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Leading Midwest Research and Development organization seeks broad gauge Scientific Executive to work with economic and planning specialists in the development of long range technical programs in graphic communications.

Candidate employed will be responsible for coordination, evaluation, and interpretation to Management of various active research projects within the company relating principally to solid state physics and physical chemistry.

Will work with the company's staff in motivating them to development of new and/or expanded programs as well as maintain active liaison with customers' technical staffs at all levels. Must maintain a broad surveillance of a number of technical "areas of potential interest." Will be responsible for preliminary investigation into new technical areas and making recommendations for further investigation.

Requirements include Ph.D.

Requirements include Ph.D. in Physics plus heavy experience in solid state physics and experience in planning and direction of programs involving several projects and other disciplines. R&D experience in as many of the following fields as possible:

- (a) Photoconductivity
- (b) Luminescence
- (c) Magnetism
- (d) Masers and Lasers
- (e) Photochemistry
- (f) Preferably experience in Optics or Electrostatics

Company Prefers

Company prefers a man who has contributed to the literature of his field and is active in technical societies. Candidate's personal goals and interests should be: desire to develop generalist rather than specialist capabilities; to enjoy working with people and helping them develop ideas; with strong interest in the "business" side of research and its relation to corporate growth and strategy.

IF YOU are interested in knowing more about this exceptional opportunity but do not have a prepared resume, jot your home address and phone number on the back of your business card and mail with full assurance that all activity will be on a confidential basis and all expenses paid by employer.

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celerator (more than \$3 million) have already been provided under a grant to the University from the National Science Foundation. In addition, the Foundation and the State of New York have each allocated sums of \$425 000 to defray part of the construction costs of the laboratory buildings, which are expected to amount to more than \$1.7 million.

The laboratory will consist of four buildings covering about an acre. Tentative plans call for the preliminary design of the buildings to be undertaken next year, with construction scheduled to be complete before the first parts of the accelerator are delivered in 1965. The University expects to have the laboratory in operation sometime in 1966.

The Case of Channel 37

According to a rule proposed early this spring, the Federal Communications Commission would provide limited and temporary protection of radio astronomy observations on the waveband 608–614 Mc (UHF TV channel 37) from interference by commercial broadcasts. The proposed rule, which at the time of this writing has not yet been formally adopted, is framed with specific reference to the welfare, as viewed by the FCC, of the University of Illinois' radio telescope at Danville, Ill. The University of Illinois was the principal petitioner for protection.

The proposed rule would ban broadcasting on channel 37 from any point within 600 miles of Danville until January 1, 1968. It would further restrict licensees in the area outside the 600-mile limit from broadcasting between the hours of midnight and 7:00 A.M. local time, thus providing about four hours of the night during which there would be no interference on channel 37 originating anywhere in the United States. The provisions of the rule appear to be based on a statement (quoted by the FCC) made by G. C. McVittie, the director of the University of Illinois Observatory, in the course of an article on the Danville installation which appeared in the magazine *Sky and Telescope* (December 1962). Dr. McVittie wrote that, because of the effects of solar interference, observations involved in the telescope's first project (a five-year program to develop a map of discrete sources) would be confined to night hours. The FCC has before it four applications for assignment of channel 37, all originated by parties in Paterson, N. J., where, according to the FCC, no other channel is available for assignment. The Commission is delaying action on these applications until final adoption of the proposed rule since it feels that a change in the 600-mile protection zone might be made.

The University of Illinois originally sought an unqualified deletion of channel 37 from the list of assignable television frequencies. It had built its receiver for this band in the hope that the 1959 conference of regulatory agencies held at Geneva would make such protection a world-wide requirement. The conference did not so rule, but it did recommend that na-

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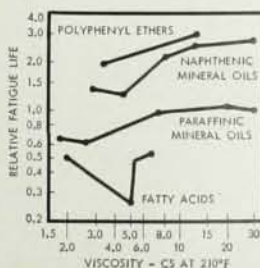
Besides reducing wear and friction, there is growing evidence that a lubricant profoundly affects the fatigue life of the component being lubricated. Members of our staff, for example, have observed 30-to-1 differences in the fatigue life of bearing balls due to lubricant variation. The study covered some sixty base oils from eleven chemical classes.

True, the evidence comes from bench tests. Its exact prediction of service experience is open to question, since tests were run at greatly elevated loads to shorten fatigue times to minutes.

But it offers some highly intriguing leads . . . leads we're following up by evaluating the many possible lubricant properties that may control the fatigue process. Viscosity is one. Antiwear characteristics, reactivity, and polarity are others. More rings in the lubricant molecule, for instance, usually result in longer life. And apparently there's an optimum wear rate for maximum life. Additives and precoatings play significant roles.

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tional regulatory agencies reserve channel 37 for radio astronomy "as far as practicable".

In May of 1960, the University of Illinois filed a petition (RM-180, Docket #15022) asking that channel 37 be deleted from the FCC's Table of Assignments. This petition was supported (indirectly in Docket 13458) by Cornell University, Yale University, Rensselaer Polytechnic Institute, the National Academy of Sciences, and the Carnegie Institution of Washington. An opposition was filed by an organization called the Association of Maximum Service Telecasters, Inc.

Nearly one year later, the Commission denied the Illinois petition on the grounds that it was premature. In 1957, the FCC had instituted a "general inquiry" into frequency allocations in the whole spectrum from 25 to 890 Mc. This inquiry has not been completed, and, in 1961, the FCC did not wish to take up the request for deletion of a particular channel. At the time, the only broadcaster on channel 37 was an experimental station in Camden, N. J., to which no one objected.

The recently adopted federal law requiring new TV sets to be all-channel receivers has further complicated the situation. Applications for UHF channels have increased, and the Commission feels that even though its own general inquiry is still pending it cannot continue its interim policy of blanket protection for channel 37, and it has therefore proposed the compromise rule.

The terms of the proposed new rule were spelled out in a public notice issued by the FCC on March 27 of this year. The Commission requested that comments from interested parties be submitted by May 1. In response, statements urging that channel 37 be protected have been filed by several groups, including the Federation of American Scientists, the American Astronomical Society, the American Geophysical Union, the International Scientific Radio Union, and the American Institute of Physics. The resolution adopted by the AIP Governing Board and transmitted to the FCC on April 29 reads as follows:

"Be it resolved by the Governing Board of the American Institute of Physics that the restriction of Channel No. 37 to astronomical research throughout the United States during the entire twenty-four-hour day is of great importance to the progress of radio astronomy. Information obtained through this spectrum window of the earth's atmosphere from natural as well as artificial objects in outer space can be of inestimable value to a wide variety of scientific investigation.

"The Governing Board of the American Institute of Physics therefore strongly recommends that no action be taken in assigning Channel 37 at this time. Such action, if taken, would undoubtedly be irreversible. At the same time, it is recommended that the FCC request the National Academy of Sciences to study this matter with a view to pointing out the possibility of resolving this and similar other problems which seem certain to arise for the FCC in the near future."