

# C. I. T. NEWS

## SUBSTITUTE FOR BLOOD PLASMA DEVELOPED AT CALTECH

THE California Institute of Technology announces that a group of investigators at the Institute, headed by Professors Dan H. Campbell and Linus Pauling, have developed a new substitute for blood plasma. Tests have shown that this material, which is called oxypolygelatin, can be satisfactorily used as a substitute for human plasma in the treatment of shock. Preliminary studies of the material are very promising, but the final physiological and clinical testing has not yet been completed, and the material has not been released for public use.

The development of this plasma substitute has been carried out during the last three years under a contract with the Committee on Medical Research of the Office of Scientific Research and Development. The proposed plasma substitute is made by the treatment of gelatin with certain chemicals. Gelatin itself, specially prepared and purified for this purpose, has been used to a small extent in recent years as a plasma substitute, with some success. When the gelatin is treated with two chemicals, glyoxal and hydrogen peroxide, chemical reactions occur which lead to the production of oxypolygelatin, which has improved properties as a plasma substitute. The gelling tendency is reduced, permitting the solution of oxypolygelatin to be injected at room temperature, without preliminary warming; the material is available for injection at any time. The number of acidic and basic groups on the molecules is changed in such a way as to make the material resemble closely a normal constituent of plasma, serum albumin. The chemical treatment also increases the time of retention in the blood stream, and in this way improves the effectiveness of the material as a plasma substitute.

The investigators at the California Institute of Technology have expressed the opinion that oxypolygelatin may be of special value in peace times for the emergency treatment of burn shock and shock due to wounds. Since the material does not contain any red blood cells, it is not a satisfactory substitute for whole blood. Moreover, although oxypolygelatin is designed to serve as a plasma substitute, it is not believed to be as effective as human plasma, and no plans have been made for general use of this new material in place of human plasma.

## DU PONT COMPANY OFFERS 35 RESEARCH FELLOWSHIPS

THIRTY-FIVE postgraduate fellowships at 29 universities are offered by E. I. du Pont de Nemours and Company for the academic year of 1945-46.

This is an increase of 13 over previous years and for the first time includes two fellowships in physics, reflecting the increasing need for physicists in the chemical industry. Five of the fellowships are in chemical engineering and 28 in chemistry.

Two changes have been made in the fellowship plan this year. First, in order to equalize the value of fellowships among the various universities, where tuition rates differ, the company is paying the tuition in addition to the stipend. And second, the amount of the stipend has been increased from \$750 to \$1000. Women as well as men are eligible, and selection of the recipients and the subjects of their researches are left to the universities. Holders of these fellowships are

not restricted in any way in their choice of position when the fellowship expires.

This plan was adopted by the company to encourage and assist graduate students at a time of acute shortage of trained research people. It was felt that this was one way in which it was possible to help universities in the task which all of them face in rehabilitating and rebuilding their graduate schools. The Du Pont fellowships were established in 1918, another period in which there was a shortage of well-trained chemists, and have been maintained with but one interruption ever since.

It is expected that a number of veterans, returning to school after discharge from the armed services, will be eligible for the fellowships this year.

Eight universities were added to the fellowship list this year, and the universities and the subjects in which the fellowships are offered follow: Brooklyn Polytechnic Institute, chemistry; Carnegie Institute of Technology, chemical engineering; University of Indiana, chemistry; University of Iowa, chemistry; University of Nebraska, chemistry; University of Notre Dame, chemistry; University of Rochester, chemistry; and University of Texas, chemistry.

The universities at which several fellowships are offered and the fellowships to be granted at each are as follows: Columbia University, one each in chemistry and chemical engineering; Massachusetts Institute of Technology, one each in chemistry, chemical engineering, and physics; University of Chicago, one each in chemistry and physics; University of Michigan, one each in chemistry and chemical engineering; University of Wisconsin, one each in chemistry and chemical engineering.

One fellowship in chemistry is being offered at each of the following: California Institute of Technology, Cornell University, Harvard University, Johns Hopkins University, Northwestern University, Ohio State University, Pennsylvania State College, Princeton University, Purdue University, Stanford University, University of California, University of Illinois, University of Minnesota, University of Pennsylvania, University of Virginia, and Yale University.

## "ELECTRICAL THINKER"

Dr. G. D. McCann, '34, in a talk given before the American Institute of Electrical Engineers at their annual meeting in Pittsburgh, told members that Westinghouse Electric and Manufacturing Company's engineers have developed an "electrical thinker" to solve mechanical stress problems heretofore too complex for mathematical analysis. Dr. McCann said the apparatus had been evolved to meet problems in the design and construction of turbo-generator units for production of electricity.

Dr. McCann pointed out that "with the newly developed analyzer, engineers can determine the worst condition under which the apparatus might operate and carry out the design in line with such data."

Designed primarily to meet problems in the construction of power station equipment, the analyzer can be used "for almost any mechanical stress problem," Dr. McCann said.

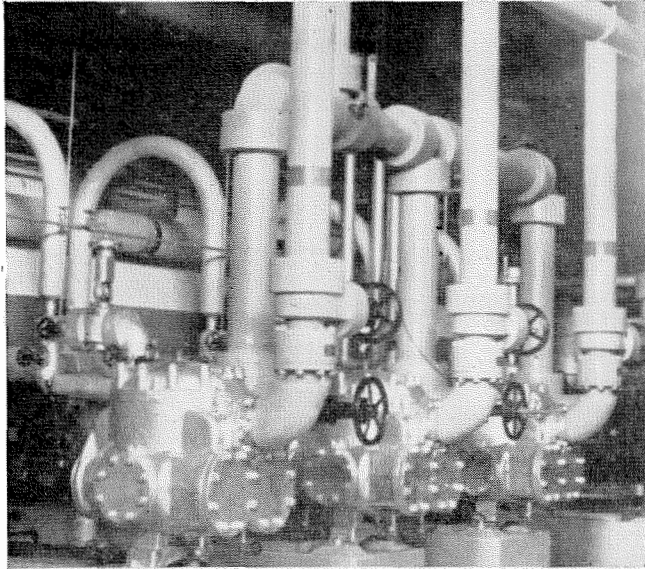
## DR. MILLIKAN WINS ARTHUR NOBLE MEDAL

IN recognition of his contributions to the city of Pasadena, Dr. Robert A. Millikan was nominated for the Arthur Noble medal by a committee appointed by the Board of City Directors to select Pasadena's most useful citizen for 1944. The medal will be formally presented at the annual banquet of the Chamber of Commerce.

This honor was bestowed on Dr. Millikan by the

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committee for his contributions to the war effort through the medium of the California Institute of Technology. The war program of Caltech has been outstanding in the United States, for it was here that rockets, termed as "the" weapon of the second world war, were developed and produced.

Also cited by the committee was Dr. Millikan's part in the development of synthetic quinine and other scientific experiments used in the war effort which cannot be divulged at this time.

In 1923 Dr. Millikan won the Nobel Prize for Physics because of his important discoveries in the composition of matter.

Other important medals won by Dr. Millikan include the Comstock, Faraday, Edison, Franklin, and Roosevelt Memorial Medals, the decoration of Commander of the French Legion of Honor, and the Chinese Order of the Jade.

## CALTECH CLUB OF NEW YORK MEETS

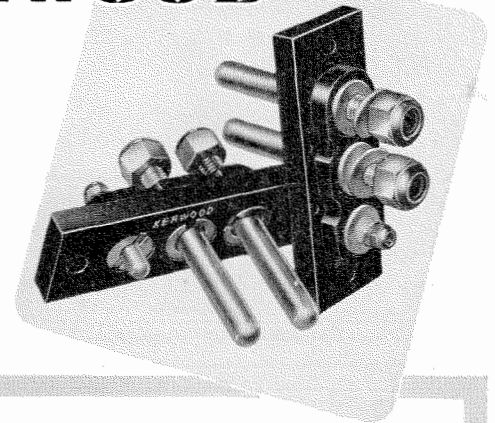
With 27 members present, the Caltech Club of New York held its second meeting of the year at the Hotel Holley on January 31.

Clyde Keith, the chapter's vice-president, gave a very interesting talk on high-speed motion pictures, illustrated by actual high-speed studies taken at photographing speeds up to 6000 frames per second. The pictures included the popular milk drop formation study, written up in "Life" magazine, the flight of birds and insects, and the more practical study of telephone and selecting gear.

The Caltech Club was particularly glad to welcome several new members in attendance and hopes that future meetings will be attended by more of the new men in that area.

*Evan A. Johnson*  
Secretary-Treasurer

## KERWOOD



Here is another Kerwood specialty. Pictured is the #121 external power receptacle built to work with the #117 external power plug assembly introduced in this magazine last month. Again strength and stability, coupled with excellence of engineering design provide a receptacle with a 1000 ampere rating. The external power receptacle, #121, with its mating unit, the #117 power plug, is truly a typical example of Kerwood's ability to present hard working, job-doing, exact equipment designed in every way to meet the toughest war-time conditions. Kerwood Specialty's engineering design staff can help you. Write for further information to:

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## ATHLETICS

By H. Z. MUSSELMAN,  
Director of Physical Education

**M**EETING the strongest teams in southern California, Caltech's basketball quintet finished the season with a record of eight wins and 11 losses. However, this record does not present a true picture of the season, for all of the games were thrillers. Three games were lost by three points or less, and even in the three games lost by 10 points or more the Engineers threatened all the way.

The strong Pepperdine five copped the league championship, dropping only a game to U.C.L.A. in six starts. U.C.L.A., in second place, split with Pepperdine, won two from Caltech and dropped a pair to Oxy by one point margins. Caltech and Oxy tied for third with only two wins each.

Tech's dual victories over Oxy were the best games on the Engineer schedule. In the first game the Beavers held a slight lead early in the second half, but were forced to come from behind in the closing minutes, with Jack Cardall's free throw breaking the tie to give Caltech a 44-43 victory. In the return match, which Tech won 53-45, the first half was a repetition of the first game. Both teams matched each other basket for basket, never being separated by more than three points, and with the half again ending in a tie. However, the Engineers took a quick lead in the second period and were never headed. This was Tech's first double victory over the Tigers since 1924.

In another feature game U.C.L.A. nosed out Caltech 29-28. A tight Beaver defense held the Bruins, who had a 21-11 half-time advantage, to four free throws and two field goals in the second half—both field goals coming in the closing minutes of play.

In non-league games, Tech took a pair from Redlands, won one each from Vultee and Los Alamitos Naval Air Station, split with Camp Ross and Santa Ana Army Air Base, dropped two each to U.S.C. and March Field, and one to San Diego Naval Training Center.

John Pryor, who played at guard or center, led the team in scoring. Transferring from the "B" squad in mid-season, Pryor rolled up the impressive record of 124 points in 10 games.

The season's results are:

Caltech .....	84	Vultee .....	36
U.S.C. ....	46	Caltech .....	39
Santa Ana A.A.B. ....	55	Caltech .....	52
Caltech .....	47	Camp Ross .....	43
Camp Ross .....	58	Caltech .....	51
U.C.L.A. ....	42	Caltech .....	37
Caltech .....	55	Los Alamitos N.A.S. ....	54
Caltech .....	44	Occidental .....	43
March Field .....	57	Caltech .....	44
Pepperdine .....	52	Caltech .....	44
Caltech .....	55	Redlands .....	31
U.S.C. ....	42	Caltech .....	36
Pepperdine .....	45	Caltech .....	33
Caltech .....	42	Redlands .....	25
March Field .....	70	Caltech .....	68
U.C.L.A. ....	29	Caltech .....	28
Caltech .....	53	Santa Ana A.A.B. ....	37
Caltech .....	53	Occidental .....	45
San Diego N.T.C. ....	69	Caltech .....	52

With the opening of the new semester on March 5, five spring sports will swing into action. Five schools—Occidental, Pepperdine, U.S.C., U.C.L.A., and Caltech—will compete in league play, with at least three of the schools having teams in all five sports.

Spring schedules are as follows:

### BASEBALL

Sat. March 31.....	Caltech.....	at Pepperdine
Sat. April 7.....	U.S.C.....	at Caltech

Sat. April 14.....	To be arranged	
Sat. April 21.....	Occidental.....	at Caltech
Sat. April 28.....	Caltech.....	at U.S.C.
Sat. May 5.....	Caltech.....	at U.C.L.A.
Sat. May 12.....	Pepperdine.....	at Caltech
Sat. May 19.....	U.C.L.A.....	at Caltech
Sat. May 26.....	Caltech.....	at San Diego State (tentative)
Sat. June 2.....	Caltech.....	at Occidental

### GOLF

Fri. April 20.....	U.S.C.....	at Caltech
Fri. April 27.....	Caltech.....	at U.C.L.A.
Fri. May 4.....	To be arranged	
Fri. May 11.....	U.C.L.A.....	at Caltech
Fri. May 18.....	Caltech.....	at U.S.C.
Sat. May 26.....	Intercollegiate Tournament.....	at U.S.C.
Sat. June 2.....	Intercollegiate Tournament.....	at U.S.C.

### SWIMMING

Fri. April 6.....	U.C.L.A.....	at Caltech
Fri. April 13.....	Caltech.....	at U.S.C.
Fri. April 20.....	Occidental.....	at Caltech
Fri. April 27.....	U.S.C.....	at Caltech
Fri. May 4.....	To be arranged	
Tue. May 8.....	Caltech.....	at Occidental
Sat. May 12.....	Caltech.....	at U.C.L.A.
Sat. May 19.....	Intercollegiate Meet.....	at U.C.L.A.

### TENNIS

Sat. March 17.....	U.C.L.A.....	at Caltech
Sat. March 24.....	U.S.C.....	at Caltech
Sat. March 31.....	To be arranged	
Sat. April 7.....	Pepperdine.....	at Caltech
Sat. April 14.....	Caltech.....	at U.C.L.A.
Sat. April 31.....	Caltech.....	at U.S.C.
Sat. April 28.....	Occidental.....	at Caltech
Sat. May 5.....	To be arranged	
Tue. May 8.....	Caltech.....	at Pepperdine
Sat. May 12.....	Caltech.....	at Occidental
Fri. May 18.....	Intercollegiate Tournament.....	at U.C.L.A.
Sat. May 19.....	Intercollegiate Tournament.....	at U.C.L.A.

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## TRACK

Sat. March 24.....	Combined J.C.'s.....	at Caltech
Sat. March 31.....	Caltech-Pomona-U.C.L.A.....	at U.C.L.A.
Sat. April 7.....	College Relays.....	at Compton
Sat. April 14.....	Caltech-U.S.C.-Pomona.....	at Caltech
Sat. April 21.....	A.A.U. Meet.....	at Coliseum
Sat. April 28.....	Caltech.....	at Occidental
Sat. May 5.....	Conference Meet.....	at Caltech
Sat. May 12.....	Caltech-U.S.C.-U.C.L.A.- California.....	at Coliseum
Sat. May 19.....	Fresno Relays.....	at Fresno
Sat. May 26.....	Coliseum Invitational.....	at Coliseum
Sat. June 2.....	Modesto Relays.....	at Modesto
Sat. June 9.....	Pasadena Games.....	at Caltech

## ULTRA-HIGH FREQUENCY CONCEPTS

**D**R. SIMON RAMO, who is research engineer at General Electric's Schenectady research laboratory, has written a short book, "Introduction to Microwaves," which will soon be published by McGraw-Hill Book Company. The publication of a number of articles on ultra-high-frequency concepts by Dr. Ramo created such an extensive demand for reprints and lectures that he decided there was considerable need for a book giving a qualitative treatment of electrical concepts that are important at high frequencies.

The book gives a completely nonmathematical description of the physical basis for all microwave phenomena, covering transit-time electronics, velocity modulation, radiation, transmission lines, resonant cavities, and wave guides. Dr. Ramo correlates microwaves

with lower frequency electricity in simple language and with a large number of explanatory diagrams.

Dr. Ramo received his Ph.D. degree at California Institute of Technology in 1936, where he did high voltage research. Immediately afterward he started work at General Electric Company. In 1941 he was honored by Eta Kappa Nu, electrical engineering fraternity, as "one of the most outstanding young electrical engineers in America." At General Electric Dr. Ramo continued his association with academic work by organizing the advanced course there in high-frequency engineering. Although he is no longer actively in charge, he is still a frequent lecturer. His current work is in ultra-high-frequency generation, modulation, and reception, and in electronoptical studies. Dr. Ramo holds a number of patents in electron microscopy and has been granted over a dozen patents in the high-frequency field.

## CALTECH PROFESSOR RECEIVES HONOR

Dr. Chester Stock, professor of paleontology at the California Institute of Technology since 1926, was elected president of the Paleontological Society of America at its annual meeting held in New York in December. Dr. Stock has been serving also as a member of the Council of the Geological Society of America, to which office he was elected for a three-year term.

*Engineering and Science* has had the privilege of presenting several articles by Professor Stock. His work in the field of paleontology has been outstanding.

## PERSONALS

**I**T WILL be helpful if readers will send personal items concerning themselves and others to the Alumni Office. Great interest has been shown in these columns, but more information is required. Do not hesitate to send in facts about yourself, such as change of position or location, present job, technical accomplishments, etc. Please help.

—Editor.

### 1922

GEORGE C. HENNY is on the faculty of Temple University Medical School, Philadelphia, Pa., as the head of the department of physics.

WILLIAM D. POTTER is a hydraulic engineer for the Soil Conservation Service, Washington, D. C. Mr. Potter lives at Alexandria, Va.

### 1924

LIEUTENANT-COLONEL EDWARD D. LOWNES, U.S.A., Engineers Corps, was in southern California recently on a 30-day leave. He has been stationed in Alaska, North British Columbia, and the Yukon territory, in charge of construction projects.

### 1925

ALFRED L. ERICKSON holds the position of vice-president of J. T. Thorpe, Incorporated, Los Angeles, Calif.

JOHN TEMPLETON is superintendent of the Brandy Forging Company, Los Angeles, Calif.

### 1926

JOHN E. MICHELMORE was acting Exalted Ruler of the Glendale Elks Lodge No. 1289 when they paid honor to the men in the armed services at a special program on January 29.

BRUCE H. MILLS is packing house manager for Rancho Sespe, Fillmore, Calif.

WALLACE C. PENFIELD holds the position of public works director of the County of Santa Barbara, Calif.

MAJOR ORRIN H. BARNES and Miss

Shelia Jane Hiler were married January 14 at Post Chapel, A.P.O. 956.

### 1927

LEE W. RALSTON is director, division of trade and industrial education, Los Angeles County Schools.

ARCHIE P. KING is associated with Bell Telephone Laboratories, New York, as a research engineer.

ROBERT M. MOORE of the Western Electric Company, formerly stationed at San Diego, has been transferred to the New York office.

### 1928

MARTIN E. NORDBERG is employed by Corning Glass Works, Corning, N. Y., as a research chemist.

MAJOR ARTHUR P. BANTA is chief of the War Planning Section, stationed in Oahu. He finds his work most interesting and enjoys the climate of the islands.

RALPH M. WATSON holds the position of chief engineer, centrifugal division of the Worthington Pump and Machinery Corporation, Harrison, N. J.

S. B. BIDDLE, JR., is a field engineer for Leeds and Northrup Company, San Francisco, Calif.

### 1929

KNOWLTON R. BIRGE holds the position of senior electrical engineer for the Municipal Light and Power Company, Pasadena, Calif.

WILLIAM W. BOOTH is on the faculty of Claremont High School, Claremont, Calif., as a mathematics teacher.

### 1930

DR. JOSEPH URMSTON, one of the nation's foremost orchid hybridizers, has arranged to exhibit rare orchids, never before shown to the public, at the spring flower show, Brookside Park, Pasadena. The orchid fancier is an Army corporal in the Medical Corps, attached to a hospital at Ogden, Utah. The entry was arranged during Corporal Urmston's furlough.

LIEUTENANT-COMMANDER FREDERICK T. SWIFT is in the radio material office of the Navy Yard in Honolulu.

DR. JOHN M. PEARSON is physicist and manager of the Susquehanna Pipe Line Company, Philadelphia, Pa.

### 1931

LELAND D. PRATT is superintendent of Kelco Company in San Diego, Calif.

### 1932

WILLIAM PICKERING was made chairman of the electronics division of the Los Angeles section, American Institute of Electrical Engineers.

DR. JOHN A. LEERMAKERS is technical assistant to the director of research, Eastman Kodak Company, Rochester, N. Y.

RAY T. OELSCHLAGER is with Douglas Aircraft Company, Incorporated, Santa Monica, Calif., in the capacity of a stress analyst.

HOWARD W. FINNEY holds the position of senior accountant for Lybrand, Ross Brothers and Montgomery, Los Angeles, Calif.

### 1933

ROBERT L. SMALLMAN was made vice-chairman of the electronics division of the Los Angeles section, American Institute of Electrical Engineers.

D. DWIGHT TAYLOR announces the establishment of an office for engineering calculations and consultation in physics in Pasadena, Calif.

LIEUTENANT-COLONEL JOHN C. MONNING, formerly employed as a structural engineer for the city of Los Angeles, recently was awarded the Legion of Merit for outstanding services in clearing the Port of Piombino, Italy, in order that it could be used by the Fifth Army. Lieutenant-Colonel Monning has been overseas since January, 1943.

### 1934

GUY O. MILLER is a design supervisor for the Phillips Petroleum Company, Bartlesville, Okla.

### 1935

DR. PAUL GENATCHE, assistant to the general manager of the Mexican Light and Power Company, Ltd., Mexico City, for the past six years, is back in southern California with his family.