

ATTEND
OPEN
HOUSE

THE ILLINI CERAMIST

DON'T FORGET
THE
PIG ROAST

VOL. I. — No. I

CHAMPAIGN-URBANA, ILLINOIS

APRIL 1, 1941

CURRENT PROBLEMS TO BE DISCUSSED AT BALTIMORE

ENGINEERING COLLEGE OPENS ITS DOORS FOR OPEN HOUSE

Ceramic Dept. Offers . . .

On April 4 and 5, the students of the Department of Ceramic Engineering at the University of Illinois will exhibit to the thousands of open house guests the which, why, and how of ceramic chemistry and ceramic engineering. In the research laboratories and in the kiln laboratory, the visitors will ask hundreds of questions of the student attendants who will explain and demonstrate the apparatus and equipment pertinent to the various ceramic industrial fields.

In the kiln laboratory, a miniature hollow-ware tile plant will be in full operation producing hollow-ware from the raw crude clay. The clay will be ground, screened, mixed with water, and extruded into a hollow-ware tile. Also, in the kiln lab, a typical brick kiln will burn ware at temperatures exceeding 2000 degree Fahrenheit.

In the enamel lab, souvenir ash trays will be porcelain enameled in various colors. The complete process of porcelain enameling will be demonstrated from pickling the sheet metal to stenciling the designs on finished pieces. Enamel equipment exhibited will include the Hunter Multipurpose Refractometer, G. E. thickness gauge, Binks spray booth, and electric furnaces that melt the enamel at 1550 degrees Fahrenheit.

A new glaze dipping mechanism will be exhibited in the pottery laboratory. Clay vases which are cast from a clay slip mixture will also be prepared in this lab.

Besides the processes and equipment that are to be exhibited, the ceramic museums will be open to show at a glance some of the products of the wide, billion dollar field of ceramics.

Seniors Invade Plants . . .

Traveling through Indiana and up to Chicago the senior ceramists of the University of Illinois fought their way through important industrial plants, bombarded questions at the technical men, and carried home a bookful of stuff not found in textbooks. Thirty-nine seniors and three faculty members toured from Nov. 5 to Nov. 9.

In Indiana, the group first visited the Brazil Hollow Block and Tile Company and the Arketex Ceramic Corporation in Brazil. In Muncie,

Thousands Attend . . .

The house is open. Come on in and we'll show you around.

Now over here, ladies and gentlemen, is the miniature brick plant, and over here is—. Once again, after a two-year lapse, the engineering college opens up all its doors on April 4 and 5 and allows the hordes of knowledge-thirsty humanity to meet and investigate the wonders of engineering science and its various sub-phases.

The College of Engineering lifts the latches and puts out the "Welcome" rug for this biennial occasion for which thousands of visitors migrate to the campus north of Green Street to see and hear what makes part of the world go round.

Engineering open house always does provide enjoyable entertainment, for there are many attracting features, such as preparing and firing porcelain enamel monogrammed ash trays, the man-made lightning, the crushing of concrete pillars, and production of hollow-ware tile in a miniature plant.

After the two-day madcap of side-shows and their banners, motors and their efficiencies, and volts in their ohms, the pre-supposed students will jive to the sweet strains of Charlie Agnew's music, as the Open House Jamboree terminates at the Illini Union Ballroom with the Hep-cats swinging it out at the Slip-Stick Shuffle, the all-engineering dance.

Better Accommodations For The Department

In 1905 this Department began its duties in two rooms in the basement of the Natural History Building. In 1910, it moved into a two-story building which is now part of the Mechanical Engineering group. In 1912, the present Kiln House was built. In 1916, the Ceramics Building was completed and two floors and part of the basement were taken over for the use of the ceramists. Since then, the Department has slowly expanded into the space vacated by other departments which were temporarily housed in the building. For example, the concrete research was formerly conducted in the north basement but was transferred to the Testing Materials Laboratory upon its completion.

During the past year, the Natural Resources Building was completed and the Geological Survey was removed from the third floor of the Ceramics Building to its quarters in the new structure.

The space released by the Survey will be shared by the Departments of Ceramic Engineering and Mining and Metallurgical Engineering. For a long time, there has been an urgent need for additional space to accommodate the expanding activities of the Department of Ceramic Engineering and this arrangement is gratefully welcomed.

Some of the rooms have been occupied; others will be put into service as quickly as necessary changes can be made.

First Issue Of New "Ceramist"

By Prof. C. W. Parmelee

The Student Branch of the American Ceramic Society at the University of Illinois is an active organization, which, its friends may modestly say, is the envy of other similar departmental groups here and elsewhere. The members of the Staff and the Alumni of the Department share in the pride and satisfaction the S. B. A. C. S. members enjoy in setting the pace. It is a good sign of a virile and deep faith in the great and important industry whose service they are preparing to enter. Their friends are confident that they



PROF. C. W. PARMELEE

will carry into their professional careers the enthusiasm, energy and initiative which will bring success and happiness to themselves and prosperity to the industry.

The issuance of the printed record of the varied activities of the S. B. A. C. S. was initiated by them in 1937, when an attractive booklet, entitled "The Illini Ceramist," first appeared. It was welcomed with universal approval and in 1938, '39, and '40 other similar issues followed. Proceeding on the assumption that a large circle of readers eagerly awaits more news, the S. B. A. C. S. yields to the just claims of its public and, through the generous support of its advertisers and subscribers, presents for your edification this new format under the old title. We all hope that this undertaking wins the cordial approval and support necessary to justify subsequent issues.

In the limits of this modest sheet, the editors and other contributors endeavor to present to the readers a brief catalogue of the numerous activities of the Staff and Students. Naturally, it is not complete as the space available limits the items to a selected few of the many affairs. However, even a cursory glance will make evident that there is more to be told. The Editors and friends of this enterprise hope that you will read these items to your entertainment and profit. They hope that you will achieve a better acquaintance with those who are participating in making the S. B. A. C. S. at Illinois and the Department of Ceramic Engineering a successful cooperative undertaking.

Lively Schedule Planned For Visitors At The Convention

Faculty To Present Papers

Last year it was Toronto; this year it is Baltimore where the annual meeting of the American Ceramic Society is held. From March 30 to April 3, the conventionists will present, discuss, and deliberate on the important subjects confronting the ceramic industry today. The Lord Baltimore Hotel will act as hosts for the technical and professional members of the society.

The lively schedule will be separated into divisions, namely, enamels, glass, white wares, art, and materials and equipment.

Members of the faculty at the University of Illinois will present important topics pertaining to recent research carried on in the department. Professor A. I. Andrews and Dr. B. W. King, Jr., will give two papers jointly: "The Solubility of Zirconia in Soda-Borosilicate Glasses" and "The Development of Opacity in Zirconia Enamels." "Iron Oxide in Enamel Glass as Dissolved from the Metal Base" will be presented. (Continued on Page 7)

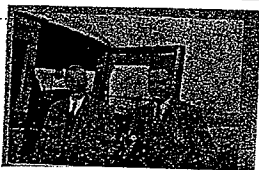
John Ceramist Joins The Army

Yes sir, Mr. John P. Ceramist will be in khaki by June. He'll soon be marching and camping instead of dancing and coking. And John will have a cute little bugle blow him out of his bed for his eight o'clock instead of a ringing alarm clock. It will be hard on John Ceramist for they cut no classes in the army, but then again the girl friend doesn't have to be home by 10:30 P. M. either.

The scraps of cannon fodder enrolled in the advanced R.O.T.C. will leave for their year's training upon graduation in June. After University President Arthur Cutts Willard presents the white scroll tied with ribbon on the last day of senior week in June, thirteen seniors of the Ceramics Department will throw off the cap and gown and don the military garb. Those men in the senior division of the R.O.T.C. are: Tom Huber, Ray Isenson, John Jones, Robert Kimpel, Frank Klane, Duane Lillie, Jim Nelson, Terry Newkirk, Joe Smith and Al Thornton.

Keramos Initiated

Keramos terminated its activities for the 1940-41 semester with its semi-annual initiation banquet. New members initiated were William Zschoche, Robert Giles, Robert Pelz, William Mohr, Mitchell Miller, Edward Thomas, and honorary member Mr. Hugo Filippi of the Illinois Brick Co. The highlight of the banquet was a short address by Mr. Filippi on "Your Future in Ceramics." This talk was followed by the election of the following new officers: Robert Kimpel, President; Bill Fitzpatrick, Vice-president; Ray Devorkin, Secretary-Treasurer; and Bill Zschoche, Herald. The evening's formalities ended with a theater party.



... TRIP MANAGERS

Ball Bros. Company and Owens Illinois Glass Company played host to the inspectors. The group visited the Kokomo Sanitary Pottery Company at Kokomo and the Square D Company at Peru. Last stop in Indiana (Continued on Page 2)

THE ILLINI CERAMIST

Published by the Student Branch of the American Ceramic Society at the University of Illinois.

Managing Editor and Bus. Manager
Otto Novy

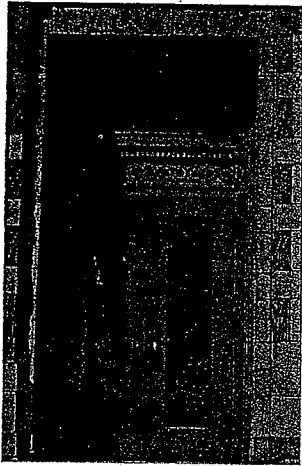
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Prof. C. W. Parmelee, J. A. Pask



WHERE CERAMISTS ENTER

This is the first issue of the Illini Ceramist published as a student newspaper. Heretofore, the Ceramist has been printed as an annual publication to serve possibly as a souvenir of college memories to those men that go forth with their degree to conquer the problems of the industry.

Now, the Illini Ceramist serves as the departmental organ of ceramic publications at the University of Illinois. This paper will go to 3000 readers—to Illinois graduates and other leading men in the ceramic industry, to those attending the current convention at Baltimore, to the future ceramists in the Illinois High schools, to the students in our department here at Illinois, and to the visitors at Engineering Open House.

The editor wishes to acknowledge with gratitude the helpful counsel and suggestions afforded by the faculty and the cooperation of the Student Branch of the American Ceramic Society. It is the hope that this first issue will be only a small part of the journalistic efforts to be published in the student ceramic newspaper at the University of Illinois.

Slip-Stick Shuffle

Hello Joe?—this is Bill—Yea, Bill—remember?—Listen, Joe—I just bought the tickets—what tickets?—to the Slip-Stick Shuffle, ya dope—sure, it's gonna be swell—Charlie Agnew and his band are gonna be down to play when?—April 5—yea, that's on Saturday night—sure, it'll finish the Open House with a bang—you're comin', aren't ya, Joe?—what's that?—oh, it'll be held at the Union Building Ballroom—Oh, sure—I took care of everything—car—suits cleaned—tickets—what?—what did you say, Joe?—Oh, my gosh—the dates—I knew I forgot something—I'll see what I can do—just leave it to me—So long, Joe.

Substitute For Valendar Clay Is Explored In Lab

The possibility of developing a blend of American clays or even synthesizing a clay or blend as a substitute for German Valendar Clay is the problem confronting Robert Kimpel, senior in ceramics, in his research problem for thesis work in ceramic chemistry. Mr. Kimpel is investigating various domestic clays in attempting to find a commercially satisfactory blend for the porcelain enamel industry.

Since the outbreak of war across the Atlantic, the American enameleer's supply of German Valendar Clay has again been cut off. So again we are having to use American substitutes for Valendar, and it is of highest probability that the dependence upon foreign enameling clay is at an end.

Some American clays have been found to be quite suitable for porcelain enameling. True, nearly all of them are not as suitable as Valendar, but the possibility of developing a blend of domestic clays or even synthesizing a clay or blend is very encouraging. Kimpel believes that research has developed such knowledge of an enameling clay's requirements that a clay may be "made to order."

Kimpel finds that fishscaling is one of the most conspicuous defects occurring with some domestic clays and this defect seems to be controlled by the amount of bubbles within the glass, and that additions of organic material to a mill addition using a clear clay almost directly determines a possible control of bubble quantity.

Organic material, then, seems an important factor to be considered, as are particle size and mineral composition, in stepping toward a synthetic clay. Kimpel is working from two extremes: using a ball clay having high organic material and small particle size, and using a kaolin of little organic material and large particle size, the mineral composition and other physical properties being similar to those of Valendar Clay.

Fellowships Aid Research

To aid in the research in the ceramic field, fellowships are granted to those worthy men to help develop better competitive products and solve the present problems of the ceramic industry.

The fellowships or scholarships are granted by various concerns throughout the country. Dr. B. W. King, Jr., is a special research assistant on a cooperative fellowship granted by Titanium Alloy Manufacturing Company. Dr. King is working with enamels, presenting his latest work at the American Ceramic Society meeting in Baltimore. Mr. Van Derck Frechette from Ottawa, Canada, is the holder of University of Illinois Graduate School Fellowship. Mr. G. H. Zinc is doing special work on enamel ware, the work being sponsored by the Kitchen Utensils Council Fellowship. Holder of the research assistant fellowship with the University of Illinois Engineering Experiment Station is Howard R. Swift. Harold C. Johnson is the present possessor of the Edward Orton Foundation Scholarship. Mr. M. K. Blanchard is carrying on enamel research for Ferro Enamel Corporation Fellowship.

Structural Clay Products Characterize Region . . .

Professor Hursh Explains The Field Of Ceramic Materials

The architecture of a region should grow out of its soil and characterize the geographical and climatic conditions of the area. In the central states, where timber resources are lacking or have been exhausted, nature has provided extensive deposits of excellent clay materials. In a region such as this, a building constructed of burned clay products should be as characteristic as would a log cabin in the North Woods. No other structural material, unless it might be rorn stalks, can so well typify the natural resources and geographical features.

The impression of solidity and permanence in the appearance of clay products is well-merited by the properties of the material. Resistant to weather and fire, these products of the earth offer a variety in color and texture that can be provided by no other materials. Utility and aesthetic value are combined in a structural material that withstands the ravages of time and remains as new when others are old.

The hazards of fire and the tremendous annual losses of property and life that it causes are increasingly important considerations in the public mind. The demand for safe and fireproof construction for homes, factories, and public buildings calls for the use of incombustible and

fire-resistant building materials. The requirement is adequately met by the products of clay, which, tested and matured by fire, will not be destroyed by fire.

The ancient art of brick-making has become a modern industry with the technologic and engineering aspects that characterize manufacturing operations in present-day civilization. Research has contributed to the knowledge of the properties and characteristics of the raw materials; engineering developments in mechanical equipment and in processing have modernized plant operation. Improvement in products, variety in color and texture, and economies in production by more efficient methods have placed the industry on a new basis. Traditional practices and the knowledge handed down from generation to generation of the brickmakers are no longer adequate for the operation of a modern plant. The engineer, with his basic knowledge of the chemistry and physics of the materials and processes and his ability to apply this and other engineering principles to the processes of manufacture, has become an important factor in the industry. The need and demand for his services will continue to grow. The structural clay products industry will offer increasing opportunities for the ceramic engineer.

New Methods Of Glaze Slip Control Developed

Many of the defects ordinarily encountered in manufacture of glazed ware can be reduced to a minimum by proper control of the glaze slip at the time of application. Much work has been done to develop suitable methods to accomplish this end.

For the past two years an investigation of glaze slips has been sponsored by the Edward Orton Jr. Ceramic Foundation, at the Ceramic Engineering Department of the University of Illinois. Mr. H. Johnson, holder of the fellowship, has directed the work until the present time toward the development of a method of evaluating glaze slip properties which will allow the direct application of the results of academic investigation to industrial practices. The apparatus for this method is simple to operate, and is adequate for research laboratory and plant use.

The limits of this new method have not been fully investigated, but the data obtained thus far indicates that this method will be suitable for studying the effects of such variables as clay content, kind of clay, electrolytes, ageing, water content, and grinding, which are associated with glaze slip preparation.

By using this new method it is possible to designate glaze slip condition by a single number which can be directly correlated with a factor indicating the condition of the body. When these two values are known, it is possible to prescribe the proper glaze consistency for satisfactory application on any practical ceramic body. This phase of the work includes the study of an extremely wide variety of bodies varying from zero to over forty per cent porosity. The data obtained is correlated with the results of fired glaze trials. This method has been used within the Ceramic Department under conditions simulating practical application and proved to be very satisfactory.

The new method, referred to in this article, has not been made public as yet; but it will be when it has received sufficient investigation to definitely establish it as a valuable tool in studying and controlling glaze slip.

Bloating Produces Tight Joints

Adding small amounts of fluxes to the fireclay to produce bloating of the brick is the method that Mr. L. E. Puntney is using in his research work for his senior thesis in developing tight joints in the ladle linings for molten steel. The bloating of the brick when the molten steel is poured will give this tight joint condition and will eliminate the difficulty of skull formation.

Molten steel is tapped into ladles at a temperature somewhere near 2900 degrees Fahrenheit and the refractories which line the ladle must be able to withstand the erosion, corrosion, thermal shock, slag attack, and other service conditions without appreciable loss in weight, for the eroded brick would be a source of impurity in the steel. At the present time, the brick which give the best results in service are those which have a P. C. E. value below the teeming temperature of the steel. These brick become somewhat plastic on the surface forming a tough skin and closing all joints tightly. This permits metal ingress at the joints and formation of skulls which cannot be removed without destruction of the ladle lining.

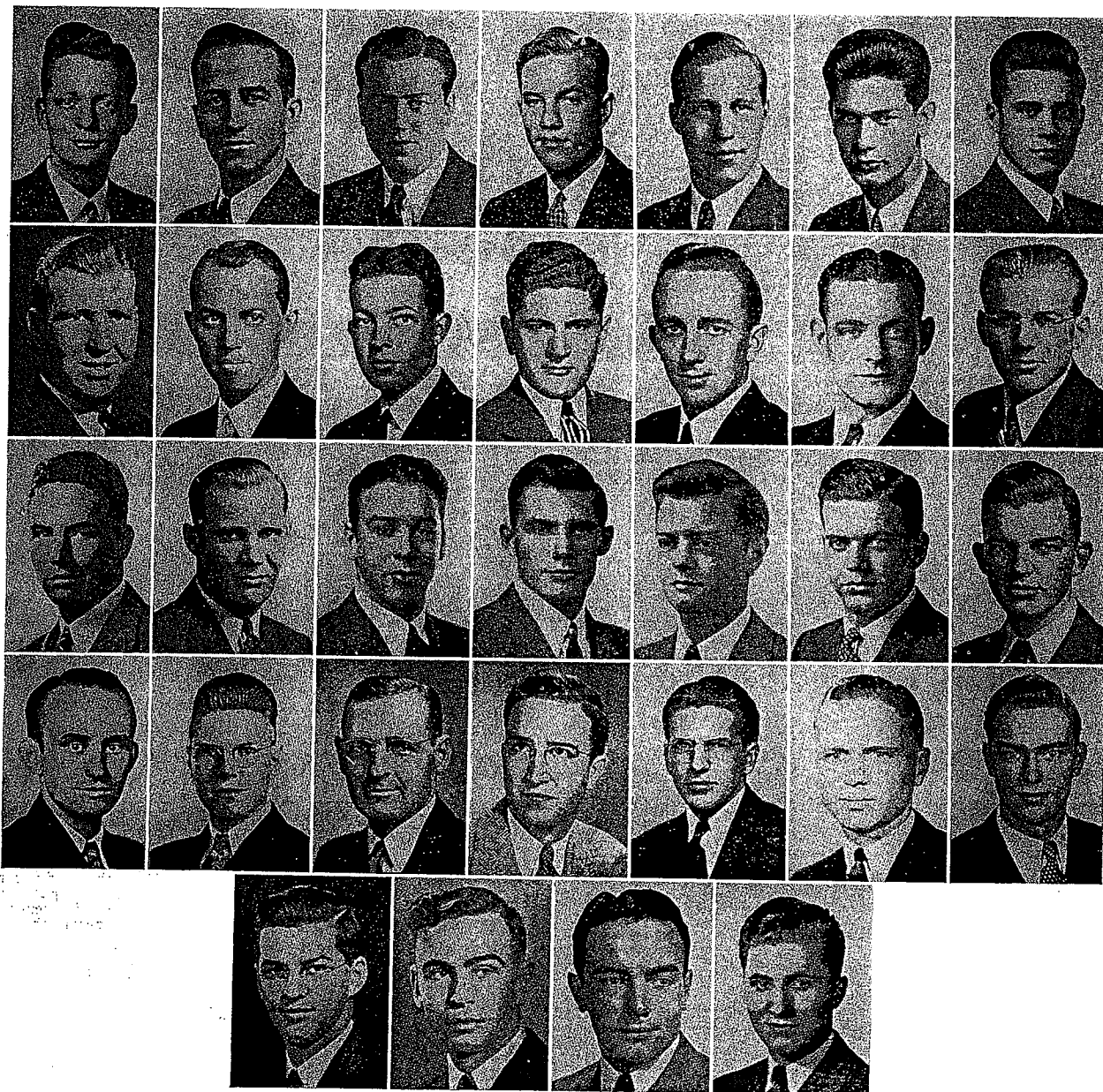
Seniors Invade Plants . . .

(Continued from Page 1)
was the Harbison-Walker Refractories Company at East Chicago, Indiana.

In Chicago, the seniors stepped off the busses into the Chicagoan Hotel where accommodations had previously been arranged. Around the Chicago area, the group surveyed the Chicago Vitreous Enamel Products Company of Cicero, Illinois; the American Stoye Company at Harvey, Illinois, and Illinois Brick Company of Chicago.

The itinerants were greeted and cordially received by the personnel of all plants. The boys were very much impressed by the automatic spray system at the Arketex plant in Brazil and the American Stoye Company at Harvey; by the Ball Brothers versatile vastness, and their appropriate souvenirs; by the cleanliness at Chicago Vit, and by the demonstration of French pottery at Kokomo.

GRADUATING SENIORS, CLASS OF 1941



TOP ROW—Paul F. Drake, Winchester, Ill.; Robert E. Whitfield, Sullivan, Ill.; Charles L. Van Etten, Albion, Ill.; Edward R. Buckholz, Melvin, Ill.; J. Lawrence Stoneburner, Rocky River, Ohio; Joseph F. Smith, Auburn, Ill.; James A. Nelson, Bureau, Ill.

SECOND ROW—John D. Palmer, Benton, Ill.; Donovan P. Brown, Paris, Ill.; R. Allen Thornton, Jr., Danville, Ill.; Raymond A. Isenson, Chicago, Ill.; Jack M. Lepp, Decatur, Ill.; Lawrence E. Puntney, Mt. Erie, Ill.; Otto R. Novy, Berwyn, Ill.

THIRD ROW—Terry F. Newkirk, Decatur, Ill.; Burnett D. Bruce, Berwyn, Ill.; Arthur L. Friedberg, Yorkville, Ill.; John W. Jones, Oakland, Ill.; Raymond C. Bertram, Bristol, Ill.; Robert F. Kimpel, Urbana, Ill.; R. R. Ruthenberg, Berwyn, Ill.

FOURTH ROW—William D. Fitzpatrick, Lincoln, Ill.; William C. Mohr, Hillsdale, Ill.; Floyd Bailey, Toledo, Ohio; Duane L. Lillie, Rockford, Ill.; William H. Fellows, Troy, N. Y.; William H. Zschoche, Athens, Ill.; Robert R. Rough, Mt. Vernon, Ill.

BOTTOM ROW—Frank S. Klane, Chicago, Ill.; Harley R. Pinnow, Orangeville, Ill.; Thomas N. Huber, Highland, Ill.; Albert L. Lillienthal, Chicago, Ill.

H. R. SWIFT INVESTIGATES ZINC FLASH

Manufacturers of face brick have long known that the addition of zinc to their fires in the latter stage of burning with careful control of the temperature and atmospheric conditions results in a product with a dark green surface which is quite desirable. These bricks command a premium price in proportion to the cost of production. However, difficulties are met in the productions of the zinc-green; some procedures produce greens in one kiln and not in the one next to it or with one shale and not another. Very careful control is necessary and then the results are quite variable.

The green color has long been thought to be due to the formation of a green colored mineral, although the theory has been proposed that the green color is due to a blue reduced zone covered with a thin yellow glass. The possibility that the green may be due to the reduced condition of the iron has been suggested.

An investigation was undertaken to study the factors influencing the formation of the green color and to determine the origin of the color. A laboratory procedure was developed which produces results comparable to those produced in commercial

conditions, after which the variables influencing the color, such as heating and cooling rates, atmospheric conditions, composition of body, and amount of zinc were studied.

In subsequent experiments, the effect of the carbon monoxide-carbon dioxide ratio on the color of a shale briquet was determined.

S. B. A. C. S. SCHEDULES

The Student Branch of the American Ceramic Society has had a very active and eventful schedule during the year. Two distinguished speakers, Mr. V. W. Boeker of the Richards Brick Company of Edwardsville, Illinois, who spoke to the student branch on "Problems of the Engineer," and Mr. R. S. Bradley, Director of Research of the A. P. Green Company of Mexico, Missouri, who spoke about "Refractories" were the principal features of the last two meetings.

Last semester, members of the student branch were busy in preparation of the Ruckus, the annual ceramic dance on January 10. (See page 6 or 7). After the porcelain Enamel Institute Forum on October 16, students concluded a tour through the Ceramic Building for the visitors and participants at the Forum.

Ferro Grants...

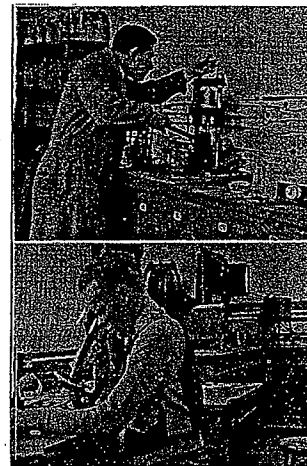
The Ferro Enamel Fellowship was established under the administration of the graduate school of the University of Illinois in September 1937 by the Ferro Enamel Corporation of Cleveland, Ohio. The investigation work made possible by this grant has been directed by Professor A. I. Andrews, and has had as its aim a better understanding of the fundamental physical and chemical characteristics which are imparted to porcelain enamels by the soluble salts present in their mill liquors.

To the present, the work has been concerned with a study of the various soluble salts, particularly in regard to their behaviors in bringing about the enamel defect of tearing. The first part of this investigation, completed in 1940 by Dr. T. L. Hurst, included a careful study of the various soluble salts, and led to a theory of the mechanics and prevention of tearing. The second stage of the study, now in progress, has been concerned with and advancement of the understanding of other characteristics of soluble salts in enamel mill liquors. The present holder of this fellowship is M. K. Blanchard.

LOOK INTO THIS...

From microscopic (low) to ultra-microscopic (high) is the range of magnifications attainable with equipment now available in the Ceramic Microscopy Laboratory at Illinois both for classroom use and for research. In the expansion of the Department a preparation room of materials for microscopic study is planned.

The laboratory, of which Mr. J. A. Pask is in charge, has student and research petrographic microscopes. One of the research microscopes has a paraboloid condenser (dark field)



... PASK PONDERES
... SWIFT LOOKS IN

and a cardioid condenser (ultra-microscopic) with special objectives and sample holders for their proper use. This equipment extends the range of investigational abilities to particles of colloidal size, as would be needed for special studies of clays and opacifiers in glasses of all kinds, including porcelain enamels and glazes.

Particle size determinations are facilitated by use of mechanical stages, a filar micrometer, and a Euscope which is a device for throwing the field of view into a screen thus enabling the study of particles without excessive fatigue of the eyes.

An attachment for reflected light and use of a special objective corrected for no cover glass allows study of polished sections by reflected light. This technique is finding great favor in the examination of refractories, certain phases of porcelain enamels and cement clinkers.

A photomicrographic camera enables the recording of any section (Continued on Page 8)

Research Conducted

Seven students are carrying on research work in glass technology in the Ceramic Department under the direction of Dr. A. E. Badger. Dealing with the various problems confronting the glass industry, these men use the small laboratory furnaces to make trial melts of glass, as well as the furnaces in the kiln laboratory. Those engaged in this glass research are Messrs. Broun, Johnson, Pinnow, Rodriguez, Rough, Ruthenberg, and Swift.

During the past year, research has included: Methods of testing resistance to thermal shock were investigated in an attempt to obtain a reliable method; testing the electrical conductivity of various glasses at temperatures below the softening range of glass; the fluorescence of glasses as a means of studying glass structure and the crystallization of fluorine compounds from various glass; the effects of ultra-violet light and sunlight on the color of some commercial glasses; the durability of glass or resistance to attack of various solutions; refractories for use in contact with molten glass.

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MAG-NO-SPALL.....Chemically Bonded Fused Mag. Oxide

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CUPOLA PATCH.....Fused Aluminum Oxide
KELLUNDITE.....Fused Aluminum Oxide
MAGNA LINE.....Fused Magnesium Oxide
DI-MUL.....Fused Mullite
EROSSET.....Aluminum Silicate

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PIG ROAST PLANNED . . . !



... MAC AT WORK

The annual Ceramic Pig Roast will be held Thursday night, May 8, in the new Illini Union Building. The Pig Roast is a departmental banquet, which affords an opportunity for the students and the faculty to get together for an informal evening of fun and good fellowship. At this pleasant gathering, the faculty is "roasted" by the senior students; the faculty are given the privilege and "joy" of listening to a description of themselves as the senior students see them. It is usually the custom for the seniors to "dig up" some scandal which is true or untrue, and to watch the faculty "roast" as the accusations and implications fly. For the "ribbing" they receive, the instructors are given an opportunity to retaliate as best they can.

Favors at the banquet are glazed pigs made by the students in the ceramic department under the direction of Mr. W. B. McDevitt, potter and laboratory technician. Last year's souvenir pigs are shown in the picture below. This year, the pigs will be in the form of a vase.

Co-chairmen of the Pig Roast are H. R. Pinow and J. A. Nelson.



Alumni Stationed . . .

Bartow, W. T.—American Lava Corp., Chattanooga, Tenn.

Barzdukas, A. C.—Globe Stove Corp., Kokomo, Ind.

Boeker, J. R.—Owens-Corning Fiberglass Co., Newark, Ohio.

Breeze, L. K.—Eng. Exp. Station, Ohio State University.

Briscoe, J. W.—Potter Coal and Materials Co., Indianapolis, Ind.

Cichowski, V. J.—Ferro Enamel Corp., Cleveland, Ohio.

Cosby, A. B.—Owens-Illinois Glass Co., Huntington, W. Va.

Dayton, J. D.—American Vitriified Products Co., Barberton, Ohio.

Eyerly, G. B.—(Fellowship) Department of Ceramic Engineering, University of Washington, Seattle, Washington.

Greenberg, J. S.—Attending University of Northwestern.

Hanks, C. F.—Westinghouse Electric and Manufacturing Co., East Pittsburgh, Penn.

Hutton, P. K.—Corps of Engineers, Fort Logan, Colorado.

Johnson, H. C.—(Fellowship Orton Foundation) Department of Ceramic Engineering, University of Illinois, Urbana, Illinois.

Karrer, A. S.—American Vitriified Products Co., Brazil, Ind.

Killmar, H. M.—Atlantic Terra Cotta Co., Perth Amboy, N. J.

Krivec, J. J.—Tennessee Enamel Manufacturing Co., Nashville, Tenn.

Lenz, V. W.—Owens-Corning Fiberglass, Newark, Ohio.

Luster, V.—Detroit-Michigan Stove Co., Detroit, Mich.

Lobdell, E. M.—Ball Brothers Co., Muncie, Ind.

McCreight, D. O.—Harbison-Walker Refractories Co., Pittsburgh, Pa.

Morris, J. L.—Commercial Decal Products, Inc., Mt. Vernon, N. Y.

Nutt, A. W.—Harbison-Walker Refractories Co., E. Chicago, Ind.

Oesterle, R. A.—Roesch Enamel Range Co., Belleville, Ill.

Ottosen, A. C.—Imperial Glass

Students Use Thirty Kilns And Furnaces

A short walk through the kiln house of the Ceramic Department would disclose that there are five kilns of major size, seven small gas furnaces, and about six crucible furnaces. Of the five larger kilns, two use oil as fuel, two use gas, and the other is fired by coal.

The oil pumping kilns are 5½ ft. x 4½ ft. x 5 ft. and 3 ft. x 3 ft. x 5 ft. in size and cost from \$12 to \$16 for a 24-hour burn. They are started with gas then change to oil after the fire boxes are well heated.

The gas fired kilns are 3 ft. x 3 ft. x 3 ft. and 4 ft. x 3½ ft. x 4½ ft. in size. The smaller of the kilns costs \$9 to \$14 per burn while the larger costs \$12 to \$15 per burn. The coal fired kiln is 3 foot square by 5 feet deep and costs \$5 to \$7 per burn.

Besides these larger kilns, there are several electrical furnaces available for the firing of enamels and glass.

Co., Bellaire, Ohio.

Rawlinson, J. R.—Anchor-Hocking Glass Corp., Lancaster, Ohio.

Roberts, A. R.—1208 Eastern Parkway, Brooklyn, N. Y.

Swift, H. R.—(Research Graduate Assistant) Department of Ceramic Engineering, University of Illinois, Urbana, Illinois.

Thieman, W. F.—Owens-Illinois Glass Co., Streator, Ill.

Thorson, M. S.—Illinois Clay Products Co., Joliet, Ill.

Veale, J. H.—General Refractories Co., Baltimore, Md.

Webber, J. J.—General Refractories Co., Baltimore, Md.

West, H. F.—Owens-Illinois Glass Co., Streator, Ill.

Wolfensperger, R. E.—Bethlehem Steel Co., Bethlehem, Pa.

Roaming Thru The Lab

It has been said by members of other departments in the engineering college that the fellows in the Ceramic Department experience the most intimate associations that are found on the engineering campus. What is the explanation for this? Probably one of the prime factors that aids in developing the friendly relationship is the laboratory work which is required of all students in ceramics.

These work, research work, and laboratory classes are always under full sway in the lab. Both graduate and undergraduate students work at all times, night and day. Let us assume that we are visiting the ceramic lab one day in the middle of January, 1941. The laboratory class we are visiting is a class in Ceramic 17—an enamel course.

There is Frank Klane working on his special problem. (Each student is required to work on a special problem in addition to his regular laboratory requirements.) Frank once worked in a copper plating factory and he has an idea about doing away with the ground coat for sheet steel enamels. Upon inquiring about his problem, we are given this answer by Frank.

"Solid copper is very easy to enamel in that almost any enamel will fit the metal and stick with good adherence. No ground coat of any sort is required. On the other hand, cobalt oxide must be present in the composition of an enamel before it will adhere satisfactorily to sheet iron or steel. This necessitates that

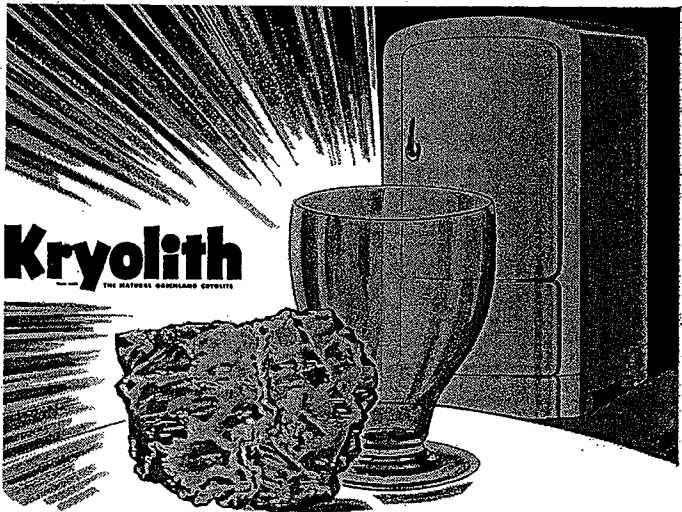
an enamel of the desired color be applied on top of this ground coat. The result is that one extra coat of enamel (the ground coat) must be applied and the resulting enamel coat would not be as elastic as it would be if it were thinner. It would be more apt to chip. The object of my problem is to investigate the possibility of enameling copper plated steel with the idea of substituting the copper plate for the sheet steel ground coat."

Upon thanking Frank for his explanation, we wander into the furnace room where we find Paul Drake busily firing some test pieces. Paul, like Klane, is working on a special problem that is his own idea. While he was working in an enamel plant in St. Louis last summer, the efficiency of the plant was decreased by a number of rejects caused by moisture marking. Paul notices us and motions us over to some samples that have just been fired.

"See those marks. They seem to be combinations of shore lines, tears, and sulfate scums. I believe that I have the answer to the problem now." Paul seems to have gained a great deal of personal satisfaction out of getting good results. We notice that all the students seem to be taking a great deal of interest in their work. There is Ed Buchholz working with Nephelene Syenite on sheet-steel ground coats. He seems to be getting results.

As we stroll back into the main laboratory, our attention is caught

(Continued on Page 6)



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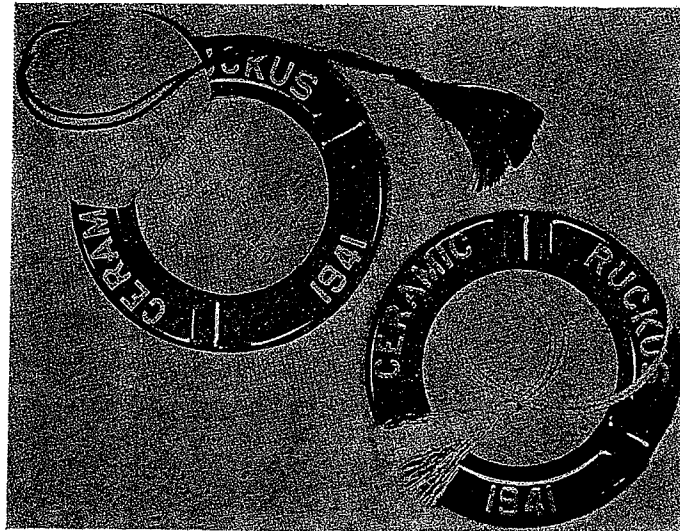
Dr. C. W. Parmelee, head of the Department of Ceramic Engineering at the University of Illinois, presented a lecture to the Chicago Academy of Science on Feb. 2. The subject about which Dr. Parmelee spoke was "Ceramic—Illinois' Most Ancient and Indispensable Industry." Dr. Parmelee presented graphs which illustrated how the ceramic industries in Illinois compared to ceramic industries in other states, how the ceramic industry compared to other major industries, and how the ceramic industry was subdivided in the state of Illinois. The graphs also showed the relative market of the brick industry.

Graduates Employed

All but one or two of the 37 students receiving bachelor degrees in June from the University of Illinois are now engaged in ceramic work. More inquiries for men came in during the year than men were available, Prof. Parmelee reports.

An analysis of the distribution of graduates of the Department as of March, 1939, according to the type of employment, shows the following: Employed in the ceramic industry, 70%; employed in technical pursuits not strictly ceramic, 12%; employed in non-technical pursuits, 10%; unknown or unemployed, 8%.

CERAMISTS DANCE . . .



The Ceramic Ruckus which was presented by the Student Branch of the American Ceramic Society on the University of Illinois campus has the reputation of having the most unique programs of any dance on the campus. The ash trays enameled with university blue and orange were the basis of the programs given to those attending the dance Jan. 10. The programs consisted of a blue ash tray with Ceramic Ruckus 1941 fired on the rim which was applied by the use of a screen process. Into the well of the ash tray was fitted the circular filler containing the material pertinent to the dance, R. R.

—Photo Courtesy Industrial Publications, Inc. Rough and W. H. Whitfield, seniors, were in charge of the programs. D. P. Brown and B. D. Bruce were at the head of the Arrangements Committee, and R. A. Thornton, President of the Society acted as general chairman.

The dance is also outstanding in that it is the only departmental dance at the University. The programs for the occasion are made entirely by the student body. Former programs include an enameled job on a copper base, glass cloth, miniature drain tile with a clear glaze, circular enameled programs bearing an outline of a brick kiln, and the present ash tray.

Thru The Lab . . .

(Continued from Page 5)

by several announcements on the bulletin board and our overcoming curiosity forces us to read them all. One announcement states that all chemical reagent bottles not in use—should be turned in to the store-room immediately. Another paper ominously announces that reports on Experiment 10 are due the following Tuesday. The last paper is really of interest. It is a list of all the special problems that are being investigated by the seniors. Here are a few of them:

1. Use of molybdenum oxide in sheet iron ground coats.
2. Study of sag resistance of various types of sheet iron.
3. Study of antimony free super-opaque cover enamels.
4. Use of nepheline syenite in sheet iron ground coat.
5. Study of hydrogen in steel.

That mythical trip gives an idea of what is going on in the enamel lab but that is by no means all the laboratory work that is done by the undergraduates. At the present time the juniors are hard at work in the laboratories for their glaze course. In this course special problems are assigned as in the enamel lab course. Likewise, as in the enamels course, a number of other experiments are also to be performed. Here is an idea of what the special problems in glazes deal with.

1. Study of production of copper red glazes.
2. Study and adaption of different colors in glazes for standard pottery bodies.
3. Development of crystalline and aventurine glazes.
4. Development of standard University of Illinois orange and blue overglaze decoration.
5. Development of glazes for high talc electric insulator bodies.

All these special problems furnish the students with a wonderful opportunity to earn how to conduct an investigation of their own. The results attained in these problems will never revolutionize the ceramic industry but the benefit derived by the students is one of the most educational factors given by the Ceramic Department at the University of Illinois. And it must also be remembered that the time spent in the laboratory offers the opportunity for making with fellow ceramists intimate relationships that will never be forgotten.

Seniors Design Special Equipment

Under the able guidance of Professor R. K. Hursh, the senior class of Ceramic Engineers have applied themselves in a struggle to learn all the angles and technical details encountered in designing equipment pertinent to the production of ceramic ware.

Last semester they were given the problem of designing a continuous tunnel dryer capable of handling 42,000 brick per day and a round down-draft brick kiln. Thus far this semester, the engineers have designed a hollow-ware tile die and a lubricated brick die. The rest of the year will be devoted to the study of plant layout.

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Factors Affecting Color Investigated

With the ever increasing use of a wide variety of colors, not only for beautifying and decorating kitchen ware, table tops, and the large number of appliances used in the average home, and more recently, in the extensive application of colors to the ever widening field of porcelain enameling, the desirability for a complete understanding of the fundamental factors influencing and controlling the development of color in porcelain enamels has tremendously increased.

At the present time, the various factors such as fineness of grinding, relative size of the coloring agent, and the composition of the color stain are being studied in regard to the comparative effect on the resulting color characteristics. A few of the facilities of the ceramic laboratories which have been invaluable in this work would include: a Premier colloid mill, extensive photomicrographic equipment, a Sharples supercentrifuge, which is capable of producing forces thousands of times greater than that of gravity, (which is very necessary in separating fine particles from a suspension), and most important of all, a spectrophotometric photometer, which gives a continuous recorded graphical representation of the actual colors.

Mr. R. L. Cook, Instructor in Ceramics at the University of Illinois, recently investigated this material as thesis work for a Masters degree.

Stevens: "Whenever I'm in the dumps I get myself a new hat."

Grove: "I was wondering where you got them."

"Everybody is crazy over me," said the inmate of the first floor of the insane asylum.

THEY KEEP THINGS GOING . . .



Here they are. Those unsung individuals who act as papas and mama to the footloose ceramists who wander about the building with clay on their shoes and slide rules in hand.

"Mac" Mr. W. B. McDevitt) who informs the boys just how much kerosene they can have in which to dip their hand-made bricks, superintends the storeroom and demonstrates laboratory and commercial procedures.

"Vannie" (Miss Vannie L. Shiery)

has the "lowdown" on everyone that even entered the office. Vannie, who has charge of the departmental office and library, quiets the little "clay termites" in the library and reprimands the boys on their contrasting clothes.

Hughie (Mr. J. H. Cain) initiates the sophomores to firing the kilns. He surely makes it "hot" for the boys. Hughie plays "Jack-of-all-Trades" in the building, tending to all necessary incidental work in the kiln laboratory.

SOPHS AND JUNIORS WORK WITH CLAY . . .

Under the direction of P. M. Corbett, assistant in Ceramic Engineering, the sophomore and junior classes are investigating ceramic raw materials and clay bodies as the essential basic work in ceramic engineering.

The sophomores enrolled in the course, "Ceramic Raw Materials," are operating a complete test of clays, including sieve analysis, bonding strength, slaking properties, P. C. E. test (pyrometric cone equivalent), and draw trials. The effect of

anti-plastics on two ball clays as determined by thermal shock, fired and dry strength, and other tests was a recent experiment conducted by the sophomores. Prevention of scumming of trial briquettes was also experimented by the sophomores.

The juniors in their course, "Ceramic Bodies," are studying casting properties of various bodies. Each student spends half of the semester finding the complete physical properties of some designated, special ceramic body.

Destroy 10,000 Pans In Enamel Research

Doomed to destruction are 10,000 perfectly good porcelain enamel pans, which will be destroyed at the University of Illinois Ceramic Engineering department in order that American housewives may have better kitchenware. The pans will be damaged beyond usefulness in research to set up standards for this type of product and to improve it.

Through the Enamel Utensil Manufacturers' council, manufacturers of enamelware are uniting in financing the research at the University, and in providing the 10,000 pans needed. All have agreed to adopt the standards to be set up.

George Zink, University of Illinois ceramic engineering graduate in 1938, has been giving his full time to this research job since September, and expects to spend many more months at it. So far nearly 1,000 standard porcelain enamel pans, from two to four quarts in size, have been sacrificed in research.

Faculty To Present Papers

(Continued from Page 1)
sent by Prof. Andrews and Mr. R. I. Swift. Professor Andrews and Mr. R. L. Cook, Instructor of Ceramics at Illinois, will present "The Relation of Particle Sizes of Frit and Color Oxides to Color Properties of Porcelain Enamels."

Dr. A. E. Badger in conjunction with Mr. A. Ottoson will relate to the Glass Session, "The Effect of Ultraviolet Light and X-Radiation on Color of Iron-Bearing Glasses."

In the White Wares Division, Professor C. W. Parmelee and Mr. P. E. Buckles will talk on "The Study of Glaze and Body Interface."

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LOOK INTO THIS . . .

(Continued from Page 4)

or views for record or publication purposes. The camera is equipped with special lenses allowing the taking of photographs with large fields at low powers of magnification. The latter is similar to macroscopic examination.

The microscopic preparation room will be equipped with coarse, medium, and fine grinding wheels, and a polishing wheel in order to eliminate contamination as much as possible. In addition, one wheel will be mounted with fine emery papers for work with materials necessitating use of the dry technique. The room will also contain a diamond cutting wheel, and elutriators for grading of polishing powders and reclaiming of grinding materials.

Over 600 slides or thin sections of all types of ceramic materials and products are available for class study and examination. Students also work with practical problems as well as short research experimental series.

The microscope is a most useful tool because of its speed and its ability to identify the mineral constituents. Whereas chemical analyses of most ceramic materials and products are time-consuming, the microscope can immediately pick out the impurities or changes in normal proportions of crystals. One of its greatest attributes is its ability to identify the mineral composition which is not possible chemically except by approximate calculation from the analysis.

Ceramic microscopy finds its use in all branches of the industry for the examination of raw materials and specific study of glass defects, refractory and pottery and white-ware bodies texture and crystalline developments, porcelain enamels, structural clay products, cements, and abrasives.



Technical Stuff—

Gravity was first discovered by Isaac Newton. It is particularly noticeable in the autumn when the apples are falling off the trees.

Nitrogen is not found in Ireland, because it is never found in a Free State.

A circle is a round line with no kinks in it joined up so as not to show where it begins.

The logarithm of a given number is the number of times the given number must be squared in order that the given number may be equal to this number.

Prof: "You missed my class yesterday, didn't you?"

Gibbs: "Not in the least, sir, not in the least."

Vannie: "Young man, we are about to close the library. Is there anything you'd like to take out?"

Buehler: "Why, yes, how about the short one with the knit dress?"

Drake: "Who's that man over there snapping his fingers?"

Bailey: "That's a deaf-mute with the hiccups."

Police Captain: "Officer, when did you first suspect this man of being intoxicated?"

Cop: "Well, he dropped a penny in the patrol box, looked at the clock on the Christian Church and muttered, 'Gad, I've lost 14 pounds.'"

Raw Materials

CHEMICAL DEFINITIONS:

Clorine—A dancer in a girls show.

Electrolyte—A thing that you turn on when it's dark and it gets light.

Catalyst—The owner of a large western ranch.

Flask—A small glass container carried on the hip and measured in fingers.

Aqua Regia—Liquid consumed the night before an exam.

Joe: "I dreamt about you last night, Mary."

Mary: (Coldly) "Yes?"

Joe: "Then I got up, closed the window, and pulled the covers up over my head."

Mr. Jones: "What is your daughter working for at college—an M. A.?"

Mr. Brown: "No, and M-R-S."

Socialism means that if you have two cows, you give one to your neighbor. Under Communism, you give both cows to the government which gives you back some of the milk. Under Facism, you keep the cows but give the milk to the government which gives you some of it back. And under New Dealism, you shoot one cow, milk the other, and then pour the milk down the sink.



A mountain range is a cooking stove used at high altitudes.

Brown: "Are you writing that letter to a girl?"

Bruce: "It's to a former roommate."

Brown: "Answer my question."

A monologue is a conversation between two people, such as husband and wife.

She doesn't drink, she never smokes, She doesn't spend her dimes on cokes,

She doesn't like to stay out late, She'd rather sleep than have a date, She doesn't neck, she doesn't pet, In fact, she doesn't walk as yet.

—Minnesota Ski-U-Mah

Dell: "Do you think a girl should learn about life before twenty?"

Bill: "Gad no, that's too large an audience."

Zschoche (at telephone): "Zschoche! Zschoche! Z! Z! No, not S. A. B. C D E F G H I J K L M N O P Q R S T U V W X Y Z!"

Buch: "What kind of a dress did Mary wear to the Ruckus party?"

Bert: "I don't know, but I think it was checked."

Buch: "Boy, that must have been some party."

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