FIFTH ANNUAL SECTION DINNER-MEETING

Thursday, June 13
Cocktail Hour 5:30 P.M.

ROBIN HOOD INN, CLIFTON

See Page 6

Pat Parkinson, outgoing chairman of the N.C.E. Student Branch of IEEE passes gavel to Stephen Hoffman, the newly elected chairman for the 1968-1969 academic year.

See Page 7

The IEEE
Newsletter
The Magazine of the North Jersey Section

North Jersey Section IEEE Presents:

NEW HORIZONS IN MEASUREMENT
Trends in Theory and Application

"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind . . ."

Lord Kelvin (1824-1907)

(Coming Fall 1969 — Watch for future announcements)

Volume 14 June 1968 No. 10

STUDENT AFFAIRS

The North Jersey Section warmly congratulates the following Student Members of the I.E.E.E. upon their graduation:

FAIRLEIGH DICKINSON UNIVERSITY

Osvaldo L. Cano
Nelson Chester
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ABOUT ADDRESS CHANGES

REPORT ALL ADDRESS CHANGES TO:
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS INC., 345 EAST 47th STREET NEW YORK, N. Y. 10017

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

NORTH JERSEY
SECTION OFFICERS
1967-1968

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Vice Chairman ..... Joseph G. O'Grady
Treasurer ..... Merle M. Irvine
Secretary ..... Herbert E. Blaicher, Jr.
Member-at-Large ..... Robert G. Sokalski
Member-at-Large ..... Carl C. Torell
Past Chairman ..... Stephen A. Mallard

Executive Committee Meetings
at Verona Public Library
First Wednesday of Month
7:30 P.M.

1968

June 5

All IEEE Members Welcome

Reduce your risk of Heart Attack!

CONTROL HIGH BLOOD PRESSURE

The higher your blood pressure, the greater your risk of heart attack and stroke.

WATCH YOUR DIET

A diet rich in saturated fats and cholesterol increases your chances of heart attack.

KEEP YOUR WEIGHT NORMAL

If you're 30% over normal weight, you run twice the risk of heart attack in middle age.

KEEP PHYSICALLY FIT

Exercise regularly and moderately. Physically active people have a lower heart attack risk.

DON'T SMOKE CIGARETTES

Heavy cigarette smokers get coronary disease at a rate 2 to 3 times higher than non-smokers.

SEE YOUR DOCTOR REGULARLY

Only he can help control blood pressure and advise on weight, exercise and the diet for you.

GIVE...so more will live

HEART FUND

Contributed by the Publisher

Executive Committee Column

Changing Times carried a quotation by Emerson "This time, like all times, is a very good one if we but know what to do with it." This is the guideline that your Executive Committee keeps in mind at all times, or almost does.

The Section, in coordination with the Groups, has presented programs of interest. There have been technical talks, and tours of various installations, and places of general interest.

The Education Committee has prepared and presented courses that have been extremely well received. As always, the Education Committee is seeking not only subject material for the courses, but also subjects to be members of the committee. Courses must be planned, organized, and administered. This takes volunteers. Of course, there is work; of course, there is frustration; and worry about the outcome; but think of the satisfaction when the task is successful.

In February we held our Annual Dinner Dance, at which time we honored those members of the North Jersey Section that had been advanced to the grade of Fellow. We basked in reflected glory — because with only 3% of the IEEE world-wide membership, we garnered 7 Fellow Grades or 5.6% of the 125 awarded throughout the world.

The following table compares North Jersey statistics with some of the other large sections. As of December 31, 1967:

Section	Members	Fellows
Boston area	7205	154
New York-Westchester	6887	135
North Jersey	5320	162
Philadelphia	5659	115
Washington	6420	115
Chicago area	5308	71

This year the Executive Committee started making plans for a 2 day symposium to be held around October 1969. As you are well aware, symposia are held in New York, Boston, Philadelphia, Washington, Los Angeles, Chicago, and wherever else a group can be convened. We thought that we might be able to provide such an event for North Jersey during the afternoon or evening, so that you, the members, could be spared a long jaunt to a distant meeting place. At such a time as plans are former, firmed, and finalized — we'll call on you not only to be present, but also to present papers, and even see exhibits. Most importantly though, there are many activities for such an event that could use your help.

After all, North Jersey is a gold mine of talent, not only from the viewpoint of research capability, but also from the manufacturing and educational capabilities. These sources should not be overlooked as we plan and hold meetings. Every effort should be made to present our talent. I don't believe that we should follow the old bromide that an expert is someone who is 50 miles from home. We have the experts, the talent, the capability, and the membership. This year we tried to utilize them, and I am sure that your very capable incoming chairman and alert, active executive committee will continue to keep the North Jersey Section in the forefront of activity.

I have enjoyed the past year, and I want to thank all the members of this year's executive committee who gave so generously of their time and talent to make this a successful year.

BERNARD MEYER
Chairman
North Jersey Section

Panoramic Holography Gives Color Images Unlimited Depth

Three-dimensional color images with unlimited depth are being produced by a new holographic technique. With this method, small or large structures are given life-size appearance.

With panoramic holography it may be possible, for example, to see not only a garden in a hologram but a landscape stretching to the horizon. This hologram cannot be made directly through photography. Instead, a small model of the landscape is made. A photographic plate is then used to record a hologram of the model through the special lens, which is designed to make the landscape appear to extend to infinity. Simultaneously, the photographic plate is illuminated directly by a fraction of the laser light from the opposite side through a point of focus. The result is a "reflecting" type of hologram, in natural colors. When the hologram is developed and illuminated by a white point source (a small incandesent lamp) from the point occupied previously by the point of focus, the viewer sees exactly the same scene the plate picked up through the lens—that of a landscape extending to infinity.

Initially, panoramic holography may be best suited to industrial applications to simulate the final appearance of a product. Architects and automobile designers, for example, can produce a model that will look as though it were the same size as the finished product.

The new technique was developed by CBS Laboratories, a division of the Columbia Broadcasting System, Inc.

New York Computer

Advances in Computers

Annual Survey June 11

The review will be given by Wayne Cotten, of the National Security Agency, Fr. Meade, Md. Mr. Cotten will discuss recent developments in devices, circuits and organization.

The meeting will be held in the second-floor auditorium of Burroughs Corp., 605 Third Ave. (40th St.), at 7:45 P.M. A pre-meeting no-reservations-needed dinner will be held at Longley's Restaurant, 39th St. and Third Ave. at 6:00 P.M.

The election meeting of the N. Y. Chapter of the IEEE Computer Group will be held June 11 at 7:45 P.M. at Burroughs, 605 Third Ave., N. Y. C. Nominated for the posts of 1968-69 chairman, vice-chairman, and secretary-treasurer are: Prof. Herbert Freeman, NYU; Jeffrey Bairstow, Electronic Design; and Peter Stark, Queensborough Community College.

Videophone Service Will Link New York to Pittsburgh in Test

A new Picturephone® see-while-you-talk set that will be tested next fall as a medium in everyday business communications was demonstrated recently by the Bell Telephone Laboratories.

The set, called Model II, will be evaluated in a trial of the Bell System's videophone service at the Westinghouse Electric Corporation, in which it will link selected offices in the Westinghouse headquarters in Pittsburgh and at its New York City locations. The trial is scheduled to start in September and to last from three to four months. Forty sets — 28 in Pittsburgh and 12 in New York — will be used for both inter- and intracity communications in an effort to gauge the usefulness and performance of the system. The company hopes to be able to introduce the service to a limited number of customers in the early 1970s.

The new set is an improved version of the Model I unit, which has been in public operation between the three Picturephone centers. The Model II, for example, contains a new television camera tube that provides a better picture under both poor and normal lighting conditions and makes it possible to alter the field of vision for close-up or wide-angle viewing. The screen of the set is 5½ inches wide by 5 inches high (approximately 13.2 by 12.7 cm), which is larger than the previous set's screen. This feature, together with a new camera lens centered over the screen, gives the user more freedom to move from side to side.

Magnetic Pileup May Explain Behavior of Venus' Ionosphere

A "magnetic pileup" on the solar windward side of Venus has been postulated to explain surprising new discoveries about the planet, including a sharp cutoff of the dayside ionosphere. According to V. R. Eshleman, Stanford University professor who headed the experiment, "the discovery may be of fundamental importance in continuing efforts toward understanding the difference between the evolution of the atmospheres of the earth and Venus over the past billions of years, where these differences may be related to the reasons we are here instead of there."

A dense ionosphere on the planet's sunlit side, which vanishes suddenly at a height of only 480 km, was revealed by radar signals beamed from the Stanford Center for Radar Astronomy to the Mariner V spacecraft during its brief passage behind Venus on October 19. When the data were analyzed on computers, it was found that a strong Venusian ionosphere extends at least three times farther out on the planet's night side than on its day side. This contrasts with the earth's ionosphere, which extends far out on both sides. The sudden disappearance of the Venus ionosphere is termed a "plasmapause."

Unlike the earth, Venus has no magnetic field of its own to shield it from the charged particles and magnetism of the solar wind. However, it does have a very dense, highly conductive ionosphere, which stops the magnetized plasma of the solar wind. The solar wind thus flows around Venus as it does around the earth, but approaches it much more closely, and sweeps away all the charged particles above the plasmapause.

It seems likely, according to the researchers, that Mars is similar to Venus with respect to solar wind. The moon, on the other hand, which has neither magnetosphere nor atmosphere, absorbs the full impact of the solar wind particles.

It was also noted that the lack of magnetism on Venus and Mars makes any possibility of earth-like evolution on either planet remote. Any atmospheric components that become ionized above the very low plasmapause must be swept away by the solar wind whereas the earth's much deeper ionosphere is protected by its magnetic shield. This effect may be related to the puzzling lack of large amounts of water on Venus.

The new findings were discussed by engineers of the Stanford Center for Radar Astronomy in the December 29 issue of Science magazine. The Center is jointly operated by the university and Stanford Research Institute, and the research was sponsored by NASA through the Jet Propulsion Laboratory in Pasadena, Calif.

North Jersey Section

ANNUAL DINNER

The Annual Dinner and second annual Past Chairman's night will be at the Robin Hood Inn, Clifton, on Thursday, June 13, 1968. The usual "Dutch Treat" cocktail hour and social hour will be held 5:30 P.M. This will be followed by a combination family style ham and chicken dinner at 6:30 P.M. Dinner tickets will cost $4.50 each. Non-members including wives are welcome.

Dr. J. D. Tebo will speak on, "What you can expect in the future of communications."

J. D. Tebo

Biographical Data

J. D. Tebo

J. D. Tebo received his Bachelor and Doctor of Electrical Engineering from Johns Hopkins University in 1924 and 1928 respectively.

He has been employed at Bell Telephone Laboratories since 1928. He was in charge of the Machine Switching Laboratory of the Electromagnetic Apparatus Design Dept. He was Assistant Project Engineer and helped develop Radar and Sonar gear during World War II. He also edited the Bell System Technical Journal, Bell Laboratories RECORD and was Publications Dept. Supervisor at the Whippany Laboratories. He is currently the head of the Technical Relations Dept.

Dr. Tebo is a Fellow of the IEEE, a former Member of AIEE Board of Directors, a former Chairman of N. Y. Section AIEE, a Member of ASME, American Physical Society, American Institute of Aeronautics and Astronautics, Fellow N. Y. Academy of Sciences, Past President, Montclair Society of Engineers, Member E.J.C. Board of Directors, Member Engineering Foundation Board and Chairman of Research Committee.

He is a member of Sigma Xi honorary Scientific Society. Listed in "American Men of Science", "Who's Who in Engineering" and "Who's Who in America."

RESERVATION COUPON

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Enclosed please find my check (or money order) made payable to the North Jersey Section IEEE in the amount of $ ..... ($4.50 each) for ..... tickets for the 1968 Annual Dinner, Thursday, June 13th. Enclosed also is a stamped, self-addressed envelope to expedite return of the tickets to me. If reservation coupon is received after June 8th, or without self-addressed stamped envelope, tickets will be held at the door.

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Student Affairs
News on the Campus

Newark College of Engineering

The NCE Day Branch of the IEEE held its Annual Dinner at the Park West Restaurant on Broad Street, Newark on April 22, at which time the present Branch Chairman, Pat Parkinson, handed over the gavel to Stephen Hoffman, present Vice Chairman and newly elected Chairman for the 1968-1969 academic year.

Seated at the dais with Mr. Hoffman (third from the left) were the other newly elected Branch Officers. From left to right, these included: Robert Kierce, Treasurer; Robert Wavra, Vice Chairman; and James Hess, Secretary.

After the dinner Mr. Hoffman discussed his plans for the coming year:

As the newly elected Chairman of the N.C.E. Student Chapter of the I.E.E.E., I would like to present a brief outline of my future plans and programs. But before I do, I would like to commend the past years work by chairman Parkinson, the rest of the executive committee, and in particular Clark Gellings for his efforts to bring worthwhile and educational programs to our college.

The continuation and widening of the scope of seminars being brought to the students will be stressed in the early weeks of the next semester. Programs oriented toward helping undergrads through difficult periods in their curriculum will be appropriately timed. These programs, in particular, will be chosen by a special committee which will regularly sound out the students for indications of rough areas.

In addition to these programs involving guest speakers, we will plan special technological and scientifically accented movies. These will hopefully be acquired from NASA, IBM, Bell Laboratories or other leaders in new and interesting fields. Most of these programs, in the end, will be based on arriving at a full and varied schedule of events to appeal to as many students as possible.

In order to continue our expansion we will need the full cooperation and support of the student members. In effect, I am appealing to the student I.E.E.E. members to sign up for membership on the committees now forming. These will include publicity, programs, tests, and other special committees which will form as the need arises. I hope to make this coming year a continuing improvement with your help.

STEPHEN HOFFMAN
Chairman I.E.E.E.
N.C.E. Day Division

INTERNATIONAL CRYSTALLOGRAPHY CONGRESS EXPECTED TO ATTRACT 3,000 SCIENTISTS TO STONY BROOK IN 1969

The Eighth International Congress and General Assembly of the International Union of Crystallography will meet in the summer of 1969 on the campus of the State University of New York at Stony Brook in the first U. S. meeting of the Congress in 21 years. The Congress met last year in Moscow.

Some 3,000 participants from all over the world are expected to converge on Stony Brook for the two-week triennial Congress, August 13-27. Others have been held in Rome, Cambridge, England, Montreal, Paris, Stockholm, and Cambridge, Massachusetts.

The U. S. meeting has been sought by the National Academy of Sciences which is acting as a co-sponsor of the Congress. Brookhven National Laboratory will cooperate with the State University in arrangements for the Congress and related sessions will be held at the National Laboratory. The American Institute of Physics will provide a wide range of conference and management services.

Topical meetings associated with the Crystallography Congress will be held at the Center for Crystallographic Research, Roswell Park Memorial Institute, Buffalo, New York, preceding the general meeting, and in Washington, D. C. following the Stony Brook sessions.

Dr. David Shoemaker of the Department of Chemistry, Massachusetts Institute of Technology, is Chairman of the Steering Committee which includes distinguished scientists from universities as well as government and industrial research and development laboratories. Dr. Walter Hamilton of Brookhaven National Laboratory is chairman of the local arrangements committee which also includes as members Dr. Francis Bonner, chemistry chairman at Stony Brook and Dr. Yoshi Okaya, professor of chemistry. Mrs. Natalie Fiess is executive secretary of the Congress Headquarters at the Stony Brook campus.

The Congress delegates will represent many of the major scientific fields — chemistry, physics, biology, mineralogy, metallurgy. Some are interested in structures and their relationship to the physical and chemical properties of substances, others investigate the orderly behavior of complex forces acting within molecules, still others are devoted to fundamental research designed to shed light on the basic but complex life processes.

Molecular structures and the relationship of atoms to each other are often best determined through crystallography. It has been most useful, for example, in the determination of protein structures such as enzymes which play a key role in all living cells. Enzymes which have been recently deciphered through x-ray crystallography include ribonuclease, myoglbin and lysozyme.

Million-Volt Microscope Will be Used to Study Steel

An electron microscope capable of revealing the internal structure of matter on a scale equal to atomic dimensions has been installed at the United States Steel Corporation's Fundamental Research Laboratory in Monroeville, Pa.

It was pointed out that the microscope's higher resolving power will permit closer study of the myriad of microstructural components of steels, since the many varied properties of steel depend on the internal atomic arrangement resulting from heat treatment and processing by rolling, drawing, etc. The researchers are seeking to develop superior microstructures to achieve improvements in strength, toughness, and corrosion resistance.

To attain its power, the microscope uses a million-volt accelerator, which, although more than 5 meters high and weighing some 15 ton, maintains the dc voltage constant to within 0.0004 percent. An accelerated stream of electrons is fired through the microscope's magnetic lenses at approximately 94 percent of the speed of light. This velocity gives the electrons a penetrating power of up to ten times that of beams used in standard electron microscopes. Increasing the accelerating voltage also has the effect of reducing the wavelength of the electrons; this, in turn, improves the instrument's resolving power. Thus the microscopist expects to "see" features only 2 Å apart.

Image intensification techniques will be used that permit the reduction of the beam strength by as much as 50 times, thus diminishing the damaging effects of radiation and heat on metallurgical specimens. The techniques also electronically brighten the image so that it may be displayed on a television monitor screen to an audience. Electrons traveling in vacuum down the microscope column are controlled by six magnetic lenses — two condenser lenses, one objective lens, and three projector lenses. Automatic valves control the instrument's three vacuum systems: one for the accelerator that often operates at a higher vacuum than the column, one for the column itself, and a buffer vacuum between the two.

The instrument system was designed and built at the Radio Corporation of America's Broadcast and Communications Products Division in Camden, N. J.

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