

# THE MONTH AT CALTECH

## Registration

**F**INAL REGISTRATION figures for this year put the Caltech student body at 1023—611 undergraduates and 412 grad students—which is 47 under last year's total.

Undergraduate enrollment includes 138 seniors, 139 juniors, 135 sophomores and 199 freshmen. This isn't the biggest freshman class ever, but it's just one man away from it. The freshman class in 1942 had 200 men in it.

Final tally on the number of freshmen signed up for the Institute's new Air Force R. O. T. C. program is 154—sophomores, 20.

## Betasyamine

**T**HE CALIFORNIA INSTITUTE Research Foundation in Pasadena, and the International Minerals and Chemical Corporation of Chicago made a joint announcement last month of a new therapeutic combination which is currently undergoing extensive investigation to determine the extent of its potential benefits in heart and degenerative diseases.

The new combination consists of betaine and glycoyamine, two materials related to the amino acids. These materials have long been known to biochemists, but their

use in combination is new to medicine. The first preliminary reports on betaine and glycoyamine were published in the October issue of the *Annals of Western Medicine and Surgery*.

The published papers cover the use of betaine-glycoyamine therapy in 46 heart cases. Clinical observations by the authors indicate that two-thirds of the patients benefited in varying degrees. In some of the cases all other forms of heart therapy were withdrawn, and in others betaine and glycoyamine were used in combination with digitalis and other traditional medication. In most cases the reported results were clinical or subjective—i.e., the patients told the clinicians that they felt better and could lead more active lives. One of the major goals of further investigation is to measure the results of betaine-glycoyamine therapy by objective methods.

Except for occasional gastro-intestinal disturbances, the clinicians reported that use of the betaine-glycoyamine combination disclosed no evidence of toxicity or other disturbing side effects.

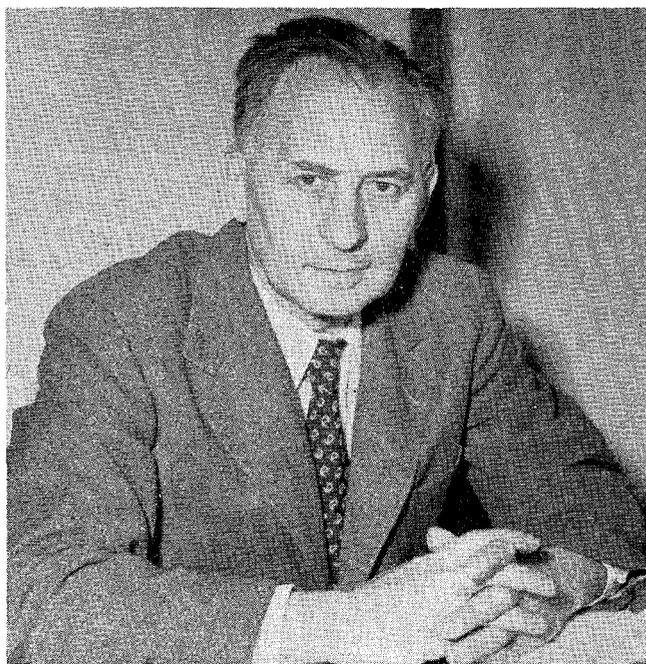
The first of the four published reports outlines the basic biochemical background which encouraged the preliminary clinical investigations. This paper was prepared by Henry Borsook, M.D., Professor of Biochemistry at Caltech, and his brother, Dr. M. E. Borsook, a Los Angeles physician and surgeon, who is also a member of the Research Division of the Leo N. Levi Hospital at Hot Springs, Arkansas.

The biochemical basis of clinical interest in betaine-glycoyamine therapy rests on the hypothesis that the combination, when taken orally, leads to the formation of phospho-creatine, which is recognized as the main reservoir of immediately available energy in muscular, nerve and glandular tissues of the body.

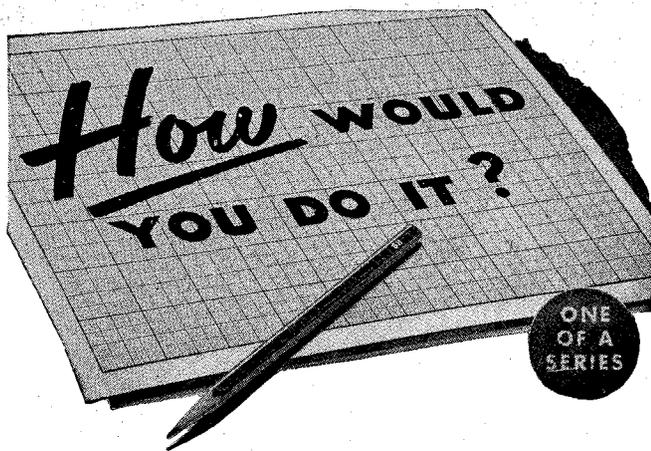
The three other papers report on the clinical results obtained when betaine and glycoyamine were used in the 46 heart cases. Authors of these papers are: Drs. M. E. Borsook and Henry Borsook; Drs. Vernon van Zandt, a Los Angeles heart specialist, and Henry Borsook; and Captain Ashton C. Graybiel (MC-USN), Director of Research of the U. S. Naval School of Aviation Medicine, and his associate, Lt. Charles A. Patterson (MC-USN), at Pensacola, Florida.

The Office of Naval Research assisted in the support of the biochemical investigation at the California Institute of Technology and also at Pensacola. The Amino Products Division of the International Minerals and Chemical Corporation contributed to the clinical investigations and also supplied some of the material used.

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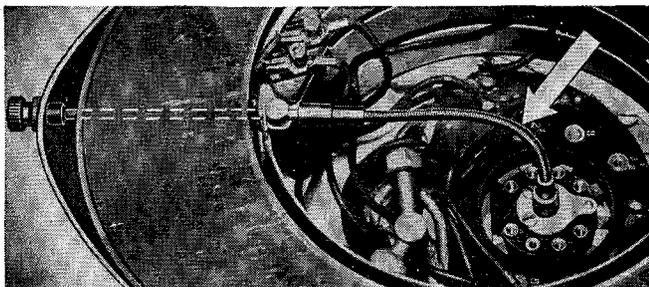


*Dr. Henry Borsook, Professor of Biochemistry, reports on the use of betaine-glycoyamine therapy in heart cases.*



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## THE MONTH . . . CONTINUED

To permit further investigation on the broad scope indicated by the preliminary reports, International Minerals and Chemical Corporation is currently preparing adequate research quantities of betaine and glycoyamine in various combined dosage forms. For possible future use, the company has selected the trade name "Betasyamine" for the combined dosage forms.

In devoting virtually his entire October issue to the four papers on betaine and glycoyamine, Dr. Edmund T. Remmen, editor of the *Annals of Western Medicine and Surgery*, said:

"Use of the combination is new to medicine. The papers no doubt will stimulate investigational interest on a wide scale . . . Additional studies by these and other investigators are currently in progress in the cardiac field, in poliomyelitis, arthritis, and other conditions.

. . . For the present, the combination of betaine and glycoyamine is available for investigational use only."

Dr. Paul D. V. Manning, Vice President in charge of research for International Minerals and Chemical Corporation, said that his company will limit the distribution of the available research quantities of betaine and glycoyamine to qualified investigators in the field of heart and other degenerative diseases. He cautioned:

"The most we can say for the results to date is that betaine and glycoyamine present very interesting biochemical substances for further medical research.

"In view of these results and the serious nature of the illnesses involved, for the present the use of betaine and glycoyamine must be limited to investigators who are willing to use the medication under controlled conditions. Because heart patients obtain an improved sense of well being and feel like they can do more work, controls must be exercised to see that they do not overdo.

"International Minerals and Chemical Corporation is supporting various research projects by supplying materials and, in some instances, funds for further research in connection with selected institutions.

"However, because we feel that the therapeutic potential of this material should be investigated as quickly as possible, International Minerals and Chemical Corporation will also make research quantities available to other qualified investigators at nominal cost.

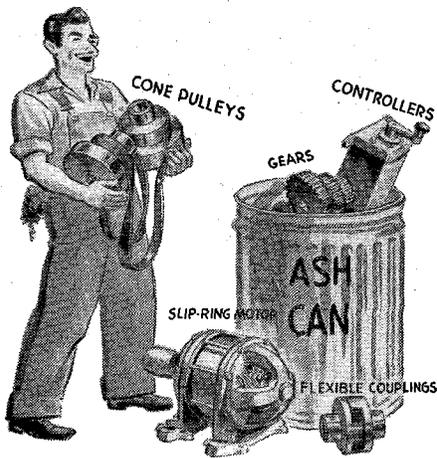
"Above all, it should be stressed that this material will not be made available at this time for general clinical use through traditional drug distribution channels."

### New Moon?

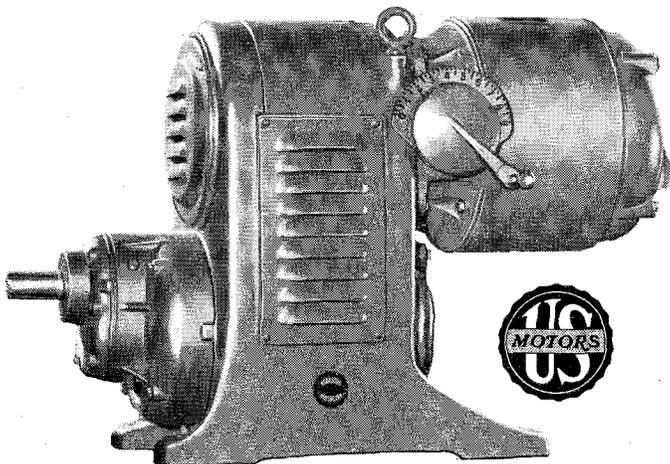
LATE IN SEPTEMBER Dr. Seth Nicholson, staff member of the Mount Wilson and Palomar Observatories, photographed a celestial object with the 100-inch telescope on Mount Wilson which is believed to be the twelfth moon of Jupiter. The discovery was announced last

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# "Good bye contraptions"



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## THE MONTH . . . CONTINUED

month only after a number of additional photographs revealed that the object was definitely moving with Jupiter. However, until it has been observed in the vicinity of Jupiter for a full month, or until its orbit can be computed, it can't definitely be called a satellite.

If it turns out to be the twelfth moon of Jupiter, Dr. Nicholson will rate right along with Galileo as the only astronomer to have discovered four of Jupiter's satellites. Galileo found the first four in 1610 with his two-inch telescope. Dr. Nicholson found one in 1914, and two more in 1938.

Jupiter, the largest of the nine planets, has a volume about 1300 times greater than that of the earth. Its mass, however, is only about 318 times as great, because its density is far less than the earth's. It has a mean diameter of 87,000 miles—11 times that of the earth. Right now it is close to its nearest approach to the earth for the year, rising as the sun sets and remaining visible throughout the night—a mere 366 million miles from the earth.

The object discovered at this distance by Dr. Nicholson is only about 15 miles in diameter, and very faint—as were the three satellites Dr. Nicholson discovered previously. Its photographic magnitude is 19, indicating that it is about one one-hundredth as bright as the faintest object visible to the unaided eye.

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