In spite of all this evidence some of our colleagues (fortunately not the cranberry growers themselves) find it hard to take the conclusions seriously. If, in contrast to the above, we were reporting results obtained from six 4-inch pots for one year, our results would be far more respectable.

A realization of the possibility that even in science there is danger from too devout worship of the fetish of alleged accuracy has recently been found in papers from two fields which are commonly supposed to be much more characterized by accuracy than biology can reasonably hope to be; namely, astronomy and physics. Professor Henry Norris Russell, in his presidential address before the American Astronomical Association[11] in 1937, discussed "the place, utility, and limitations of approximate methods in astronomical work."

Professor Russell's paper is short enough to be easily read and too compact to be easily abstracted. He gives a number of instances in which approximate methods have given highly significant results, and raises the important point of what he calls "astronomical economics," that is, the question as to the extent to which the director of a great modern observatory should spend money and energy in securing more and more accurate observations. He indicated that spending effort and funds for accuracy is justified to the extent that the problem under study requires accurate measurements for its solution.

Even in astronomy it appears there are those who would let methods dictate problems. He quotes E. C. Pickering as saying that shortly after he had become director of the Harvard Observatory he was severely and publicly criticized by a conservative group because "instead of putting his time on meridian observations, which can be made with an accuracy better than one part in a hundred thousand, he is working on photometry, with errors of ten per cent. or worse, and in spectra, with no accuracy at all." And, he adds, "Pickering had the courage of his convictions, and kept on with the results that we know."

Charles Galton Darwin in a discussion of "Logic and Probability in Physics"[12] says: "What is the moral of all this? It is that the new physics has definitely shown that nature has no sharp edges; and if there is a slight fuzziness inherent in absolutely all the facts of the world, then we must be wrong if we attempt to draw a picture in hard outline."

A drastic change in my surroundings a few years ago led to my reading a number of books in the field of sociology—which is after all a sort of biology. I find these workers are frequently faced with this same choice, relatively accurate measurements in a less interesting and significant field or obviously crude measurements in a highly interesting one. May I then close with quotations from two of them, "We have been choosing the problems of study not so much by their importance as by a possibility of making a 'fine and accurate study of a topic.' . . . Pushed too far in that direction, these investigations become a worthless parody on science. To avoid this situation, once in a while, somebody has to take upon himself the doubtful privilege of selecting an important topic for his study, though it does not lend itself to an exact investigation."[13] "Method must conform to material and not vice versa . . . the first loyalty of a scientist is to his material; . . ."[14]

SCIENTIFIC EVENTS

THE RESEARCH SECTION OF THE ROCHESTER ACADEMY OF SCIENCE

A NEW Research Section of the Rochester Academy of Science has been organized under the constitution of the academy. Meetings will be held on the first Tuesday of each month giving opportunity for social and professional discussion.

The Research Section has as one of its objects the promotion of the more active publication of the *Proceedings* of the academy. Its members pay an annual fee of $3, in addition to the fee of $2 for general academy membership. The additional $3 will be used entirely for the benefit of the *Proceedings*. It is planned to issue from two to four numbers annually, four numbers of about 200 pages constituting a volume. The subscription price will be $5 a volume, with a guarantee that the cost will not exceed this sum.

The first meeting of the section was held on January 13. Karl Patterson Schmidt, director of the division of zoology of the Field Museum of Natural History, Chicago, gave a lecture entitled "Desert and Highland in Peru," which was devoted to a résumé of impressions gained while on an expedition to Peru in 1939. In his introductry remarks he presented his views on the value and purpose of an Academy of Science. The second meeting, on February 4, provided a round-table discussion on "Speciation in Plants and Animals" conducted by Professor Sherman C. Bishop and Dr. Richard Goodwin, both of the department of biology of the University of Rochester. The third meeting will be held on March 4, when William A. Ritchie, of the Rochester Museum of Arts and Sci-

[11] H. N. Russell, *Publications Am. Astron. Soc.*, 9: 108–114, 1938.

[12] SCIENCE, 88: 155–159, 1938.

[13] P. A. Sorokin, "Social and Cultural Dynamics," Vol. 2, p. 270.

[14] John Dollard, "Caste and Class in a Southern Town."

ences, will present the results of his excavations on Frontenac Island, Cayuga Lake, during the summers of 1939 and 1940.

Professor David Goddard, professor of botany at the University of Rochester, is chairman of the Research Section. Other members of the executive committee include Professor Bishop, Professor Floyd C. Fairbanks, professor of astronomy at the university and president of the academy, Dr. Dean L. Gamble and Dr. R. L. Roudabush, both of Ward's Natural Science Establishment, and W. S. Cornwell, recorder.

CONFERENCE OF RADIO ENGINEERS AT THE OHIO STATE UNIVERSITY

THE fourth annual Broadcast Engineering Conference, directed by Dr. W. L. Everitt, of the Ohio State University, which lasted for ten days opened on February 10 for the discussion of new developments in the field of color television, ultra-high frequency transmission, etc.

During the first week speakers reported on technical improvements of speech input systems, studio acoustics, polyphase broadcasting, receivers, loud speakers, sound reproduction from recording and the status of television. Dr. Peter C. Goldmark, head of research in television of the Columbia Broadcasting System, discussed his work on color television, and E. K. Jett, chief engineer of the Federal Communications Commission, spoke at a dinner session on "Communications in National Defense." A. D. Ring, assistant chief engineer in charge of broadcasting for the Federal Communications Commission, led a general question period during the first week's program, which was sponsored jointly by the department of electrical engineering of the university and the National Association of Broadcasters.

Sessions held during the second week's program, which opened on February 17, considered the status of frequency modulation, its operating problems and technical aspects. Lectures were given on ultra-high frequency broadcasting. Homer Dudley, of the Bell Telephone Company, specialist in design and construction of speech analyzing and synthesizing circuits, spoke on "The Vocoder or Remaking Speech Electrically" on the evening of February 18.

A new feature of this year's conference was the addition of laboratory experiments on new equipment and techniques in broadcasting station measurements. Each member had an opportunity to make broadcast station measurements. The laboratory periods were held in the evening in several sections, so that all attending could make tests in which they are particularly interested. The scope of the conference was broadened this year to include topics of interest to the engineers working with airway and police communications, general receiver and laboratory development.

SYMPOSIA AT THE ST. LOUIS MEETING OF THE AMERICAN CHEMICAL SOCIETY

SCIENTIFIC problems involved in national defense, including the production of synthetic rubber and other materials and the fortifying of food with minerals and vitamins, will be discussed at the one hundred and first national meeting of the American Chemical Society, which will be held in St. Louis from April 7 to 11. An attendance of 3,500 is expected.

Dr. Charles L. Parsons, Washington, D. C., is the national secretary of the meeting. Dr. LeRoy McMaster, Eliot professor of chemistry and head of the department at Washington University, has been named honorary chairman. H. Edmund Wiedemann, consulting industrial chemist and past national president of the Food and Drug Officials Association, has been appointed general chairman.

Fourteen symposia, representing virtually every field of chemistry, in addition to technical papers to be presented before seventeen of the eighteen professional divisions, are planned. Several addresses by well-known scientific men will be delivered at a general session on Monday, April 7, in the St. Louis Municipal Auditorium. Dr. William Lloyd Evans, of the Ohio State University, president of the society, will preside.

"Fortifications of Foods with Minerals and Vitamins" is the subject of a group of papers to be presented in the Division of Agricultural and Food Chemistry, of which Gerald A. Fitzgerald, of the General Foods Corporation, New York City, is chairman. Another session of the division will be devoted to "Fats." The Biological Division, of which Dr. Herbert O. Calvery, of the U. S. Food and Drug Administration, is chairman, will hold its semi-annual symposium on "Vitamins."

"Some Current Projects in Medicinal Chemistry," "New Engineering Technique," "New Developments in the Processing of Rubber" and "Phenol-Formaldehyde Resins and Plastics" are other divisional symposia which will bring the emphasis of science to bear upon questions related to national defense.

The Division of Petroleum Chemistry, which is celebrating the twentieth anniversary of its founding, will discuss "Analytical Methods Used in the Petroleum Industry."

"Smokeless Fuels and Air-Pollution Abatement" will be the subject of a session of the Division of Gas and Fuel Chemistry. Other symposia will deal with the nomenclature of inorganic chemistry; thermodynamics of electrolytic dissociation; contemporary work in the monosaccharide field of sugar chemistry; the last two years of college chemistry, and a student symposium in chemical education.

Divisional papers will also be presented in the fields