should be in the East, especially when a good and well protected site is available near Greenbank. I might add here that a few years ago, when Harvard Observatory practically abandoned its traditional graduate student program of observational optical

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research and training, there was much talk about our graduate students going to the western observatories for optical observational work. I think I am right in saying that not a single student has thus far gone West under Harvard auspices in connection with a program in stellar astrophysics or galactic research. Some have, however, gone West to study at the western universities and they left principally because of the special instrumental attractions in optical astronomy offered by the western institutions. I feel strongly that the shifting of the major geographical center of optical and radio astronomy from the East to the West would put the eastern universities completely on a secondary level as far as graduate student training and research in astronomy are concerned. I pointed out to you already in my earlier letter that a constant effective exchange between the key optical and radio astronomical centers could be worked out at relatively small cost as far as staff members of both varieties are concerned.

Section D. I need not comment here once more on your statement that nothing has been achieved of great importance through the studies by AUI. My own views regarding the present state of the project are shown most clearly by the seven point program of action that I have described briefly in the beginning of this letter.

Section E. I want to make three separate comments on this section:

1. You intinate that I am one of several persons who is running away from the project. For the record, I would like to summarize briefly how the situation has developed. Early last January, I informed yourself and various people in key places in the NSF and in AUI of my decision to leave Harvard within two years. I indicated at that time that for the future I had in mind either going to Australia or joining the staff of the National Radio Observatory. Lloyd Berkner indicated that he would like to see me join the Greenbank staff, provided AUI would have a part in the management, but he was obviously not in a position to make a firm offer. When I did receive in March the offer for the Directorship of the Commonwealth Observatory, I felt inclined to accept immediately, but, because of my deep feeling of obligation toward the National Radio Observatory, I decided to postpone my final decision for two weeks. I did inform yourself, Lloyd Berkner and Alan Waterman that I had received the Canberra offer and that I would accept it after a two weeks delay unless good reasons could be given why I should not do so. The only one who became really agitated at that time was John Hagen, who wrote to Alan Waterman recommending that something be done promptly to keep me in the radio astronomy picture in the United States. Nothing developed and when I received the much appreciated good wishes for my future in Australia from yourself and others in key positions, I decided that I was free to accept the Commonwealth Observatory Directorship without having to feel that I was in any way affecting future developments in radio astronomy in the United States, notably the future of the National Radio Observatory.

2. Who needs this facility? I am firmly convinced that the Eastern and Mid Western universities now active in radio astronomy will be in a position to make effective use of the National Radio Observatory in West Virginia and, furthermore, that the present successful undertakings in the East and the Middle West will lose much of their momentum if the facility with the 140-footer does not come into existence within a year or so. I realize that these remarks

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do not necessarily apply to the Western institutions. I think that you are wrong in minimizing the effect that a National Radio Observatory near Greenbank will have upon the development of radio astronomical activities at Eastern and Mid Western observatories not now "active" in the field of radio astronomy, Yale, Pennsylvania, Illinois, Rensselaer and several others, notably several of the South Eastern universities. You may, therefore, not be aware of the deep interest in the Greenbank observatory that exists among Canadian radio astronomers in Ottawa and in Toronto. The NSF can inform you about Canadian interests, but I can assure you that Greenbank figures prominently in these and that the Southwest would seem quite remote to the Canadians.

3. Since copies of this letter will go out rather far and wide, to our Panel and to various people in NSF, it would seem unwise for me to list here the names of potential directors, directors of research and staff members of the National Radio Observatory. I shall therefore prepare my list on a separate sheet and send a copy of it to you personally only. I feel that we have a good group of people from whom to select the director, the director of research and the major staff members and, furthermore, that the supply of junior staff members is small, but that it will be growing rapidly if the NSF continues on its path of support to radio astronomy on which it embarked four years ago.

Well, Merle, that is about the story as I see it. I think that the developments in radio astronomy in the United States during the past four years have been very fine indeed and wherever I look I see evidence of the wisdom of the past actions by the National Science Foundation. At this point the NSF is about to embark upon the crowning feature of its initial program in radio astronomy. I think that you and I and all of us who have done our best to help guide NSF during the first few difficult years, owe it to the organization and to the future of radio astronomy in the United States to attempt to come now to a good solution of the problems of the National Radio Observatory. This is not the first time that you and I have differed in opinion and our friendship has been strengthened rather than weakened by such affairs in the past. I shall certainly consider carefully all arguments in favor of ultimate solutions, but I hope fervently that we shall not lose sight of the ultimate goal.

Sincerely yours,

BJB:jh

Copies to: Dr. Waterman  
Dr. Seeger  
Dr. Edmondson  
Dr. Goldberg  
Dr. I. S. Bowen  
Dr. Hagen  
Dr. Greenstein  
Dr. Kraus  
Dr. Minkowski  
Dr. Purcell

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