

WORLD'S LONGEST SUSPENSION BRIDGE: SO GREAT IS THE SAN FRANCISCO-OAKLAND BAY BRIDGE THAT THE HALF of it seen in this picture is the world's longest suspension bridge, with its two miles of barrel-sized cables tying the metropolis of San Francisco to the mid-bay island of Yerba Buena. The two main spans of this suspension bridge are each 2310 feet long and the side spans are 1160 feet in length. The bridge will be open to motorists in November, 1936, according to Governor Frank F. Merriam and the California Toll Bridge Authority.

Illinois Graduates Prominent in San Francisco-Oakland Bay Bridge

TO ANYONE who has seen the San Francisco Bay and the Golden Gate projects in process, and even to one who merely reads the statistics, their immensity is a continual source of wonder. When one remembers that the view as shown above is merely one half of the San Francisco-Oakland Bridge, extending from the San Francisco shore to Yerba Buena Island and that the project includes a tunnel through the island and examples of cantilever and ordinary bridge construction for another two and a half miles to the Oakland shore, one receives some impression of the size of the structure. The twenty-eight inch cables, which show like spindling cords in the picture, connect the towers and eventually carry the double-deck steel structure on which the drives and passenger walks are laid. This structural steel can be seen hanging from the cables at two points. The towers are, by the way, over five hundred feet high and their foundations extend 235 feet down into the Bay.

This San Francisco-Oakland Bridge job with its four and a half miles of clear-water spans is pretty largely a University of Illinois alumni project. The late Mr. E. J. Schneider, graduate of 1900, who was president of the Columbia Steel Company, the holder of the contract for the entire superstructure involving over \$22,000,000, was the resident contracting engineer and died "on the job" early this year.

Charles E. Andrew, class of 1906, as state bridge engineer for California, has had a great deal to do with both the design and the construction of this giant project. He supervised the work of 75 to 100 designing and construction engineers, and is at the present time superintendent of construction.

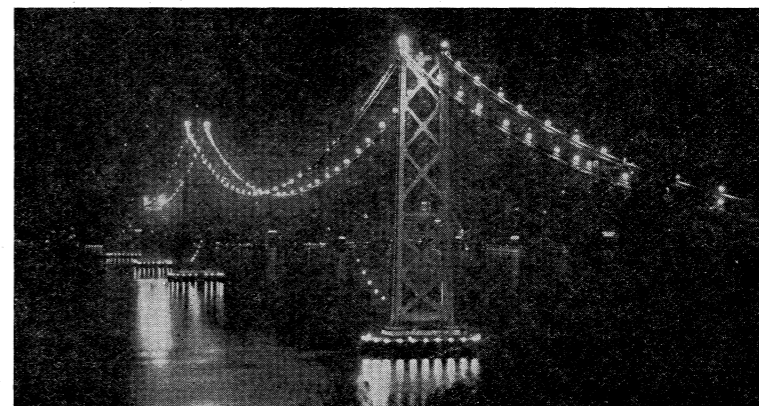
The acting state bridge engineer for California is F. W. Panhorst, 1915. H. G. Butler, consulting engineer of San Francisco, is collaborating with two railroad systems (Southern Pacific and Key) in financial and track arrangements. I. O. Jahlstrom, '25, is resident engineer on the West Bay substructure. N. W. Reese, '20, is resident engineer of the San Francisco anchorage contract of the Healy-Tibbits Construction Company. This anchorage is a massive block of concrete as big as the Palace Hotel in San Francisco and corresponds to some extent to the anchorage in the

middle of the Bay as shown in the picture. John R. Fox, '06, is assistant contracting manager for Columbia Steel, and Charles S. Conrad, '19, is manager of the stainless steel department of the same firm. Also to be mentioned in this connection is Professor W. M. Wilson of the University, who is carrying on a cooperative investigation, "Reverse Stresses in Riveted Connections."

As will be seen from the photograph, the work of suspending the bridge decks from the cables has already been begun. By the time this bulletin appears, this work will have been practically completed as far as the structural steel is concerned. These deck bridges will furnish six lanes of automobile traffic on the upper deck and two lanes of trucks plus two sets of interurban tracks on the lower deck. The process of spinning the giant cables 28¾ inches in diameter caused an intense interest. These cables have consumed 55,000 miles of steel thread, each cable containing 17,464 steel wires, approximately of pencil size, the spinning having been accomplished by a mechanical shuttle or spider.

The total cost of the bridge is estimated to be \$78,000,000.

The Golden Gate Bridge, a separate project and the longest suspension span in the world has as its resident engineer Russell Cone, '22, and Isidor Raffin, '12, manager for one of the contractors,



CHRISTMAS EVE IN SAN FRANCISCO. LIKE GIGANTIC CHRISTMAS trees, festooned with candles that cast a mile-long beam and draped with tons of tinsel of the strongest steel, the towers of the San Francisco-Oakland Bay Bridge were the community Christmas tree of the million and three-quarters of people living around San Francisco Bay last Christmas eve.

What a Union Building Means at Our Sister State Universities

A UNION BUILDING, if it is performing its true function at old Siwash is the center of student life. At Wisconsin and at Michigan, four to five thousand students enter the Union every day. A report from Iowa State at Ames made in April 1935 indicated that 100,000 students passed into their Union Building during the month of January 1935, and they have probably less than 5,000 students. With the thought of giving a little clearer idea of the facilities provided in the buildings, the types of organization and the financial set-ups at these neighboring institutions, these facts are presented:

The Indiana Union, for men and women, was built in 1932 at a cost of \$650,000 but is not yet completed. The Union board consists of eighteen stu-

dents, two faculty members and one local member of the Board of Trustees. The students are charged a compulsory fee of \$6.00 a semester restricted to the retirement of capital indebtedness and \$1.00 per year for upkeep. The Union has excellent dining service, a cafeteria seating 300 and also a short-order kitchen and men's grille. The building contains a very large and well-appointed book store. The main feature is a fine ballroom at which all University dances are held.

The Iowa Union movement was started in 1919 but did not come to a head until about 1923 when a concerted drive produced about \$1,000,000 in pledges. The present unit cost about \$450,000, the principal feature of which is a very large and luxurious lounge for

men and women, 132 by 90 feet, with a variety of other activities grouped around it. Quarters for the faculty were provided through its own contribution of \$50,000, these facilities being entirely separate, the faculty being provided with pass keys. The University Women's Club also has quarters for which it pays rent. The building is owned by a separate corporation but when it is completely paid for it will revert to the University. Even during this period, it is University operated but the activities are managed by a student board.

The Iowa State Union at Ames for men and women will have cost when completed about one million dollars and is one of the most effective in this region. Italian Renaissance in style and built of Indiana limestone, it overlooks a small lake, which gives it a very advantageous setting. To date over a million dollars have been pledged, practically all coming from life memberships at \$100.00. The Class of 1935 alone contributed 250 of these memberships. The building contains a great hall which can be used for convocations, banquets and dances. A stage is equipped with scenery comparable to our own Lincoln Hall. There are 46 rooms for regular patrons, transients and guests. Forty full-time and one hundred student employees are required to service the building. The student fee is \$2.00 a quarter or \$6.00 a year, and \$1.00 each for summer sessions.

The Michigan Union, for men only, was one of the earliest in the West. The building, a very beautiful home costing about \$1,300,000, including furnishings and equipment was paid for pretty largely by contributions from alumni, a campaign being conducted in 1915. Most of the money came from life memberships sold at \$50.00. The largest subscription was for \$10,000. In 1919 a mortgage of \$200,000 was negotiated which was completely paid off by 1931 out of income, particularly from one-half the student fee. It is operated

as a corporation separate from the University. A compulsory membership fee of \$10.00 per year from every male student, in addition to the revenue from income-producing activities, gives the Union a sizable working income. The ballroom is very desirable for dances and will seat 600 to 750 for banquets. The dining room seats 160 and a tap room serves two thousand meals per day. They have 48 guest rooms with special quarters for visiting alumni.

The Michigan State Union is for men and women and when completed will have cost \$750,000. To date \$475,000 has been expended. It was started in 1923 and is managed by a separate corporation with a 99-year lease of the ground from the University. A \$300,000 bond issue was bought by the State. The present compulsory fee is \$3.60 per year. The Union is not quite self-supporting, being subsidized by the University in several ways. Some space in the building is reserved for the faculty. A ballroom for student dances is of good design but somewhat inadequate.

The Minnesota Union, for men only, was started in 1913 with an old Chemistry building remodeled by the aid of a fund of \$17,500 appropriated by the University. In 1922 a three-story wing was added at a cost of \$50,000 and in 1925 another three-story wing at a cost of \$52,000, these building expenses having been met out of accumulated revenue and from gifts by students. The governing board consists of two faculty members, one general alumni association member, one student from each college enrolling men and one additional member from each college enrolling more than one thousand men. The student compulsory fee is \$1.25 per quarter from all male students.

The Oklahoma Union, for men and women, was built in 1928. The drive for funds with which to erect the building was a combination drive by the trustees of the Stadium-Union Memorial Fund, the unpaid pledges being used as the basis for a bond issue of \$400,000 on the two projects. The actual cost of the Union and equipment was \$287,000, and the cost of the Stadium was

approximately the same. The Union has an effective ballroom for its weekly varsity dances, concerts and lectures. The University broadcasting studio, also in the building, is used for putting student programs on the air.

The Texas Union, for men and women, has a rather unusual set-up in that it consists of four separate units, the Union Building itself, Hogg Auditorium intended for lectures, small plays, etc., the Women's Gymnasium and the big Gregory Men's Gymnasium. While the two gymnasiums are obviously intended for the Physical Culture Department of the University, whatever control is exercised by the Texas Union is only for dances and other student functions, from which the Union receives the revenue. The Union manages all the dances and other activities on the campus. Naturally the most-used unit of this Union set-up is the Union Building itself, the first floor of which

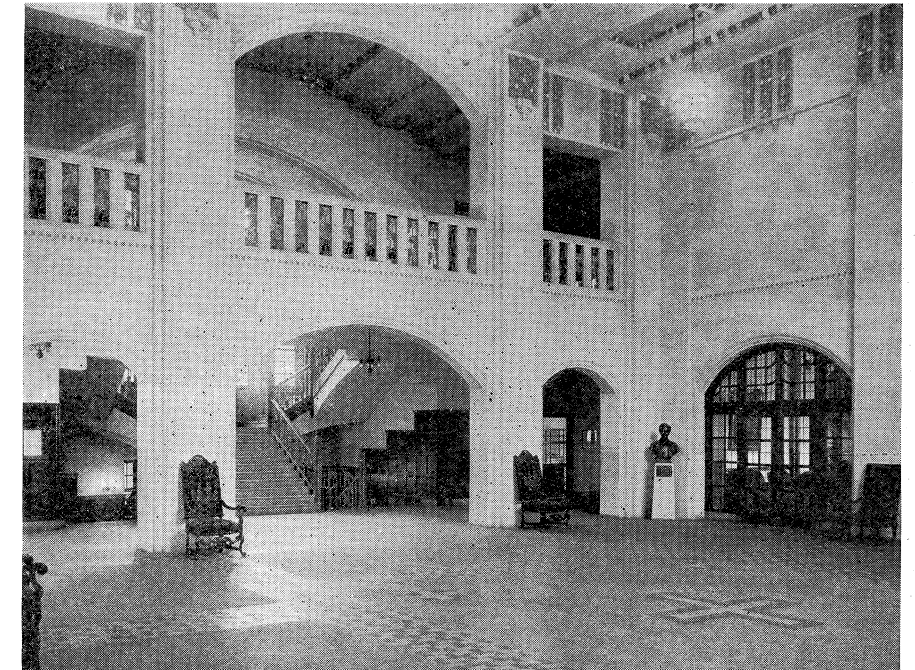
was built by the University which houses all the eating facilities including a large cafeteria and breakfast room with lunch counter and soda fountain.

The Wisconsin Union, for men and women, was completed in 1928 at the cost of \$1,250,000. The original set-up involved \$200,000 contributed from the Tripp estate with contributions of about \$600,000 from alumni and friends. A loan of \$120,000 was made on the strength of unpaid pledges, which is being paid off. The balance necessary, particularly for equipment, was obtained by means of a mortgage for \$400,000 placed on the building. A compulsory fee of \$5.00 a semester and \$1.50 for the summer school provides an income by which the financing can be carried through. The Union sells a life membership to students for \$50, \$100 to others. The cafeteria is very popular and much used. For men only, a rathskeller is maintained in the basement.



LOBBY OF TEXAS UNION IS the center of activity of the building. The manager's and other executive offices open into the lobby and various rooms are provided on the second floor for committee meetings, glee-club rehearsals, student organizations, etc., accessible from the gallery.

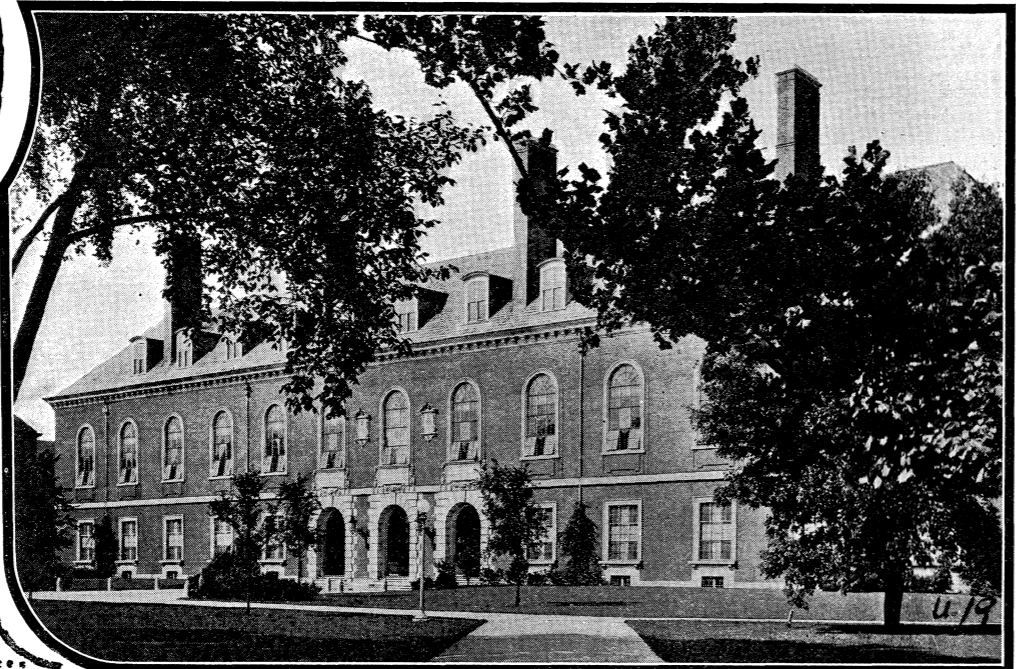
LOUNGE OF TEXAS UNION AT Austin, Texas, is a lovely room with plenty of easy chairs, davenports, rugs and other effective furnishings. Much used during the day for quiet conference and idle half-hours for students or for entertaining visiting parties. The ceiling is of the vaulted type and ample floor space is provided (150 by 100 feet) for dances up to four hundred couples, lectures, concerts and receptions. A small stage at one end allows the use of the room for the less pretentious theatricals. A corridor runs along one side which can be used as a promenade or for light service from the kitchens.



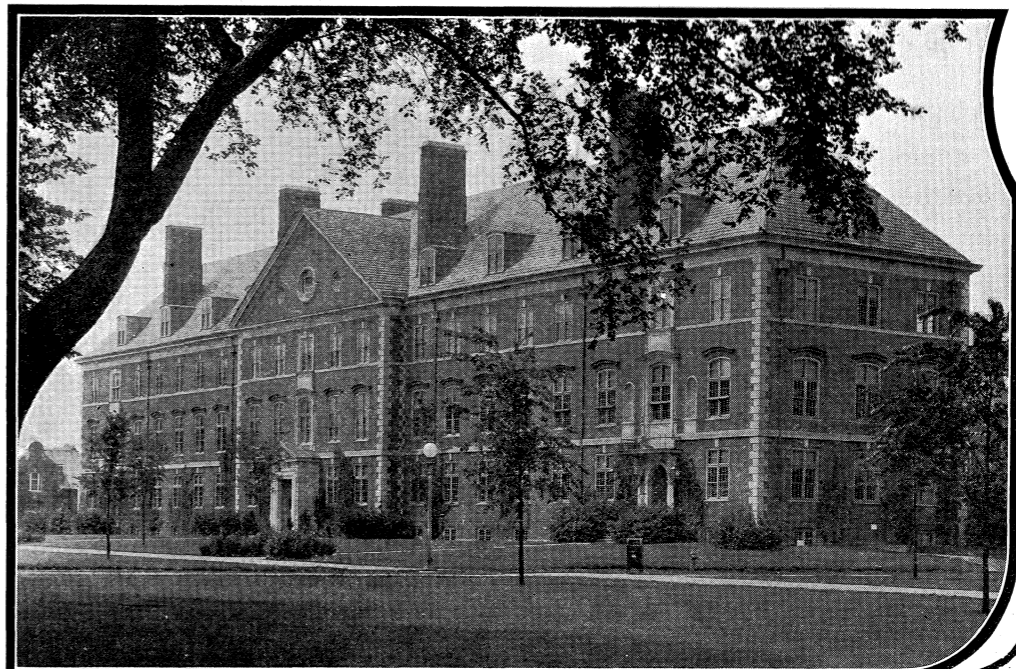
PURDUE UNION LOBBY OR Memorial Hall is a very impressive room, 40 by 60 feet, with a two-story ceiling and a large memorial tablet in the floor. The view shown is toward the north with the grand staircase leading up to the second floor. The floor is ornamented with a border pattern of black and gold tiles. From this hall, doors lead to the east into the men's lounge and to the west into the concourse with second-floor window openings into the women's lounge on one side and alumni and faculty lounge on the other. A very effective interior which has developed a splendid tradition among Purdue students.

UNIVERSITY OF ROCHESTER Union Cafeteria is an effective room, 36 x 60 feet, with three private dining rooms at one end and booths along one side. The kitchen service on the other side also serves a lunch counter in a separate room for quick orders.





THE UNIVERSITY LIBRARY was built in three units, from 1924 to 1929, and houses over a million volumes. The book stacks are independently supported on separate foundations and not as usual by the walls themselves. This building also houses the Library School of the University.



THE COMMERCE AND BUSINESS ADMINISTRATION BUILDING was built in 1925. In it are held practically all of the classes in this rapidly growing College. The building also provides accommodations for the offices of the dean of the College and members of the Commerce faculty.

Improvement in Photo-electric Cell. Professor Jakob Kunz of the Department of Physics, who is now in Germany for study, has developed a signal improvement in the photo-electric cell. Professor Kunz first developed his photo-electric cell in 1909 and further improved it during the next two years. His was an alkaline cell and was a great improvement over the selenium cell which had been used for some time, particularly because the alkaline cell showed no fatigue with use. While the Kunz cell is already so sensitive that it reacts to light from a star invisible with the naked eye, the new cell promises to be even more sensitive. The new method involves the use of colloidal alkali vapor. The uses of the photo-electric cell or electric eye, as it is now called, have multiplied in the last few years, and it has taken a very prominent place in motion pictures, television and in industry.

University of Illinois Hospital Association. The development of the hospital association at Illinois shows an interesting study as given in figures and statistics released by David M. Larrabee, assistant to the dean of men. In its first year, 1899-1900, six students were treated and the benefits paid amounted to \$48; while in the year, 1934-35, those benefited numbered 1,821 and the benefits were \$23,641.93. Further figures show that during the first eight years of its existence the association benefited 122 students or an average of 15 a year; during the last 8 years, 10,796 students, or 1,349 a year.

The hospital association is self-supporting with the aid of a voluntary student membership costing \$3 per semester. According to a recent report of Mr. Larrabee, a total of 5,150 memberships have been sold this semester, 146 above the previous high mark of 5,004 set the second semester of 1930-31. The present figure includes 400 members of the faculty, also a new record.

The hospital association is the oldest University plant in operation, according to C. Rufus Rorem, consultant of the American Hospital association.

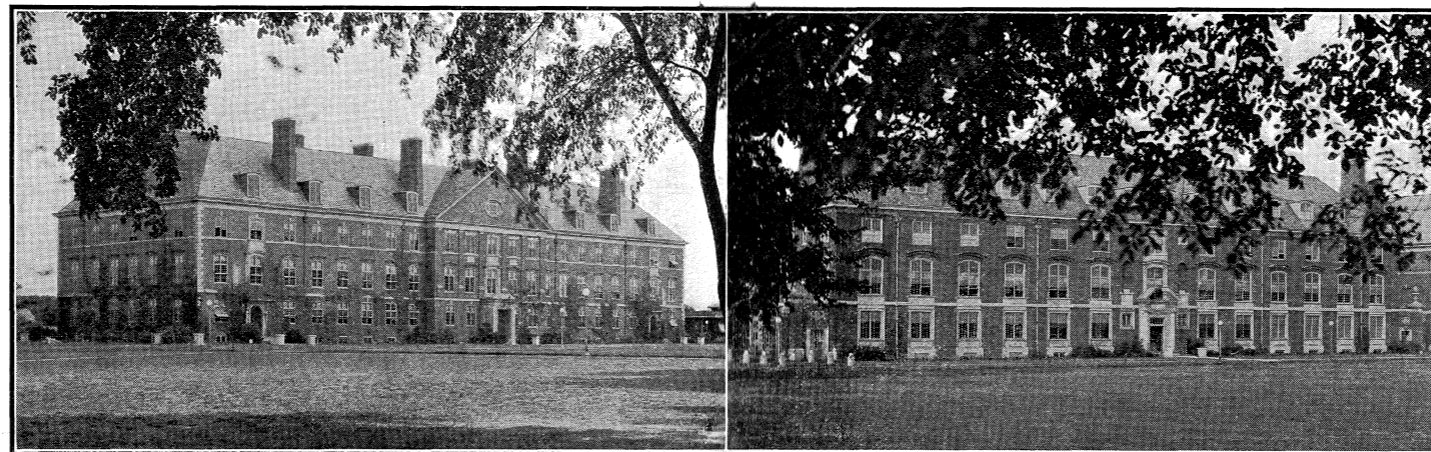
Mother's "Blood Bank." A recent announcement at the University of Illinois College of Medicine was that of a "blood

bank," into which expectant mothers may deposit as much as a quart of their own blood shortly before confinement, and which may be drawn upon for strength during childbirth. It is hoped that this plan will reduce maternity death rates.

Dr. Bernard Fantus, professor of therapeutics in the department, says, "Taken from the patient during the last stages of pregnancy when she has stored up a healthy surplus of rich blood, the reserve blood is preserved by electric refrigeration for possible use at any time."

Our Splendid Agriculture Experiment Station. "More new wealth for Illinois comes out of the institution at Urbana than can ever be created under the dome of the Capitol at Springfield," so speaks Wheeler McMillen, Editor of *The Country Home*.

THE NEW AGRICULTURAL BUILDING, built in 1922-23, shares with the old Ag building in providing accommodations for the Departments of Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Husbandry, Home Economics, Horticulture and Landscape Architecture. THE ARCHITECTURAL BUILDING (1927) houses not only the Department of Architecture but also the Department of Art and Kindred Subjects. The Hall of Casts, the Art Gallery and the Ricker Architectural Library are also found in this building.



University News Reels—Recent Findings of Our Research Departments

"Scientists at work at the Illinois Experiment Station," he says, "and the educators who cooperate by carrying their finding to farmers, are the most powerful of agents for increasing the output of new dollars from Illinois soil. . . ."

"It is splendid for the citizens of a democracy to pay generous attention to the political phases of their public affairs . . . but I do think we should pay vastly more attention to what happens around our scientific and educational institutions. . . ."

"I doubt if any of the dollars invested anywhere out of the huge budget of the State of Illinois do more for the people of the state than the few dollars expended annually in the scientific work at Urbana."

Fighting Typhoid Carriers with X-Ray. Dr. Lars Gulbrandsen, instructor in bac-

teriology at the University of Illinois College of Medicine, reports that he has been able to use x-ray treatments over the liver and gall bladder of chronic carriers of typhoid germs so as to sterilize these germs.

There still exists in the State of Illinois about 1200 cases of typhoid fever per year. Doctors know that these are infected from people who have recovered from typhoid fever and are apparently healthy, but who still pass the germs in their feces.

The x-ray treatments are not severe, but are light doses given once every two weeks and are repeated only five or six times. The new method has the advantage of being practical, economical and effective.

University of Illinois Speaking Bureau. In response to the large number of requests for speakers which comes to the University

of Illinois each year, announcement was recently made at the organization of a speakers' bureau to cover such requests. These speakers will be furnished as far as possible to school assemblies and teachers' institutes, civic clubs, women's organizations and the like.

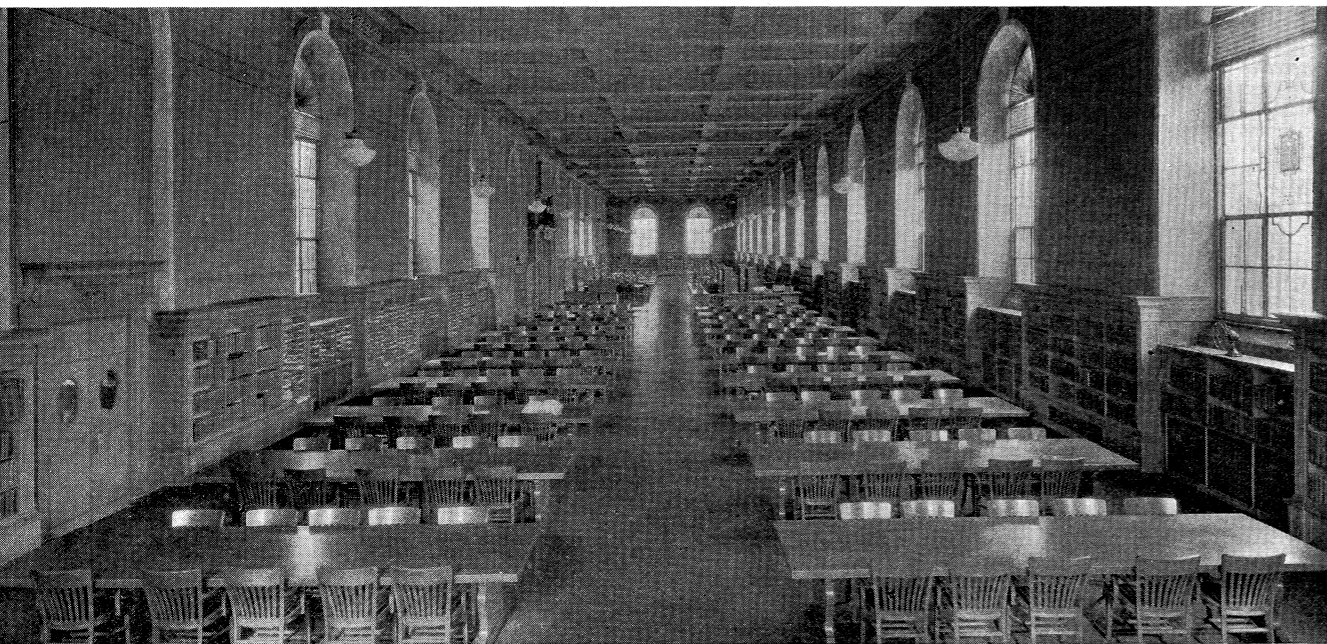
In order to make the bureau self-supporting, a fee sufficient to meet travel and incidental expenses will be charged. The Bureau functions under the Extension Division of which Robert B. Browne is director.

A New Skin Disinfectant. A new skin disinfecting solution three hundred and fifty times as powerful in killing germs as phenol (carbolic acid) and three times as powerful as tincture of iodine, yet costing only \$1.60 per gallon to manufacture in the laboratory, has been announced by the University of Illinois. The development of this solution is the work of doctors Lloyd Arnold and J. A. Vaichulis of the University's Department of Bacteriology and Public Health.

To get some idea of the saving, tincture of iodine (U.S.P.) costs approximately four dollars a gallon, while tinctures of metaphen, merthiolate and mercurochrome cost over twenty dollars per gallon.

Oral Vaccination Possible as a Substitute for the Time-honored Needle Method. Successful oral vaccination was recently heralded by Dr. Lloyd Arnold of the University of Illinois College of Medicine, which will soon open up a new field in public health and preventive medicine. Dr. Arnold has pursued his studies of oral vaccination for fifteen years and presented his new method to the combined meeting of the Indiana-Michigan-Ohio Societies of Bacteriologists.

The method involves "playing a trick on the stomach." The laboratory workers have discovered that by taking a bile pill thirty minutes before the vaccine, the bile prevents the production of digestive acids which would otherwise destroy the vaccine. The stomach remains quiescent for one or two hours and the vaccine passes through unchanged. Once in the small intestines, it is slowly but persistently absorbed.



A VIEW OF THE IMMENSE READING ROOM IN THE NEW LIBRARY BUILDING. THIS ROOM IS THREE HUNDRED FEET long and is much used by students both in the daytime and in the evening, doing collateral reading or studying from their own textbooks.

University of Illinois Scholarships and Fellowships

THE graduate school of a great university is its training school, the place where its own students of promise, and those from other institutions, can on graduation continue their work with the key men of each department and develop their powers of research and investigation under the watchful eyes of those who are already prominent specialists in their chosen fields.

These young men need not only guidance but financial aid during the period of their graduate work for advanced degrees. Those who prove themselves most worthy may be given part-time assistantships in the departments and on receiving their degrees will be assisted, as far as possible, in obtaining teaching or professional and industrial positions. The more funds the graduate school has at its disposal with which to finance these promising youngsters, the more graduate scholars it can take care of until they are able to assume their work in this or other fields under their own steam. Here is where fellowships and scholarships are so important to the life of the graduate school. Here, by the same token, is the value of undergraduate scholarships, by means of which brilliant undergraduates who need some financial assistance can be helped through their four-year course and made available for special fellowships or scholarships with which to carry forward their studies.

Graduate School Scholarships and Fellowships. A varying number of scholarships and fellowships (fifty to sixty depending upon the budget) have been established by the trustees of the University open to candidates not over thirty years of age at the time the appointment is to be made. To first-year graduate students of ability and promise, service *scholarships*, with stipends of \$300 and carrying exemption from the payment of tuition and incidental and laboratory fees, are available. There are two classes of *fellowships*—University

service fellowships and honorary fellowships. The first are open to second-year and third-year graduate students, with stipends of \$500 and \$600 respectively and with the usual remission of tuition and fees. Fellows of this class shall be available for teaching, research and other University services, not to exceed one-fourth of the time in each case. Honorary fellowships serve only to give recognition to superior students not in need of financial assistance.

In addition should be mentioned, the Robert F. Carr fellowship in chemistry, fourteen research engineering fellowships, about twelve fellowships particularly in chemistry, funds for which are received from the outside and various other scholarships and fellowships scattered through the various departments of the University.

Undergraduate Scholarships. Regarding undergraduate scholarships, these cover only matriculation and incidental fees. They include: General Assembly Scholarships, awarded on nomination of a member of the Illinois General Assembly to a candidate residing in the member's district (204 available each year); County Scholarships, awarded, one from each county by competitive examination (102 available each year); Agriculture and Home Economics (good only in these curricula), awarded on nomination of the Illinois Farmers' Institute to candidates ranking in the upper fifty per cent of their high school classes, on the basis of a competitive examination (110 each, available each year); Ceramics Scholarships (good only in the Ceramics curricula) awarded on nomination of the Illinois Clay Manufacturers' Association (110 available each year); miscellaneous war scholarships; several Music and special scholarships, including the Gregory Scholarship, the Rea Scholarships in Medicine, and Scholarships in the College of Law.

In the year 1935-36 there were in use

1763 undergraduate scholarships in the regular session and 1668 scholarships in the summer session. The total value of undergraduate scholarships for the year was \$158,677.70.

Finally, there are a number of competitive prizes, fellowships, scholarships and miscellaneous awards which are offered to students at the University. These are summarized as follows: Competition open to all undergraduate students—the Bryan prize, two English poetry prizes, the Thatcher Howland Guild Memorial prize, and the Thrift Essay prize; competition open to students in Fine and Applied Arts—Allerton American Traveling Scholarships to two juniors in the Department of Architecture of \$400 each, a Plym Fellowship netting \$1200 annually, several Plym prizes for undergraduate work in Architecture, the Plym foreign scholarship in Architectural Engineering netting \$700 and awarded by competition, and the Kate Neal Kinley Memorial Fellowships which are competitive awards made under the direction of the College of Fine and Applied Arts. Miscellaneous competitive prizes include those donated by Professors I. O. Baker and O. A. Harker.

Student Loan Funds. The University has over a period of years accumulated from friends and alumni various loan funds, by means of which they are able to help deserving students who need financial assistance at various times. This fund at present totals \$244,231.81. In addition to these, there are certain loan funds like the Wenzel Morava loan fund of \$80,000 and the loan fund of the Class of '07 of \$4500, established at its 25th anniversary. Then there are other funds made available for students through the offices of the Dean of Men. Such gifts represent excellent avenues for interested alumni and friends to follow in adding to this already potential and growing total.

Income Tax Problems; The Advantages of Gift Consciousness

THE passage last summer of the Federal Revenue Act of 1935, which act amended the existing revenue acts and substantially increased income, gift and inheritance taxes, has emphasized the material advantages of making substantial gifts to educational institutions such as the University of Illinois. In preparing this statement so that the alumni and friends may have a true idea of how this Act affects their income tax problems, we have drawn largely from a report of the Cornelian Council prepared by Mr. Jacob Mertens, Jr., and have also had the assistance and cooperation of Professor E. J. Filbey of our College of Commerce and Business Administration.

You cannot have your cake and eat it too. The first thing to make clear is a perfectly obvious but often misunderstood fact. The person involved in this analysis *must be in the mood to give* and the savings due to the Revenue Act of 1935 will neither exceed nor equal the amount of the gift. The deductions are substantial but still leave an ample balance as a token of the generosity of donors and testators. With this premise in our minds, let us see how the plan works.

(1) Exemptions from tax on gifts and bequests are sure. There is no question about the exemption from tax of gifts or bequests to the University. Furthermore, there is no limit to the amount of the gift or bequest which may be made. Such gifts and bequests remain among the few means of "avoiding taxes" which are specifically permitted by the Federal Revenue Acts. In the case of income tax exemption, however, there is a limit of fifteen per cent of the person's net income.

(2) Examples of testamentary gifts. Owing to the high estate and inheritance tax rates, a substantial testamentary gift may be made to the University by an actual outlay on the part of the donor considerably less than the amount of the gift. The advantages, owing to the progressively higher rates, as the amount of the estate increases, vary with the size of the estate. For example, the bequest of \$50,000 by an individual residing in Illinois and having a net estate of \$240,000 will "cost" his estate \$41,500, a reduction of 17%. On the other hand, if his net estate had been \$10,040,000 and he gave \$1,000,000, the "cost" would have been \$350,000, a reduction of 65%. In these cases no credit has been taken for state taxes paid; in most cases the state taxes will absorb the credit.

(3) Examples of gifts while donor still living. The same is true where gifts are made during the lifetime of the donor. In fact, such cases work so as to reduce the estate taxes payable at the death of the donor and at the same time reduce the income tax for the year in which the contribution is made. The Federal Revenue Act allows deductions of contributions to educational institutions up to 15% of the giver's net income. Assuming respective net incomes of \$15,000, \$40,000 and \$100,000 for a married man with no dependents and assuming also that in each case the donor makes the maximum deductible gift, that is, \$2,250, \$6,000 and \$15,000 respectively, the reductions in Federal income taxes under

the 1935 law will be respectively \$252.50, \$1,490.00 and \$8,550.00, or a saving in the actual amount of the gifts of 11%, 25% and 57%.

Statistics compiled in 1929 indicated that slightly less than 2% was deducted for charitable gifts of all kinds out of the allowable 15%, which indicates that a comparatively few take advantage of the opportunity of making charitable deductions.

(4) Further advantages of giving before rather than after death. In the case of No. 3, further savings over gifts made by testament accrue from lower administration costs.

(5) Gifts from corporations. The Revenue Act of 1935 contains a new provision to the effect that corporations may, after December 31, 1935, deduct contributions to the University up to 5% of their net income.

(6) Gifts through trust funds. The taxable consequences of a gift to the University in the form of a trust fund depend very largely upon the fact of each specific case. A few typical cases may be given.

(a) If a trust were created with the income payable to the donor's children during life, with the corpus of the gift going to the University upon their deaths, the "present value" of the University's interest, up to 15% of the donor's net income, would be deductible.

For example, take the simple case of a male beneficiary 35 years of age having a life interest in a trust the corpus of which is \$100,000 and the income from which amounts to \$4,000 per year, the University having a remainder interest in the corpus of the trust. The donor would be allowed a deduction for income tax purposes of 15% of his taxable net income but not in excess of \$34,060, which represents the present value of the gift to the University.

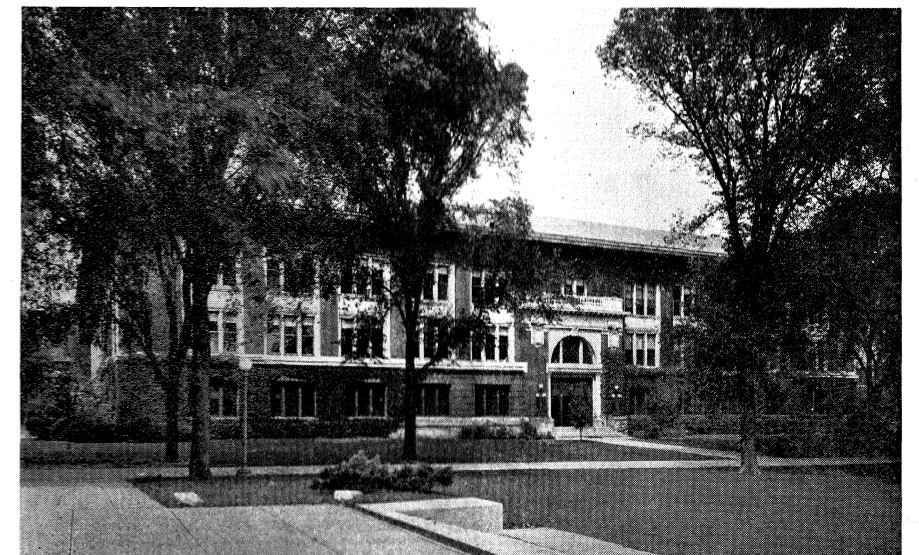
(b) An individual having assets which have increased substantially in value since the date of acquisition, may transfer such assets to a trust in which the University of Illinois is named as

ultimate beneficiary or remainderman and avoid the tax which would result were the assets sold by the donor. In such a case no tax is imposed upon the grantor upon the ultimate disposition of the property by the trustee, assuming that the capital gains as well as the corpus of the trust are payable to the University. In addition, of course, the removal of the assets transferred in trust from the estate of the donor frees the estate from estate tax on the value of the assets and relieves it from the cost of administration as previously indicated.

(c) A donor may establish a trust fund at the University, with provision for the payment to him of the average rate of return actually received by the University each year upon its investments.

(7) Advantages of making gifts in installments. In those cases where the gift of a donor to the University exceeds the allowable 15% of his net income, there will be an advantage in making payment of the gift in installments over a period of years. To illustrate, assume that a person with a taxable net income of \$50,000 is prepared to make a gift of \$15,000 to the University; he would obviously secure the maximum deductions possible by making two payments of \$7,500 each in successive years. In the case of a resident of Illinois this plan would result in deductions of \$7,500 per year or a total of \$15,000,—just twice what would be allowed if the entire \$15,000 were given in one year.

The above reports are analyzed on the basis of the 1935 Federal Revenue Act. Slight changes in 1936 have in some cases been passed but fundamentally these do not change the general conclusions arrived at. Far be it from us to suggest a rather obvious conclusion, but if and when a campaign for a new Student Center on the University campus is launched it might be well for our alumni to give serious consideration to the effect of a gift to the Foundation upon their income tax.



A VIEW OF LINCOLN HALL, WHICH IS NOT ONLY THE HOME OF THE COLLEGE of Liberal Arts and Sciences but also houses the Museums of Classical Archeology and Art, European Culture and the Oriental Collections. In the center of the building is the Little Theater used for all Mask and Bauble and other plays. For the work of the College of Liberal Arts and Sciences, see page eight of this bulletin.

College of Liberal Arts and Sciences—Largest University College

THE College of Liberal Arts and Sciences, in which by the way practically 35 per cent of the students at Illinois are registered, presents such a broad educational program that in the limited space possible in this bulletin only a brief outline of its activities can be presented. How adequately could we give the idea of the work accomplished in the departments of the Humanities: Classics, English, foreign languages, history, economics, political science, philosophy, psychology and sociology; or in the Sciences: Physics, chemistry, mathematics, and the biological sciences, geology, geography and home economics? This great College, in addition to its own well-developed curricula, takes care of the basic and cultural subjects of almost every other college on the campus as well as the preparatory courses for the Colleges of Law, Medicine, Pharmacy and Dentistry, and the School of Journalism.

In addition to these, the College is sponsoring plans of "individual curricula" and of "tutorial work," both plans designed for the exceptional student in the University. Their names indicate their character, the students under the first plan being allowed individual selection of subjects but required to have had at least twenty-seven academic semester hours with a four-point average and their special curricula being selected under the direction of a College committee. The second plan can only be applied after completion of sophomore work and with the same scholastic standing as the first. Those accepted by the Tutorial committee are provided with special facilities for independent study and investigation, not in classes but under the guidance of a tutor who will help the student to choose proper lines of work, maintain this work and its ultimate unity so as to insure substantial achievement.

Also maintained as a valuable adjunct to the work of the College is the "Illinois Historical Survey." Its purpose is the collection of material on the history of Illinois and the West and the assistance of the historical workers in their use. Printed books, newspapers, manuscripts, photostats and transcripts are available and a card index of 250,000 cards (constantly growing) of source material in Washington archives is being maintained. The fact that about twenty doctoral dissertations and a much larger list of masters' theses are based on this material shows its importance to the graduate work of the college.

In Political Science, Professor J. W. Garner has recently completed a three years' task for the Harvard Law School Research in International Law. It is in the form of a report on the law of treaties including the draft of a convention with elaborate comment dealing with the practice of nations, the doctrine of the jurists and the jurisprudence of the courts relative to such matters as the validity, form, ratification, interpretation, duration, denunciation and termination of treaties; accessions, reservations and effect of changes; failure to perform treaty obligations; effect of war on treaties; etc. The work is intended to serve as a sort of model code of treaty law and to make available the materials for the use of any official international conference which may in

the future undertake the codification of international law. The draft was discussed from time to time by a special advisory committee of American jurists and was finally approved at Cambridge in April 1935 by the general committee, of which the late George W. Wickersham was chairman. Professor Garner



DEAN MCCLURE IS HEAD OF THE largest college on the campus, Liberal Arts & Sciences, is one of the best known of the University officers, and is also head of the Department of Philosophy.

was assisted throughout by Dr. Valentine Jobst of the Department of Political Science, who served as assistant reporter on the project. The report is published by the Carnegie Endowment for International Peace and makes a volume of 550 pages.

Professor W. C. Rose reports some important conclusions in a biochemical research on amino acids which has resulted in the possible intravenous feeding of human patients who temporarily are unable to consume food in the ordinary fashion. The triumph of the research is the discovery and isolation of one missing amino acid out of twenty-two—the missing link, as it were—the identification of which has made possible the complete representation of proteins by the equivalent amino acids.

As a result of this newer viewpoint, attention was directed in several laboratories toward determining which amino acids are necessary dietary components; but after 30 years of effort, only 3 were shown to be essential for life.

In 1931, the problem was attacked in the biochemical laboratory of the University of Illinois by a different technique. Highly purified diets were formulated carrying all of the essential constituents except proteins, which were replaced by synthetic mixtures of crystalline amino acids. On feeding such diets to experimental animals, they not only failed to grow, but rapidly lost weight and eventually died. Apparently growth-promoting proteins contained at least one component other than the amino acids then known.

The search for the missing component was rewarded in November, 1934, by the isolation of the compound in pure form. A few months later it was identified and synthesized. It is the twenty-

second amino acid, and the last essential one, as shown by the fact that its inclusion in the synthetic diets to the extent of 0.6 per cent renders them completely adequate for normal growth and maintenance. The new compound has been named "threonine."

Professor G. L. Clark reports that research in the x-ray laboratory of the Department of Chemistry is devoted primarily to the study of ultimate fine structure of materials. The experimental equipment, all of which (except high tension transformers and some of the x-ray tubes) has been developed and built in the laboratory, is probably the most complete to be found anywhere. Some of the investigations recently published, or ready for publication, include the structure of living nerve with the discovery of an amazingly orderly arrangement of very complex molecules in the sheath; the only reliable method of analyzing quantitatively mine and industrial dusts for total mineral content so that diseases such as *silicosis* may be prevented; the structure of films such as soaps and lubricants built up step by step from layers only one molecule thick—a new technique of considerable theoretical and practical significance; the first complete structural and chemical study of chitin from the shells of lobsters, insects, etc., which promises to afford a new and valuable textile material; studies of the chemistry of the storage battery sponsored under U.S. Navy and Prest-O-Lite fellowships in which a whole range of new lead compounds has been discovered and identified; investigations on several types of proteins, cellulose and derivatives, including rayon, crystallized rubber (with the National Bureau of Standards), various metallurgical problems including armor plate (U.S. Navy), and several problems of inorganic compounds and mixtures at high temperatures.

Professor Fred W. Tanner makes clear that Bacteriology, as taught in this College is a pure science as well as a "service science." As a pure science, bacteria and related microorganisms are studied as living organisms. Practical work with bacteria concerns their relation to human and animal diseases and to food spoilage. Other applications of bacteria are studied in the College of Agriculture.

During recent years members of the department of bacteriology have been especially interested in bacteriological problems of meat curing. A five-year research project was carried on in conjunction with the Institute of American Meat Packers and the American Can Company on one canned meat product. Another project concerned safe methods for home canners. The department has had a large part in an agitation by canned food technologists to call attention of home economics extension workers to faulty procedures. Several papers have been published.

Professor C. L. Metcalf of the Department of Entomology has several researches in process but not yet ready for announcement. He has completed a study of an insect-proof upholstery and has found that a curled, rubber-coated hair, which will be manufactured by Armour & Company, is essentially vermin-proof.