

Bill for Increased Subsistence Supported by Illinois Tech Vets

The Illinois Tech Vets Club, an independent veterans organization, at its first meeting of the semester last Friday, decided to support the Rogers Bill for increased subsistence allowance. This bill (H.R. 870) calls for subsistence rates of \$100 monthly for single vets, \$125 for vets with dependents, and \$10 additional monthly for each child.

In order to secure the passage of this bill the Vets Club is cooperating with The Intercollegiate Veterans Coordinating Committee. This committee is composed of 55 college veterans clubs throughout the east that have united to give a stronger voice to the student veterans. So that complete support can be given to this project the Vets Club will distribute petitions and questionnaires which all veteran students should secure. The questionnaires are so worded as to give a complete break down of the vets, expenses which will give more weight to the petitions. The petitions and questionnaires may be secured at the booth in the lobby of the Student Union.

Bill McDonough, a member of the club, spoke on the organization of a committee to represent students on probation because of pre-war grades. Mr. Hand and Mr. Deakins, representatives of the Veterans Administration here at IIT, were present at the meeting and stressed the importance of organizations to veterans. A tutoring service for disabled vets at Vaughn General Hospital was discussed at this meeting. It was decided that volunteering for this service would only commit a member to one or two evenings out of a semester to help his buddies.

NAVAL RESERVE

(Continued from page 1)

ing the cruise.

5. Opportunity to apply for transfer from the Inactive Reserve to an Organized Reserve Division or Air Squadron.

6. Permits membership in the Naval Reserve without leaving home or school.

It was pointed out that men enrolled in the Inactive Reserve will also have the opportunity, if they desire, to apply for transfer to one of the Organized Reserve Divisions or Air Squadrons where they can attend instruction meetings of two hours duration one evening a week, for which they will receive a day's pay. Rates of pay are correspondingly higher in the advanced ratings being \$3.33 for a petty officer third class.

The announcement emphasized that membership in the new Naval Reserve will not change a man's normal living conditions; it allows him to maintain a rate in the Navy and build up time for credit towards increased pay, yet live the life of a civilian. He may decide to attend meetings once a week, or he may decide to simply be a member of the Inactive Reserve without attending the meetings. Summer cruises with pay, uniforms and liberty stops in foreign ports are entirely optional. In no case, in time of peace, will a man be ordered to active duty without his consent.

According to the announcement the number enrolled in the Inactive Reserve up to December 31, 1946, totaled 295,618. Men will continue to be enrolled at a rapid rate until the quota is filled.

Tau Beta Pi Elects Officers

Tau Beta Pi elected the remainder of its officers Friday. Donald Asire, president, was elected at the end of the last term and presided at the meeting. New officers are: Vice President, Jake Dumelle; recording secretary, Felix Rosenthal; corresponding secretary, Bill Gauthier; and cataloguer, Hugh Christian.

The fraternity endorsed the suggestion to have the Recorder's Office list the students' overall average and rank in class and department on his transcript. In the past, several worthy IIT students, who were not elected to honorary fraternities because of lack of activities, have been overlooked in consideration for scholarships. It was felt that listing the student's rank and average on his transcript would aid in the evaluation of his value by interested parties. The suggestion will be submitted to the Faculty Council.

Sophomores, ME's Are Most Prolific Groups as Day Enrollment Hits Peak

To settle once and for all (for this semester anyway) the many arguments amongst students about the various departments and classes, the complete analysis of the registration data compiled by the Registrar's Office for this term are listed below. It will be seen that the sophomores and MEs are the most numerous while the seniors and Metallurgicals are the scarcest. The following figures are for day school enrollment only.

Term	8	7	6	5	4	3	2	1	Total
ARCH.	9	4	41	11	36	24	31	0	156
BIOL.	4	3	7	5	6	7	11	4	47
C.E.	5	8	18	12	29	14	36	10	132
Chem.	30	15	43	38	46	45	76	45	336
C.E.	2	7	9	7	12	14	18	6	75
E.E.	16	13	27	17	36	27	51	21	208
F.P.E.	60	64	83	88	124	102	137	68	726
HOME EC.	7	6	15	9	4	6	24	0	71
I.E.	5	1	3	3	4	4	5	3	28
L&L	12	14	25	23	26	6	25	13	149
M.E.	1	1	3	0	6	0	2	1	14
M.E.	106	78	110	100	111	97	149	78	829
MET. ENG.	0	1	1	0	1	0	1	0	4
MATH.	1	2	2	3	4	2	1	2	17
PHYS.	2	1	6	5	6	5	20	10	55
P.S.S.	1	2	3	5	6	2	6	1	26
PSY.	2	0	1	0	1	2	1	0	7
Total	263	220	397	329	458	357	594	262	2880

Graduate day students numbered 144, of whom 31 are attending IIT for the first time. Evening school graduate students number 853, while undergraduate students in the evening division total 2921. The overall totals give the day school a total enrollment of 3024 students, while the total evening school totals 3274 students. The grand total of students attending IIT in both the day and evening divisions is 6298. The above figures are based on totals made available on February 17.

Math Club to Hear Dr. Ford
Dr. Lester R. Ford, chairman of the mathematics department, will speak on the subject, "Some Remarkable Theorems About Moving Figures," at the Math Club meeting this Friday.

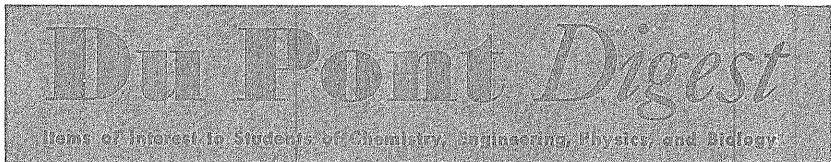
Milton Searl, program director, after a discussion of the talk with Dr. Ford, said that it will be of special interest to everyone interested in engineering or mathematics. The material will be presented so that it may be understood by students in their sophomore year, so no one need fear that it will be too involved, continued Searl. The bulletin board in Main will announce the time and place of the meeting.

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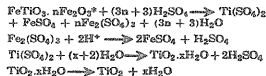
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The "Whitest of White" Pigments from Black Ore

It is a strange fact that the ninth most prevalent element in the earth's crust should have been regarded as "rare" for over a hundred years after its discovery in 1791. But that is the story of titanium, actually more abundant than zinc, copper, lead, tin, and nickel combined. One of the factors that have kept titanium from being better known is the difficulty of handling some of its compounds chemically.

If, as a student, you were to look up the equations for the manufacture of titanium oxide pigment, you might find something like this:

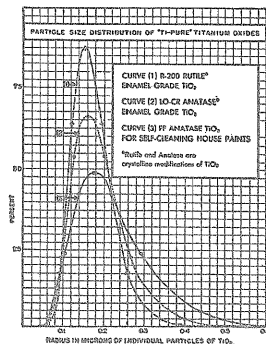


*—The exact composition of ilmenite varies with the source of the ore.

From these equations, the manufacture of the "whitest of white" pigments from black ilmenite ore appears to be chemically simple and straightforward. However, the processing required to obtain industrial titanium oxide of sufficient brightness, hiding power and fineness is more complicated than one would anticipate.

Controlling a Metastable System

The final product must have a particle size averaging 0.2 microns in radius and varying between 0.1 and 0.5 microns.



To attain this end in a metastable system that is ready to go in the wrong direction at any time requires exceedingly rigid control conditions throughout.

The essential steps in the operation are: 1) The careful solubilization of ilmenite in concentrated sulfuric acid to avoid hydrolysis. 2) The complete reduction of any ferric iron to facilitate purification of the solution, with removal of any unconverted residue and colloidal slimes. 3) Crystallization of 70 per cent of the iron as $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ —a critical operation in which temperature must be kept low and wild seed crystals avoided. 4) Hydrolysis around 105-109° C.—the most important step of all—because the initial particle size and pigment properties of the final product depend on concentration, temperature, time of hydrolysis, intensity of stirring, and presence of foreign materials. In this operation it is not unusual to talk in terms of parts per million, rather than the usual analytical accuracy of 0.01-0.02 per cent. 5) Varying salt treatment of the precipitate, depending on the impurities. 6) Calcination between 900-1000° C. to obtain the desired particle size. 7) Grinding to give the proper aggregate size. 8) Treatment of the dried pigment in various ways depending on end use; e.g., in the automotive, rubber, ceramics, paper, linoleum, printing, or other fields.

Wide Diversity of Research Problems

Long and patient research was necessary to develop the manufacturing techniques now used. Some of the problems demanded technical skill of the highest order from the colloid chemist, the physical chemist, the analyst, the crystallographer, the physicist, and other specially trained men. A wide variety of instruments, such as the petrographic microscope, the electron microscope, x-ray diffraction unit, ultra-centrifuge, and spectrophotometer were used in



Ilmenite (left). Titanium Dioxide (right). Apparatus in the background is a rotary filter.

this work. Finally the metallurgist, the chemical engineer, the mechanical engineer, and the industrial engineer had to design equipment to handle this extremely corrosive system economically.

The manufacture of titanium pigments is another example of the problems that constantly challenge chemists, engineers and other specialists.

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