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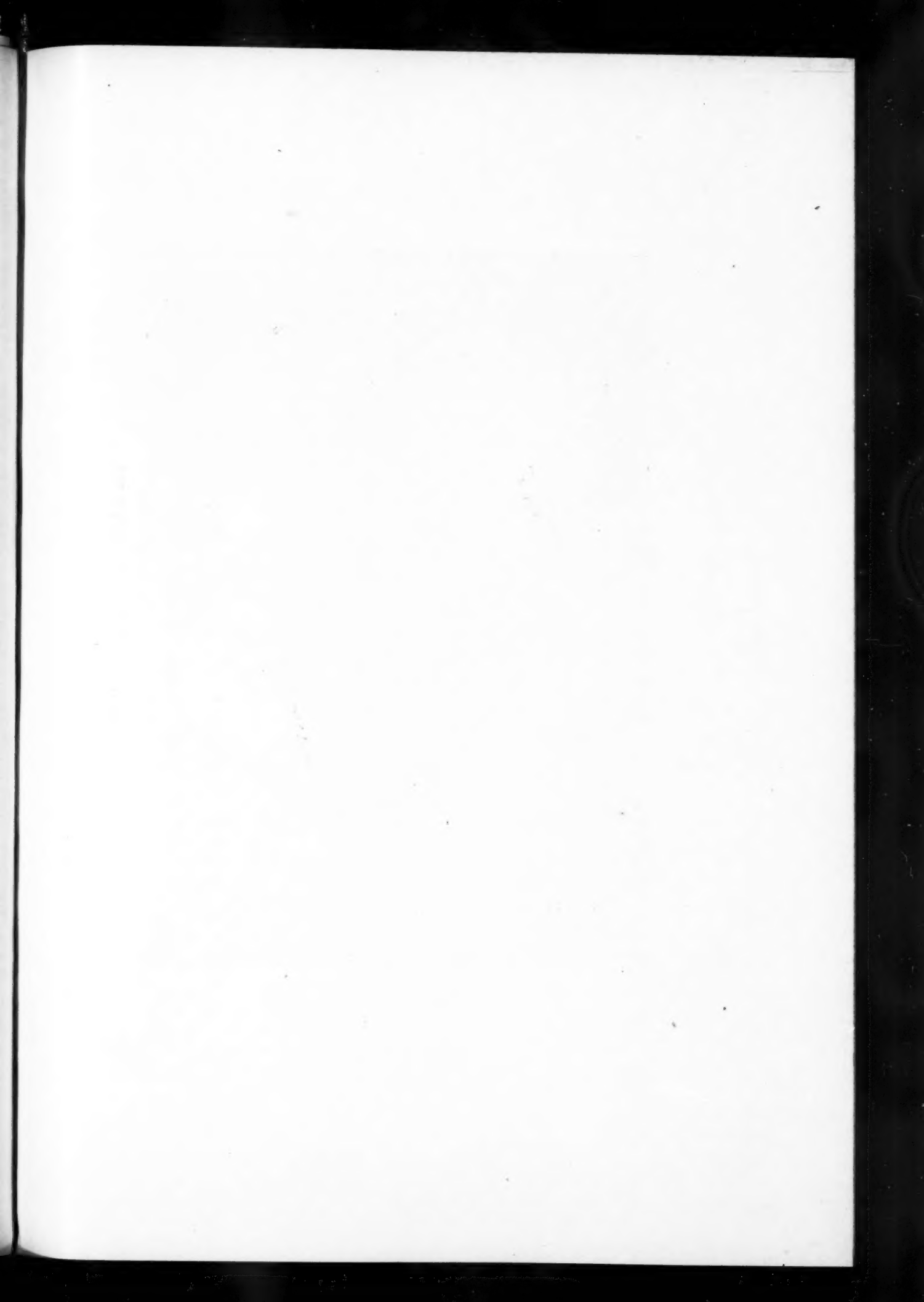
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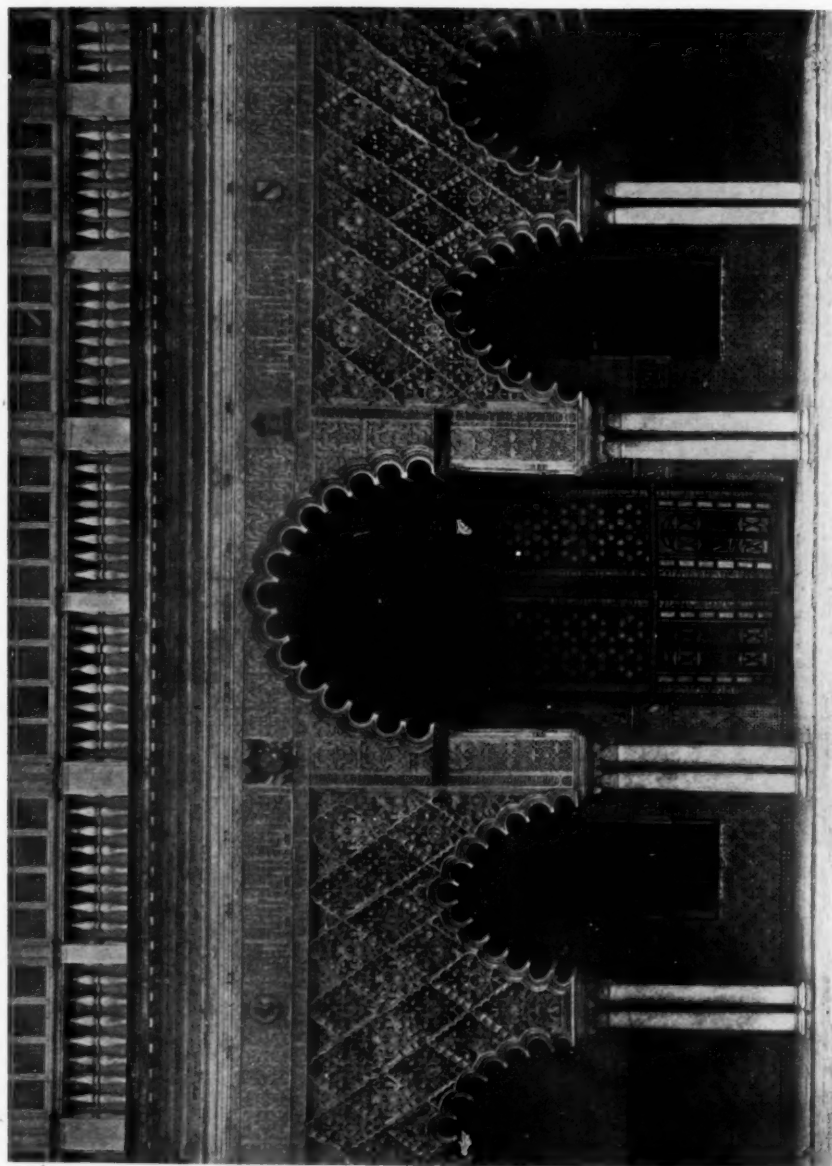
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THE AMERICAN ARCHITECT

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VOL. CXV

WEDNESDAY, JANUARY 22, 1919

NUMBER 2248

Building for Health

A House Should Fit Its Owner Like His Skin

By WOODS HUTCHINSON, A. M., M. D.

HOUSES are built for everything except for the comfort of those who live in them. Originally they were tombs for the dead and most houses more than one hundred years old are much better adapted for this class of tenant than they are for the living. No wonder so many old houses are haunted and that to move into one of them is a sure sign of a death in the family within a year.

Next, the house was a fortress, or an appendage to a fort, and a painful majority of houses over fifty years old show unmistakable traces of this origin, in darkness, smelliness, stupidity of plan, and utter lack of ventilation. An Englishman's house is still his castle in a number of most uncomfortable and inconvenient senses, cold, dark, damp, drafty. The worst fault that a house can possibly have from a health point of view is that it is old.

In recent times the majority of places in which people have to live—it would be an undeserved compliment to call them homes or even houses—are built to return a good income on the investment, the next largest moiety to form a monument for the architect, and the third most important fraction to prove publicly and inescapably that the owner "has the price." Building for the health and comfort of the occupant, or for the pleasure and welfare of the community has only just begun, and most of the best and most convenient sites are already occupied by rack-rented barracks, or misfits, or calamities in brick or stone.

For the sake of health there should therefore be passed a law fixing a term of life for houses used for dwellings and this term should be in the neighborhood of fifty years. The Almighty in His wisdom has fixed the term of human life at three score years and ten, which is often a great mercy for the rest of the community, and we should imitate Him by fixing a life-time for houses one-third shorter than this, because we cannot yet build as well as He.

Every house still used for human habitation and dwelling should be automatically burnt or pulled

down when it has stood for fifty years, unless it can be clearly shown to be thoroughly sanitary, up to date and fit for human habitation according to modern standards, or can be readily altered to make it so. Exceptions of course could be made for building of historical interest, birthplaces of famous men, specimens of periods of architecture, etc., but these should be turned into public museums and no longer lived in.

This would involve no real injustice to the owners of the property, because most rented houses are let so as to return about ten per cent on the original investment to cover repairs, dilapidation, etc., consequently the house pays for itself every ten years, or four or five times over in the fifty years. The greatest obstacle we have to fight, five times as serious as any other, in attempts at, and schemes for housing reform, is the old house, utterly incapable of being made sanitary and decent for human habitation, and yet too tough and strong to allow us to get it condemned on the ground of being unsafe to live in.

Our heathenish and outrageous old building laws in most states and cities permit the condemnation of a house only on the grounds that its walls are liable to collapse, or its floors to give way or its roof to fall in, even though it be a perfect breeding ground for bugs and hot-house of disease and death. If we had power to pull down these wretched old baby stifiers and consumption breeders, the owners of the property would have no difficulty in borrowing money enough on the land to erect in their place modern sanitary model tenements or apartment houses.

But these would return them only five or six per cent on the investment, while the existing old rookeries and barracks pay anywhere from ten to thirty per cent on the original cost. So that as long as our brutal and antiquated laws protect them they will go on callously coining money out of the blood and sufferings of the poor, and turning over one or two per cent of it to the support of the church and

THE AMERICAN ARCHITECT

schemes of Christian charity, as an opiate for their conscience.

Just think of the splendid field for architectural accomplishment, of scope for the new school of building which is eager to plan and construct for the service of the community and the public welfare and pleasure, if the hundreds of acres now cumbered and blighted in every large town by slums and stews and germ-cages could be swept clear and clean for the rebuilding of the city on broad and beautiful and healthful lines for the comfort and shelter and enjoyment of its citizens!

In "remoulding nearer to our heart's desire" the condemned old parts of our cities and towns and the growing new ones, it must be clearly recognized that the day of the single and separate house is over and gone. Houses in the new and open parts of the cities must be built in groups around parks and gardens. In the down town, denser regions they must also be built in groups called apartments, around spacious central courts, and receded sufficiently from the street line to make each one, so to speak, provide its own air and light. If they are more than four stories high the upper stories must recede still farther from the lot line and the highest assume the character of towers.

Each individual house or apartment should be considered and planned as merely a unit in the group, and, far from being in any way "self-contained," dependent absolutely upon the rest of its fellows and neighbors. It should give certain concessions in regard to air, light and view to its neighbors, both lateral and vertical, and receive from them other similar concessions in return.

Each group whether down town in a tenement or out in a suburban garden court should have a central system of heating, lighting and gas supply and of air or power for cleaning and domestic labor-saving purposes. These need not be operated by or dependent upon the skill of the individual tenants, but be attended to by groups or teams of experts who would visit the building so many times a day for heating or lighting service and so many times a week for cleaning, window washing, laundry and heavy cooking work.

Even where central heating or city electric and water and gas supply are not yet available, all modern group-buildings should be provided with flues, wires, pipes, etc., for all these services, so that whenever the city can give them these privileges they can be utilized to the best advantage. In the meantime most house groups except the very smallest would find it a distinct economy and advantage in every way to have one central furnace instead of a dozen or fifteen separate ones, one central lighting system, where possible electric, and where not, acetylene or other inexpensive form of private

gas-installation, and a central water supply from well or spring, pumped and distributed by gasoline engine or windmill.

It is also very convenient in most house-groups whether above and below or side by side, to have a central kitchen and a central café or dining room on the cafeteria plan. Here the heaviest, most laborious and heating forms of the cooking, the joints, the vegetables, the breads and biscuits, the pies and cakes can be carried out by an expert cook, paid by all the tenants in common. Then such families as wish can have their meals served in the dining room, cafeteria fashion, or bring them up to their rooms on the same plan and dine at home.

This would save much space and stuffiness and greasy odors and cooking smells in the separate houses and apartments, as well as much discomfort and dirt from ashes, coal, slops and garbage. Each individual house or apartment need only be provided with a small, well lighted and ventilated kitchen, equipped with a gas stove, sink, cabinet, glass or enamel-top tables, refrigerator and electric ironing table.

The modern kitchen should in any case be small, compact, with the stove in the centre of the room, the mixing table next to it, the sink and dish closets in easy reach from one side of the stove and the refrigerator and cabinet from the other. It should be a laboratory, not a living room, so arranged that one or at most two individuals can stand or sit on a high stool in the middle of it and reach everything they require for food and mixing and preparing on one side, and for serving, washing and distributing by wheeled table or carrier, on the other, without moving from where they stand or rising from where they sit. Any more space than this in a kitchen "cometh of evil," causing unnecessary trotting about and lost motion generally as well as wastage of valuable floor space.

The floor of the kitchen should be either of hard wood, or, better still, of concrete, or one of the tough wood-pulp mixtures, or, failing this, linoleum covered. Its walls should be not merely painted but enameled; its tables, sinks and drainage boards, either glass or enamel or heavily paraffined wood, so that every surface of tables, walls and floor can be sluiced down or wiped clean with a wet cloth. The stove should, of course, be either gas or electric, as a good and economical private "gas-works," or electric dynamo for ten or more houses can be easily constructed, where there is no city service of either gas or electricity.

In addition to this the up-to-date kitchen will be supplied with cold air pipes from a central cooling plant, so as to prevent cooking the cook with the roast when the weather is too warm, to permit the room being cooled by its numerous windows.

THE AMERICAN ARCHITECT

Of course every kitchen ought to have windows at least on two sides and preferably on three, so as to allow for both proper cross ventilation and cooling. And a hood over the stove to carry away any possible odors of cooking.

A central heating plant is absolutely indispensable for the proper and healthful use of the bathroom, as a bathroom, without an abundance of hot water day and night is little better than none at all. Without continuous hot water it is simply a temple of discomfort and mortification of the flesh. It was the omission of this vital factor which gave rise to the chief of the daring and delighted jeers and cheap flings of the superior classes at the inborn shiftlessness and dirtiness of the poor. Namely, the story of the model tenement built by the benevolent rich for the deserving "pooah," in which after six months' occupancy the bathrooms were found

turned into storerooms and the bathtubs used for the storage of coal. Nothing of that sort ever happens when hot water is provided.

Incidentally, this famous and favorite story of vestrymen, heavy taxpayers, or rather tax dodgers, supercilious lady visitors, Lady Bountifuls and the charitable rich generally can be matched and bettered by the story of the family of the Italian nobility which rented for a season the remodelled villa of an American in Rome, and who were found on a visit of the owner keeping butter and melons and green vegetables in the bathroom and live ducks in the bathtub! So that it is not merely the poor and lowly who have a prejudice against cleanliness by the cold tub route. Like Mrs. Partington, while some people can bathe in water as cold as Greenland's icy mountains or India's coral strand with perfect impunity, they prefer a bath slightly tepid.



NORTH FRONT, GREAT CHATFIELD MANOR HOUSE

The Sacramento State Buildings Competition

WILLIAM C. HAYS, *A. I. A.*, discussing in a recent issue of *The Architect and Engineer of California* the various designs submitted in the Sacramento State Buildings Competition illustrated in this issue of the *AMERICAN ARCHITECT*, refers to what he considers "well warranted criticism of the Institute Code" governing competitions. Specifically, and with reference to this competition, he states in part:

"This was a 'two-stage' competition, with ostensible 'preliminary' and 'final' stages. Actually, the 'preliminary' nature of the first stage was a farce—with such tragic results, from the economic standpoint, that architects, as a class, must appear to intelligent laymen to be fit subjects for immediate investigation, either by alienists on behalf of the Lunacy Commission or by the Board of Charities—both of which State bodies, by the way, are to be housed in one of the new buildings.

"In effect, the competitors (sixty-four of them, we are told, from Sacramento—by men who should 'admit' and not rejoice in it) were by those same 'authorities' caused to spend not less than fifty or sixty thousand dollars, where three-fourths of that waste could, and should, have been avoided.

"The 'Code' of the American Institute of Architects recognizes both 'open' and 'limited' competitions, but deprecates the former. It also provides for two classes of 'limited competitions,' in one type of which (b) the participants are chosen 'from among architects who make application accompanied by evidence of their education and experience.' In the 'open' form the Code contains a very serious fault in that this 'evidence of education and experience' shall be offered by all competitors *after* incurring the expense of the preliminary stage.

"The Code, by the way, states that the first stage of an 'open' competition is 'open to all.' Such was not the case here, for it was 'closed' to those Americans who could not qualify, under certain restrictions, as well as to all foreigners. In essence, would it have been less 'open to all' in the first stage, once any limitation is established, if the geographical limitation had been the State of California, or Modoc County—or if the 'training and experience' qualification had been 'a previous condition of servitude in the office of Smith, Jones and Black'? Furthermore, the Code never, either by word or spirit, countenances such a 'preliminary' stage as this one was; on the contrary explicitly stating

that 'the competitive drawings are of the slightest nature, involving only the fundamental ideas of the solution.'

"In this case, the officials, against the urgent representations of the Chapter Committees, insisted on a first stage in which, with the exception that no 'sections' were called for (or allowed), there were required complete 'final' scale drawings (even including basement plans) of both buildings, rendered on Whatman paper in India ink and identical with the final stage. The omitted sections, by the way, could easily have been done in *three or four days*. But their omission, far from being a help, was a positive handicap to competitors—a section being quite as essential as either plan or elevation in studying as well as in 'setting forth the fundamental ideas of the solution.' There was allowed more than *five months'* time for this 'preliminary' stage.

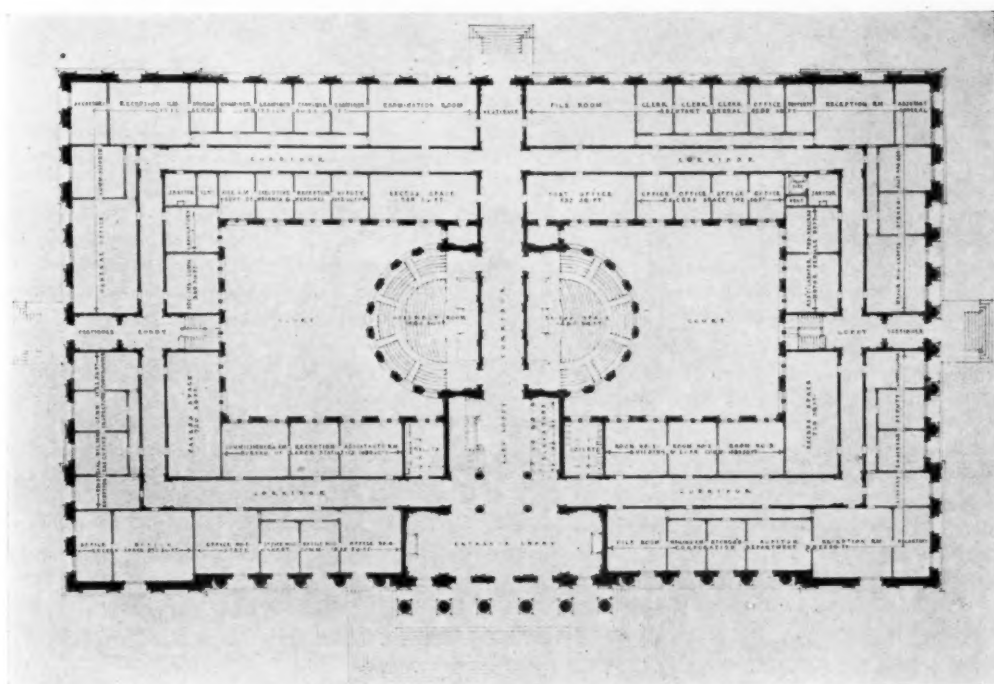
"That the 'preliminary' stage was a mockery at the plain intent of the Code is evident. What then, may the words 'least possible' in the Code mean? One may venture a specific suggestion that, in this case, the spirit and the letter of this phrase would have been properly met if there had been required, say, two principal floor plans of the Library and a plan of the Court floor, one elevation, one section (or two) of the Library and Courts building, at 1/16 inch scale and a block plan at 1/50 inch scale—all on white tracing paper, rendered only in sketch form and mounted at the corners or edges. With a time limit of, say, ten days, each set of drawings might be accompanied by an affidavit to the effect that they had been produced personally by the competitor, with no help other than one assistant, who had been regularly and exclusively in the employ of the principal for the continuous period of six months immediately preceding the issuance of the program. The drawings here described would be full and sufficient for any intelligent juror (and none other is qualified to serve, under any conditions) to make selection. Some worthy scheme might be overlooked? Doubtless—as worthy schemes *were* overlooked, even with the conditions as they existed.

"Another potential fault: the architects in the jury formed a minority, contrary to the Institute Code, and, while the geographical distribution was wise, in general the method of final choice was fundamentally wrong, as all final selections should have been made by the competitors concerned—not

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by uninformed laymen—even when professionally advised. Furthermore, it was unjust that the making of nominations for the California juror should be by general vote of the local A. I. A. Chapters, whose members have only the indirect interest of a million other citizens of the State; it was no con-

cern of anyone's, save of the avowed competitors. That the jury, as finally selected, was most excellent and efficient and made an unimpeachable choice among the 'finals' has no bearing on the *principles* involved, but only proves that good frequently comes in *spite* of adverse conditions."

Report On Labor Conditions

By the Sub-Committee of the Joint Committee of The Illinois Chapter, A.I.A., and The Illinois Society of Architects

AS precedent to readjustment of labor conditions in any scheme of general reorganization, the sub-committee on labor reorganization of this joint committee believes:

First: That the language of this country (that is the English language) shall be used in all industries and that language alone. That no notice or instructions shall be posted in any foreign language, and that after a specified period no one shall be employed outside the ranks of common labor, and then only under abnormal conditions, who does not have a fair command of English, written and spoken. The reasons for this are too obvious to need elucidation.

Second: That for a period of years (five at least) foreign immigration shall be restricted to the most enlightened and sturdiest elements and that a national effort be made to assimilate the foreign elements of our population. That when immigration shall again be permitted, any and every immigrant who cannot read and write English at the end of six months from the date of his entry into the United States shall be deported immediately.

Third: The sub-committee believes that all means of transportation, all waterways and water courses furnishing power, fuel, forests and mines, and the disposal of raw materials be placed under the supervision of the Government to be employed to the highest advantage of the greatest number of people. These fundamentals being accepted, the program of reorganization or reconstruction may be attempted with promise of success. As to details of that program, we hold among others the following principles to be indispensable in the field of universal labor of hand and brain, and essential to peaceful, progressive democracy:

1. *Minimum Standard of Wages* in industries, trades and professions, in accord with inherent quality or hazard and the cost of preparation and apprenticeship.

2. *Educational Training for All*, in observation, memory, will and expression as well as mechanics of equipment and skill of performance.

3. *Employment for All* and all employed, in necessities or amenities only, and the establishment of government labor allocation and employment bureaus.

4. *Freedom of Trade* and employment between states, cities and places—no discriminations except in quality, fitness and efficiency, and national control of capital issues.

5. *Standards of Labor* and labor conditions and housing, the elimination of child labor and the equalization of male and female labor. Standardization of and improvements in materials and methods and cost saving devices for the benefit of all, without detriment to labor and the free and unprejudicial application of new methods and devices. Enforced truthful and authoritative statements in negotiation and vending.

6. *Safeguards Against Waste* and detriment of the third party in labor disputes, price fixing and profit taking, with collective bargaining, representative negotiation and open prices; no secret treaties or secret rebates; no strikes or lockouts, except the individual right to quit or the individual liability to discharge.

7. *State Councils* for the authoritative propagation and adjudication of these principles, in each group of related industries, trades and professions, and free courts of appeal and final resort, with power to enforce decisions.

The Elimination of Waste Due to Building Codes

A BETTER appreciation of the building industry, with its multitudinous alliances, is had today than ever before. Measured as an essential for human existence, it is on equality with the production of food and clothing and its importance in the realm of finance is second to none. In supplying its demands, a greater number of different productive activities are employed than in any other industry.

As this industry seeks the avenues that lead to the resumption of normal activity, a study must be made of the conditions that obstruct. Of these, the first that occurs is the cost of materials and labor. While these costs will probably never fall to the levels of 1914, they will approach the future normal conditions as rapidly as they can be brought about through adjustments of conditions that are now abnormal.

The cost of labor and materials, of acknowledged great importance, has but little more influence on the total costs of building construction than the wastes that afflict the industry. Many of these wastes are voluntary, being in the form of misapplication of labor, inadequate or unsuitable equipment and other conditions that can be the resultant of carelessness or ignorance. By correcting these conditions, labor is made more productive or effective and consequently its cost is reduced. This, with the reductions in labor scales that in many instances will follow, disposes of that factor.

The cost of materials will naturally fall with the return of labor that was required in war work, the reduction in the cost of fuel and in many cases the cost of raw materials.

The voluntary wastes of material are due to the manner of designing and specifying their uses. These will be overcome by more intelligent effort on the part of architects and engineers and by the competition of the intelligent buyer of such service employing the most economical designer. The architects, engineers, contractors and material producers who do not take advantage of their opportunity to eliminate the voluntary wastes will naturally be driven out of business by the force of competition.

Probably the most tremendous waste in building construction is involuntary and due to laws regulating building construction, existing in the form of state and municipal codes, regulations of factory and labor commissions and in some cases fire prevention bureaus. All persons who are interested in building construction, must exert their utmost

efforts to correct, at this present time, these involuntary wastes.

The preparation and enactment of building codes is generally a slow process, being usually in the hands of commissions or committees appointed for that purpose. The personnel of these committees is often unfortunate, being dictated by political or private interests or composed of too many honest and well intentioned persons whose competency, based on broad experience and real practical knowledge, is questionable. Observation shows that the enacting bodies are always ready to adopt the conclusions of such committees promptly and expeditiously and without question. It then follows that such committees should be composed of a limited number of active and successful men who are compelled, by the demands of their other activities, to work quickly and reduce the code to a minimum in scope and size. With the experience in these matters which has been had, there is no reason why such a committee should not formulate a code in three months if the work was handled with the same expedition that obtains in any successful private enterprise. These things can be done if the desire so to do is present.

The code should contain only the minimum requirements that are necessary to insure that a building is structurally safe and sanitary, with adequate provision for fire-prevention and safety to life. Following antiquated precedents, most codes are specifications in effect, long winded and often contradictory in their provisions. It seems ridiculous that a law should describe, in minute and verbose detail, how mortar should be mixed or shingles laid. These things are within the province of the architect's activities and belong in his plans and specifications which are always subject to the approval of the building departments.

A doctor studies medicine, serves as an interne and is finally licensed to practice in a legal manner—but the law does not state in detail just how he shall perform an operation or write a prescription. Note the rapid advances in the practice of medicine and surgery. On the other hand, building codes apparently are made on the hypothesis that architects and engineers are absolutely incompetent to direct their work without minute legal restrictions covering every detail of a structure. And this in the face of the inspection of plans and specification by building departments and inspection of the work as it is constructed.

THE AMERICAN ARCHITECT

A code should be so made that it can be revised as fast as progress in building construction takes place. This is best accomplished by a body authorized to perform this function, similar to the Board of Standards and Appeals in New York City or the Commissions that govern many American cities.

When the art of constructing with reinforced concrete was in its infancy in this country, there were no codes regulating such undertakings. Under these conditions many buildings were erected two and three stories high and were later increased to five and six stories in height. The initial designs were made in the light of the then available knowledge and the buildings were well built. The cities in which these buildings stand have since adopted reinforced concrete codes, the provisions of which indicate that many of these magnificent and amply safe buildings should be unsafe and should have collapsed the moment the laws became effective. Such is *law*. Why?

Codes are generally made for the worst conditions of incompetent architectural and engineering designing and inspection and bad construction by dishonest and incompetent contractors. This is a sad commentary on the efficiency of the administrative ability of American cities and the standing of the related professions. This theory of law-making is entirely wrong.

Laws should be made for the best conditions and *effectively administered*. It does not speak well for the architects, engineers and contractors that they have quietly labored under these false assumptions of the building codes and it is now time that they should assert their true place in the political economy of this country as competent and honest men. A building department of any American city which thus admits its inability properly to enforce the law and conserve the interests of the citizens should be dismissed at once and replaced by those who can effectively administer wise and proper laws.

A city which has an improper building code is handicapped and its growth hindered by the burden of useless costs incorporated in building construction. The intelligent investor in such projects will locate in such cities that make it possible for him to secure an adequate return for his investments to which every investor is entitled. It needs no argument to substantiate the fact that the state of the building industry in any community is the index

of its prosperity. It then behooves those who have the interests of the industry at heart, architects, engineers, contractors, material producers, realtors and citizens generally, to make the proper revision of building codes now the first order of business.

The Hazard of Film Exchanges

IN urging upon architects that it was part of their duty as citizens and particularly within the legitimate activities of their profession to become identified with movements that conserved public health and insured safety, THE AMERICAN ARCHITECT believed it was consistently carrying forward its efforts toward a proper readjustment of architectural practice.

A concrete instance may be found in our issue of July 17, 1918, wherein were discussed and described the hazards due to the use of buildings not properly safeguarded, such, for example, as film exchanges. The essential features of the new code adopted by the City of Chicago to regulate the construction and equipment of buildings occupied as film exchanges were presented, and it was pointed out that these hazards existed in all cities of any considerable size throughout the United States.

Press reports of a film exchange fire in Pittsburgh state that nine persons lost their lives and a score of others received serious injuries. It develops that several exchanges were housed in the destroyed building through which the fire spread, accompanied by many explosions peculiar to this class of fires.

It is again suggested that architects, particularly in locations where there are organized bodies of the profession, should by united effort secure competent survey of every building used as a film exchange, and see to it that the general safety is assured by such municipal action as will reduce the hazard to its lowest possibility of damage, not only to the occupants of these buildings but to the entire community.

Architects with supersensitive attitude toward professional advertising might find a good method of acquainting the public with their existence by actively forwarding a reform that is so absolutely necessary.

Re-education of Disabled Soldiers and Sailors

EMPLOYERS of labor are to have a most important part in the rehabilitation of two hundred thousand American men disabled in the war. According to a monograph, "What the Employers of America Can Do for the Disabled Soldier and Sailor," recently issued by the Federal Board for Vocational Education, the success of the Government's big program dealing with the men who have borne the brunt of battle, to a great extent, depends upon the attitude and co-operation of the employer.

It is the intention of the Government to assist in replacing each man, regardless of his handicap, in suitable civil employment. The men are not to be dealt with from the viewpoint of giving them special "soft" jobs. Sympathy and charity are neither needed nor desired. On the other hand, the employers of America are requested to consider the employment as a business proposition. More harm than good will be done to the disabled man if he is merely "taken care of" in a job in which he cannot make good and earn advancement.

The Government has provided that its disabled man may be retrained in order that he may overcome his handicaps and be re-established as an efficient worker. Through the co-operation of the employers definite jobs will be made available. The training of each individual will be made thoroughly practical and pointed toward a specific occupation to which he may go when he is industrially fit to do so.

The utmost care is to be taken that each man is trained for and placed in a job in which he can make good. Each case will be considered individually on its merits by experts of the Federal Board and by a physician, an employer and a representative of labor in the home district of the man who is to be trained. An effort will be made to place each man in the occupation in which he is most interested, provided it is neither waning nor overcrowded. While it is the policy of the Federal Board to return the man to his former occupation, it can if deemed advisable train him for an entirely new trade. In each case the previous education and experience and the nature of the man's handicaps will be given full consideration in determining a suitable occupation.

Courses of instruction in all agricultural, industrial, commercial and professional occupations are being provided under the jurisdiction of the Federal Board.

No attempt is being made by the Government to establish special schools for the training of disabled men. The most reputable trade and vocational schools, colleges and other well-organized institutions will be utilized. In many cases the training will be given in the factory, shop or office in which the disabled man will be employed after he has finished his course of instruction, and is competent to do the work.

All expenses of course of training, the personal living expenses of the disabled man, and in the case of one who could not successfully follow an occupation without retraining, allowances will be paid to his dependents by the Federal Government.

After the man goes to work his interests and those of his employer will be safeguarded by a follow-up system of supervision established by the Federal Board. While each man will be free to do as he chooses, the policy of the Board will be to see that he makes good, and if he is unable to do so he may receive additional training in the chosen occupation or in some other pursuit in which he is more likely to become efficient. This additional training, when found necessary, will be given entirely at the expense of the Government and on the same basis as the previous course.

Though he may be handicapped in body, the disabled man who carries on through a proper course of training and is placed in a real job will have the satisfaction of feeling that he is doing a man's work. He will be independent and will be able to retain his self-respect.

The employer who thinks he is doing a patriotic duty by giving the disabled man a temporary soft job at high wages is only helping to make one of America's brave soldiers dissatisfied and dependent in future years of his life.

Co-operation of the right kind is sought. Every employer will do well to learn his part in this great work for the disabled soldier and sailor. Action should be taken in this matter. Inquiries should be addressed to the Federal Board for Vocational Education, Washington, D. C.

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The Definite Specification

IT will probably be admitted that the physician who made a practice of prescribing certain drugs—"or others whose pharmacodynamic properties were similar"—would soon lose the confidence of his patients, and yet that is in effect what the architect is doing who persists in the outworn and discredited practice of writing "or equal" after the specification of a given material or equipment.

Unless he entirely neglects to perform his function and leaves the decision to the builder, he must sooner or later determine what is to be used and, considered both from the standpoint of the client's interest and his own reputation, it would seem to be desirable that he inform himself and make his decision when the specification is written rather than after the contract is let.

The old argument to the effect that a definite specification fosters high prices has been effectually disposed of by leading architects who have for years been specifying the materials and equipment that their experience and investigations have shown were best suited to meet the particular requirements of the occasion, without alternative. It is evident that no manufacturer of standing and responsibility would take advantage of a definite specification to increase his price. To do so as a policy would be business suicide. Without doubt, any attempt that

has ever been made to profit unduly by reason of being favored by a definite specification was the result of a mistaken effort of some subordinate in a manufacturer's organization to improve his balance sheet. Such a circumstance needs only to be brought to the attention of the heads of the concern to be corrected.

A definite specification does not necessarily mean that choice is limited to a single article. Where there are two or more of equal merit and suitability the specification is no less definite if both or all are mentioned. If there is a difference in price, the contractor should include a bid on each. In this way, really competitive figures are secured. On the other hand, if there is but one article or material that will, in the opinion of the architect, give better results than any other, he should have the moral courage to specify it outright.

A client who lacked confidence in the architect's competence or integrity in the matter of specifications should obviously bestow his commissions elsewhere. When the indefinite specification containing ambiguous provisions, so called "grandfather" clauses attempting to put all responsibility on the contractor, and the iniquitous "or equal" phrase disappears entirely from architectural practice, the public confidence in architects will unquestionably be greatly increased. Fortunately progress is being made and comparatively few architects worthy of the name are now in practice who cling to the old forms.

Memorials in New York

THE daily press in New York has printed communications, offering what the writers believe to be the most appropriate forms for memorials. The majority of these suggestions are so impractical and visionary as to be unworthy of serious consideration. For this reason it appears to be a proper time to discuss the subject of memorials in New York and endeavor so to act as to prevent grave errors and the perpetration of artistic blunders.

THE AMERICAN ARCHITECT has in the past maintained and is yet of the opinion that any permanent memorial involving the expenditure of a considerable sum of money should be utilitarian in character, always designed and built with every dignification of good artistic expression.

In a previous issue of THE AMERICAN ARCHITECT there was presented a design for a landing stage and stadium on Riverside Drive at Grant's Tomb. The necessity for a properly designed and constructed permanent landing stage where the nation's guests might be received and welcomed in

THE AMERICAN ARCHITECT

a dignified manner has been many times stated, and action that would lead to results urged.

We have an excellent opportunity to combine the utility of a much needed civic feature with the best element of artistic design. It will be a comparatively easy matter so to arrange the plan for the Riverside Drive improvement as to provide for this landing stage and stadium, which could be made a joint memorial to our soldiers and sailors.

IF this plan should not meet approval, we have another excellent choice in the decorative treatment at 110th Street and Riverside Drive that was proposed during the Hudson-Fulton celebration. This design also contemplated a landing stage and a dependent decorative landscape treatment of that neighborhood, to be crowned by a temple. There might also be considered the admirable design for a victory memorial, published in *THE AMERICAN ARCHITECT* of Dec. 4, which includes a landing stage feature. The temporary arch now being erected in Union Square will undoubtedly be favorably considered by a great number of citizens, although its permanent location on its present site may not be as generally approved.

In addition and at different times during the past ten years various artistic societies have presented splendidly conceived projects, all of them containing germs of ideas that at this time will be worth careful consideration. All of these schemes have been evolved as the result of the application of the highest artistic effort. They have received endorsement by the best judges, and they have lapsed into obscurity. It is now time for action. It will be no time for a purely academic discussion and ineptness. Such a course will be one of the utmost ingratitude and one we shall not be able calmly to contemplate in the future.

A COMMITTEE composed of members of our leading architectural organizations with power to select and present a plan should be immediately formed. A second committee whose duties should be solely to provide the necessary money should also be formed. On this committee the city government should be fully represented, and the committee start on its work with the assurance that the city will contribute a certain amount, the remainder to be raised by public subscription.

The criticism made with reference to the proposed stadium and landing stage at Grant's Tomb,

that it might be regarded as purely a naval memorial, does not hold good. A landing stage for distinguished guests, whose mission to this country will be for many and different purposes, none perhaps naval, could in no sense be considered as solely a naval memorial. As we now conduct these matters, there is probably no maritime city which is so poorly equipped to receive its guests in fitting manner. The ramshackle emergency landing places that have been erected in the past, for the accommodation of the city's guests, have been a reproach to our civic pride and a source of regret to every patriotic citizen. No better scheme can be devised, now that we are determined that the broad expanse of Riverside Drive shall be returned to its rightful owners, the people of New York, and properly laid out and cared for, than to provide a memorial feature to our soldiers and sailors which will fittingly express in dignity and artistic conception the very large debt of gratitude we owe them.

A FURTHER scheme for memorials, and one that would be more local, is suggested by our celebration of the Fourth of July and other holidays. During the past four years, perhaps even earlier, we have throughout the country conducted these occasions in what has been well described as a "safe and sane" manner. In place of all the noise and dangerous elements, a very much more dignified program is now carried forward. Its best performance, and its ability to teach valuable lessons of patriotism and civic pride, is marred by the makeshifts of temporary rostrums and decorative features. Why not lay out the city into certain areas, or sub-civic centers, and in each one provide a memorial rostrum, after the manner, perhaps, of The Altar of Liberty, now in Madison Square? On the tablets of these rostrums could be placed the names of men who were in service from each particular section. These structures could be surrounded with such architectural and landscape effects as would make them beauty spots. The many recreation centers about the city would offer sites for these rostrums, while our recreation piers might be dignified as memorials to our sailors of the naval reserve who have served in these wars.

These things, while purely suggestive, are the basis of a scheme that is believed to be entirely feasible, well considered, and to afford the utilitarian aspect that should be a part of all well-considered memorials.

Beaux-Arts Institute of Design

DIRECTOR OF THE INSTITUTE, LLOYD WARREN

ARCHITECTURE, WILLIAM F. LAMB

SCULPTURE, JOHN GREGORY

MURAL PAINTING, ARTHUR CRISP

INTERIOR DECORATION AND INDUSTRIAL ART DESIGN, ERNEST F. TYLER

Official Notification of Awards— Judgment of December 17th, 1918

PROGRAM

CLASS "B"—I ANALYTIQUE

The Committee on Architecture proposes as subject for this Competition:

"A DOORWAY."

INTRODUCTION:

An architectural feature should not only be in scale with the whole building of which it forms a part, but also be in scale with human beings. This human scale is given by means of certain elements that are so intimately related to man's use that they should not vary much—such as steps, balustrades, the leaves of doors, etc. In addition to this means of giving human scale, there are more subtle means, such as size of stone courses, number of members in a cornice, etc.

THE PROBLEM:

The subject of this projet is the appropriate architectural treatment of the main entrance to a large city club for men. The building is of stone, 6 stories high. The first floor is 4 feet above the level of the sidewalk. From first floor to second floor is 20 feet. There should be a balcony over the entrance where the members may view parades—reached through a second story window. This window, however, need not be shown in this projet, except the window sill in the section. None of the treatment, not even the steps, shall project more than 6 feet beyond the main face of the façade, but the treatment may be recessed into the building as far as 6 feet within the façade. One of the classic orders should be used.

JURY OF AWARD: R. M. Hood, J. W. O'Connor, J. F. Harbeson, D. J. Baum, C. Ewing, L. E. Smith and B. W. Morris.

This Jury also served as Jury of Award for Class "B"—I Projet, Class "A"—I Esquisse-Esquisse and Class "B"—I Esquisse-Esquisse.

Number of drawings submitted: 29

AWARDS

FIRST MENTION PLACED: W. Ullrich, Atelier Hiron, N. Y.

FIRST MENTION: H. V. Murphy, Beaux-Arts Atelier, Wash., D. C.; S. M. Jokel, John Huntington Polytechnic Institute, Cleveland.

MENTION: W. F. Frederick and A. N. Schaeffer, Beaux-Arts Atelier, Wash., D. C.; F. Galante, Atelier Brazer, Chester; L. T. Obel, Helen M. Gail, A. T. Terrell, W. D. Moyle and S. Oxhandler, Columbia University, N. Y.; E. Babitsky, John Huntington Polytechnic Institute, Cleveland; J. W. Meyer, Jr., care of Warren & Clark, N. Y.; W. R. Shirley, Syracuse University, Syracuse; L. C. Neilson, Atelier Treganza, Salt Lake City; J. L. Fleming and E. M. Moore, University of Kansas, Lawrence; A. C. Weatherhead, University of Oregon, Eugene; T. J. Rowland and H. Bradley, George Washington University, Wash., D. C.

PROGRAM

CLASS "B"—I PROJET

The Committee on Architecture proposes as subject for this Competition:

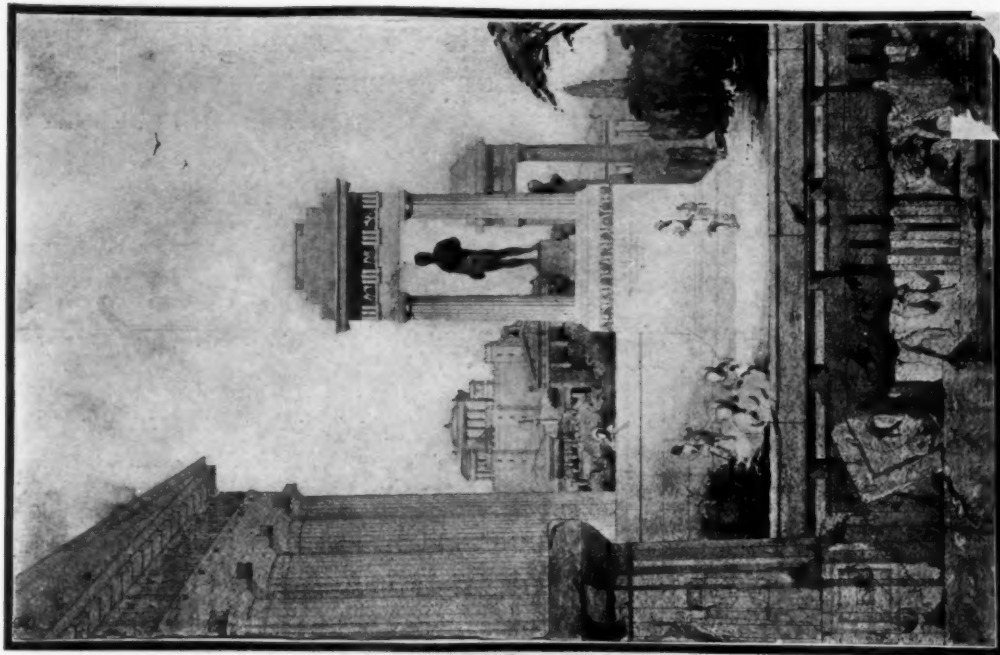
A YACHT CLUB

Upon an embankment sloping steeply down to the shores of a lake, it is proposed to build a small yacht club, the members of which are devoted to the sailing of small boats, rowing and canoeing. The nature of the ground is such that there is comparatively level space of about 100 feet between the water's edge and the embankment, while above it the ground is also fairly level. This embankment is about 15 feet high. These conditions will give an opportunity to provide, in the basement of the club-house, storage space for canoes and shells which can be very easily run up from the water. The basement will also contain locker rooms and showers for the club members.

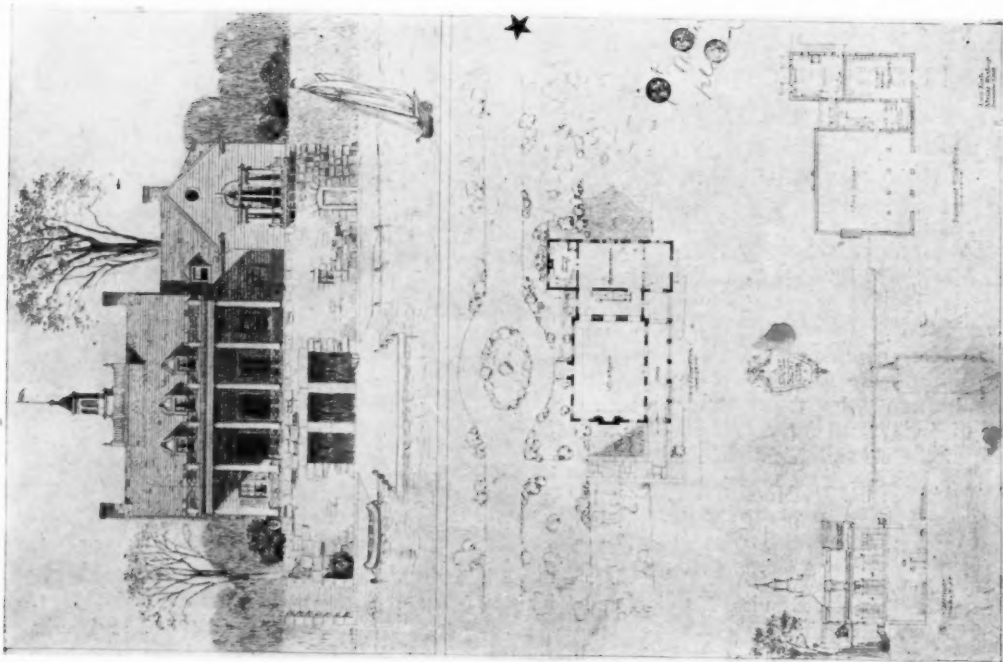
The main floor will provide a club or lounge-room, a restaurant, a kitchen and serving pantry (the kitchen may, if desired, be placed in the basement, in which case there should be provided a service stairway and a small pantry on the main floor).

Above, will be arranged several rooms and baths for guests.

THE AMERICAN ARCHITECT



J. W. HERSHEY 3D MEDAL JOHN HUNTINGTON POLYTEC. INST.
CLASS A AND B, ARCHAEOLOGY. I PROJET
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



LOUIS KURTZ 1ST MENTION, PLACED ATELIER WYNKOOP
CLASS B. I PROJET—A YACHT CLUB
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

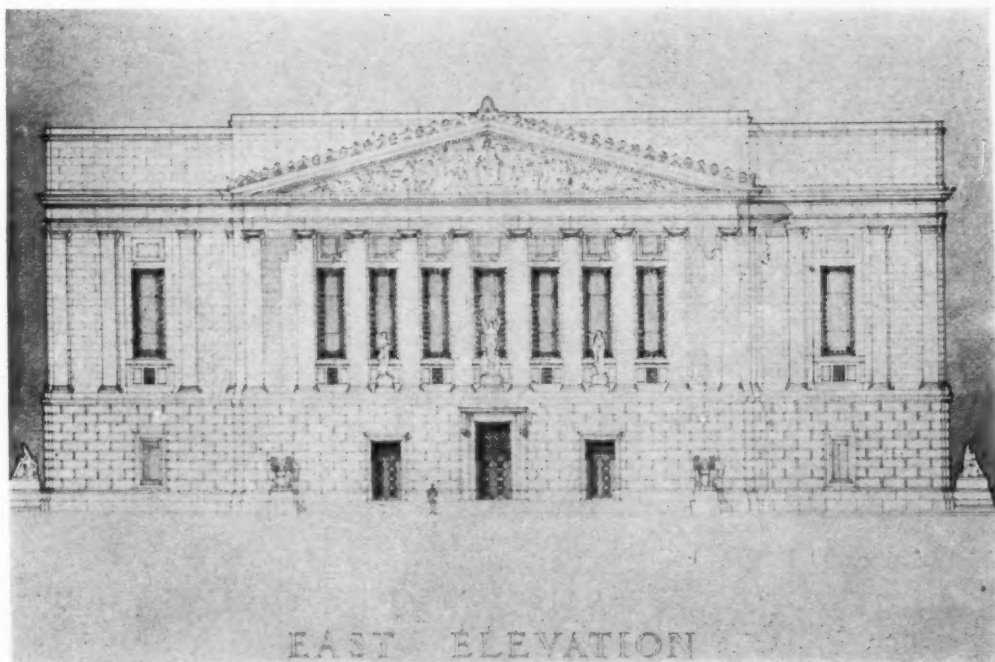
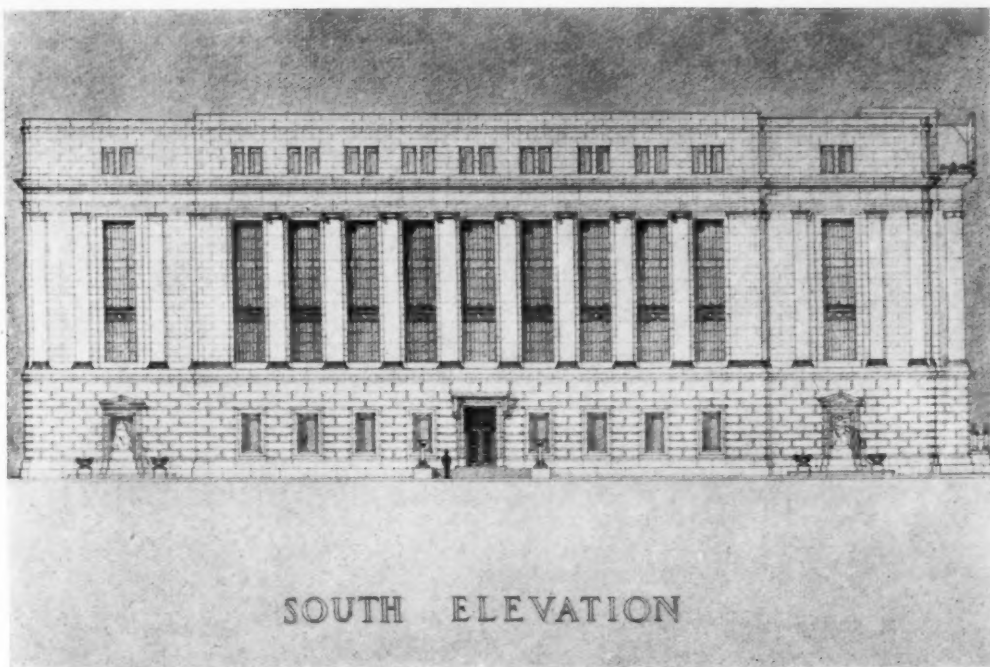


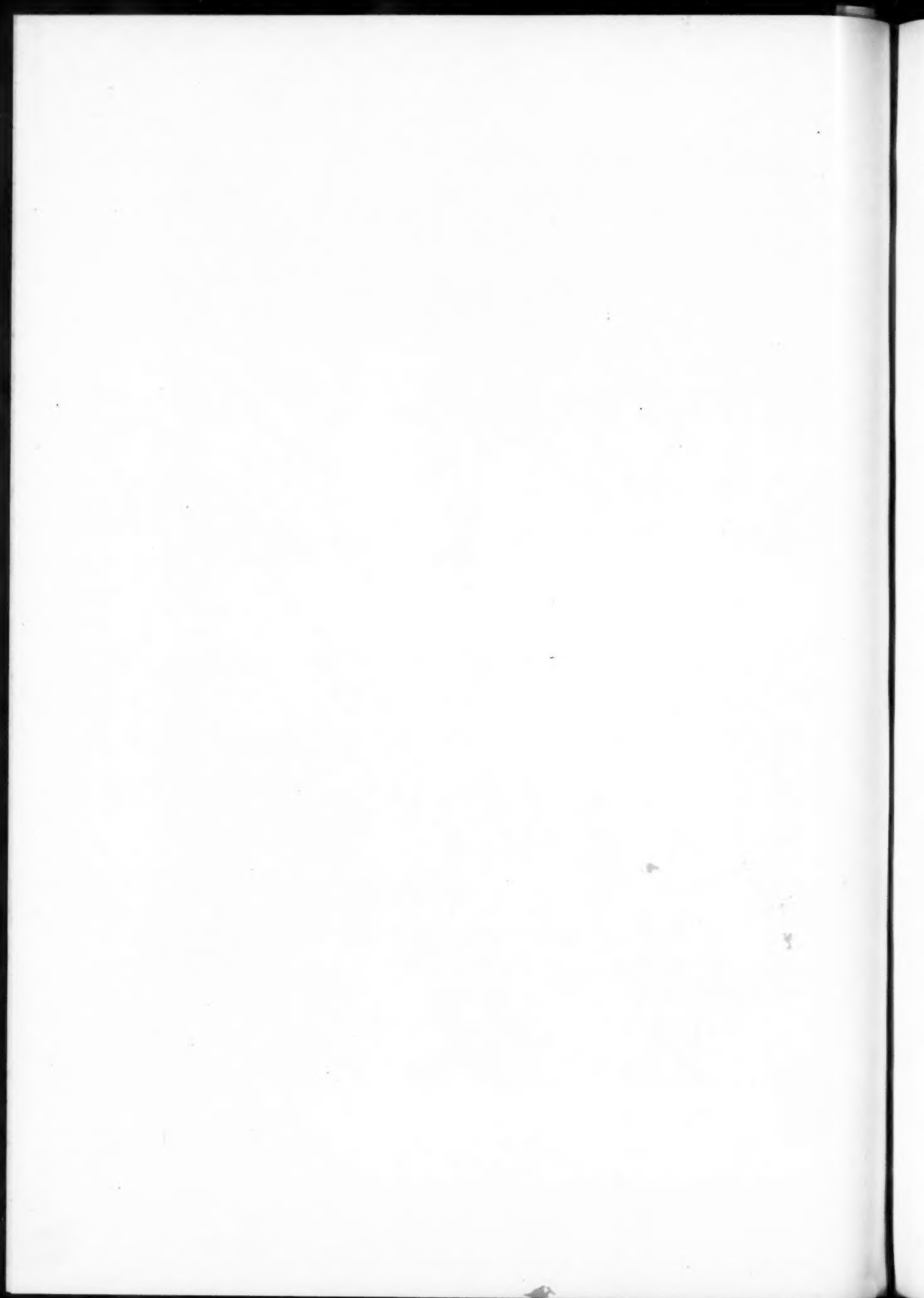
PLATE 25

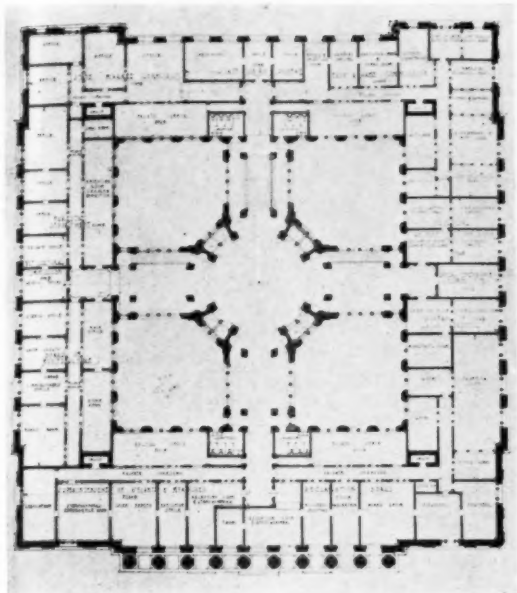
OFFICE BUILDING

PRIZE WINNING DESIGN

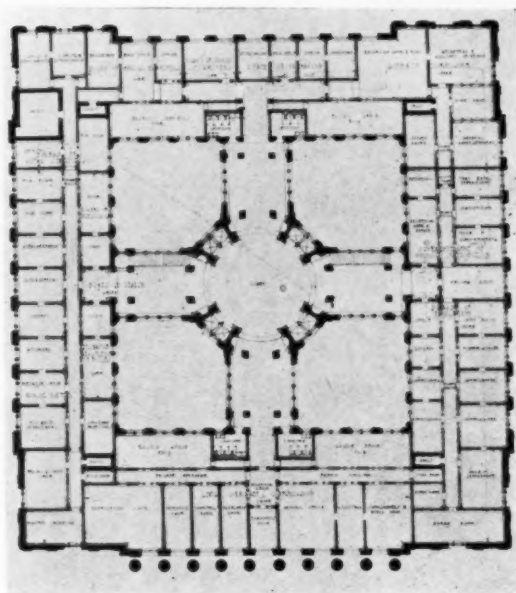
WEEKS & DAY, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION





SECOND FLOOR PLAN



THIRD FLOOR PLAN

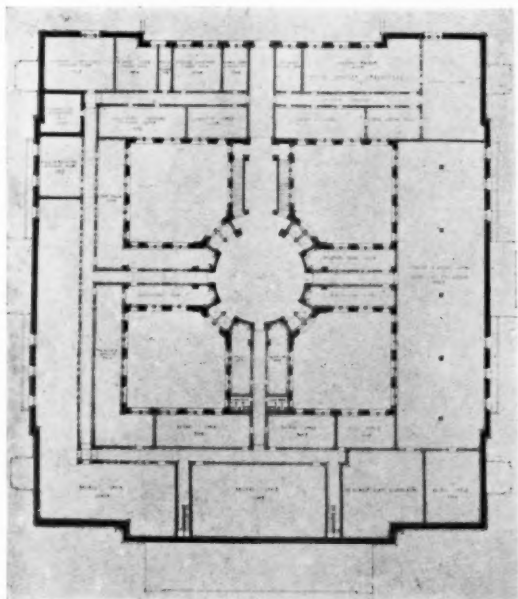
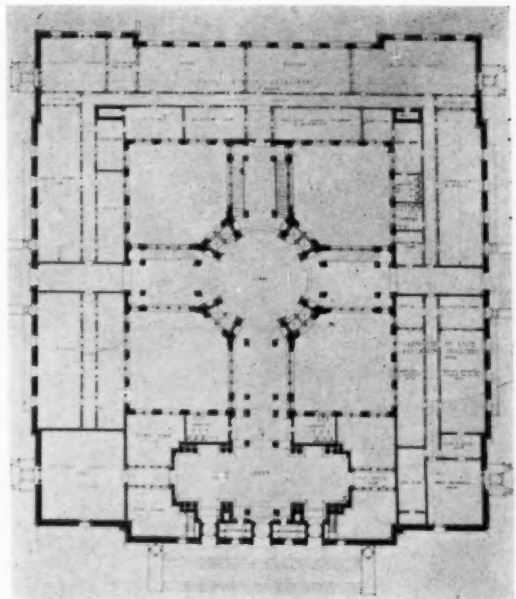


PLATE 26

BASEMENT FLOOR PLAN



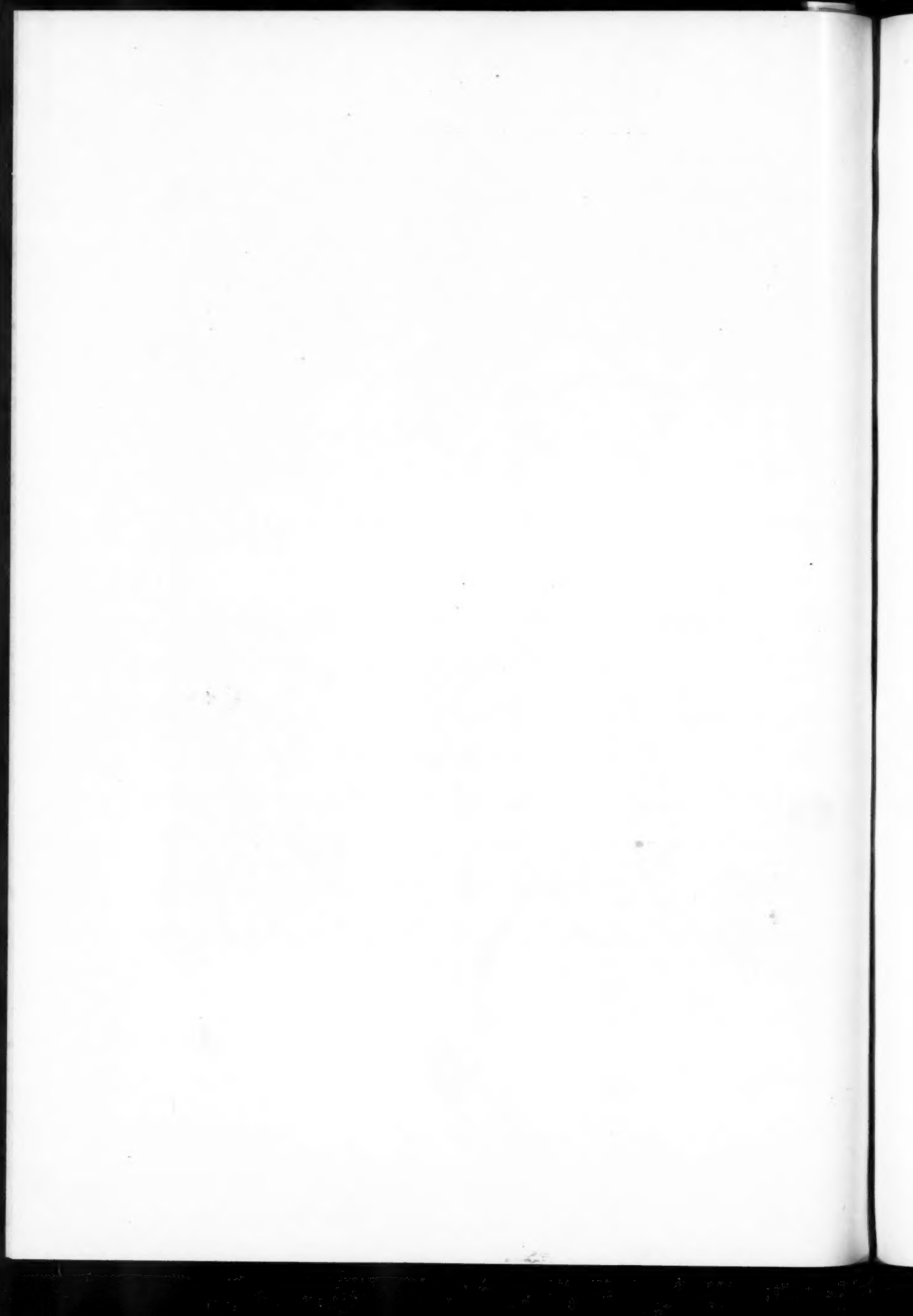
FIRST FLOOR PLAN

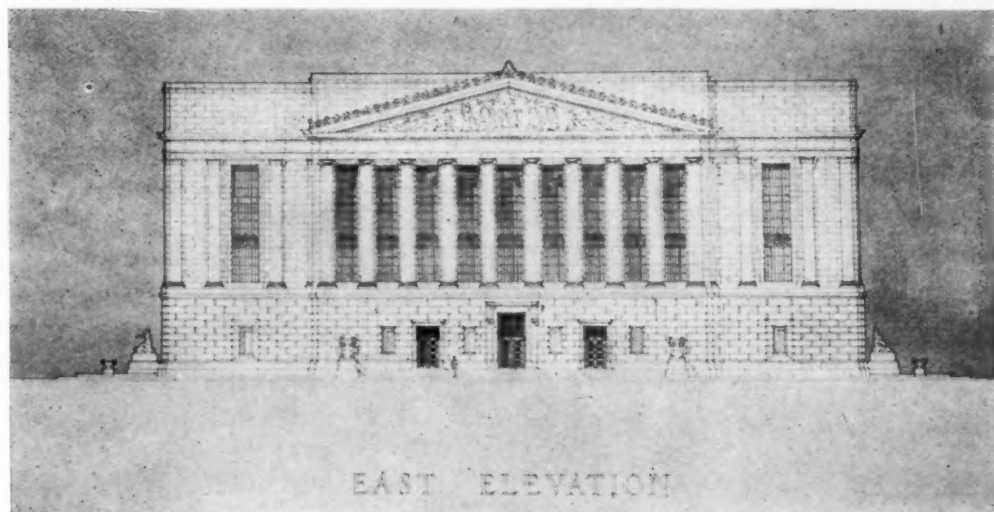
FLOOR PLANS, OFFICE BUILDING

PRIZE WINNING DESIGN

WEEKS & DAY, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION





THE LIBRARY

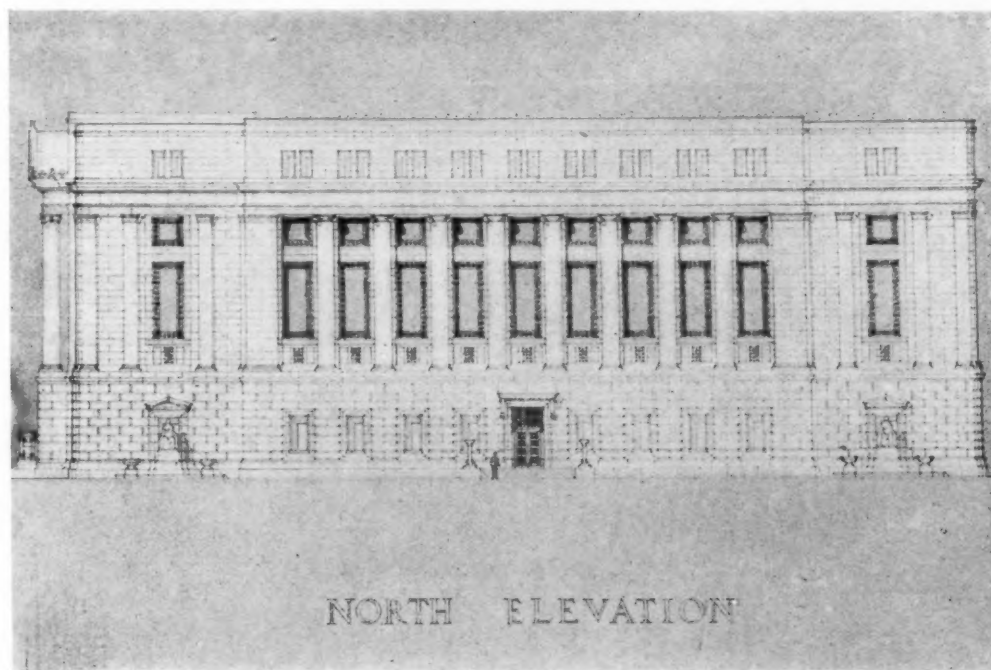
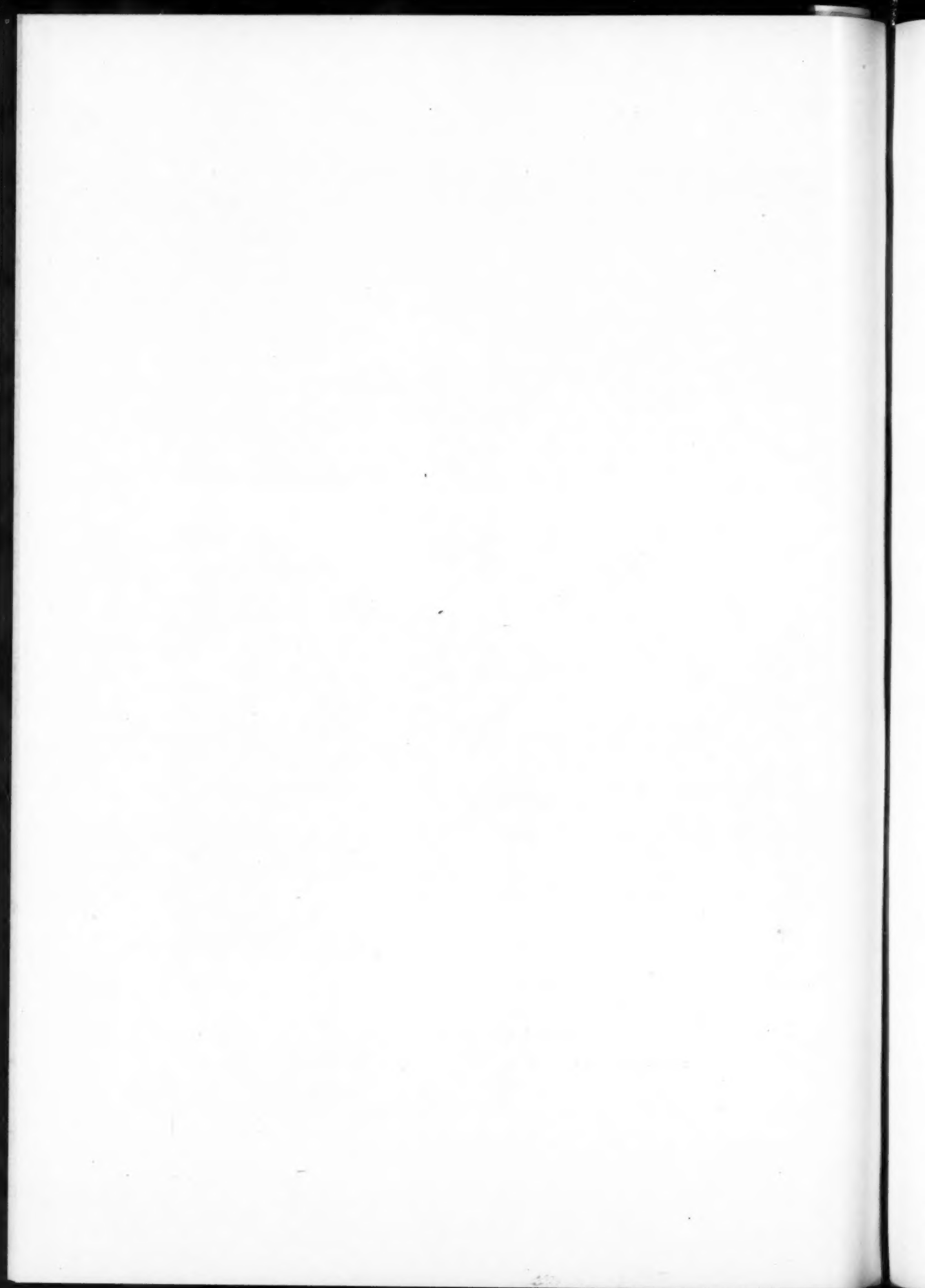


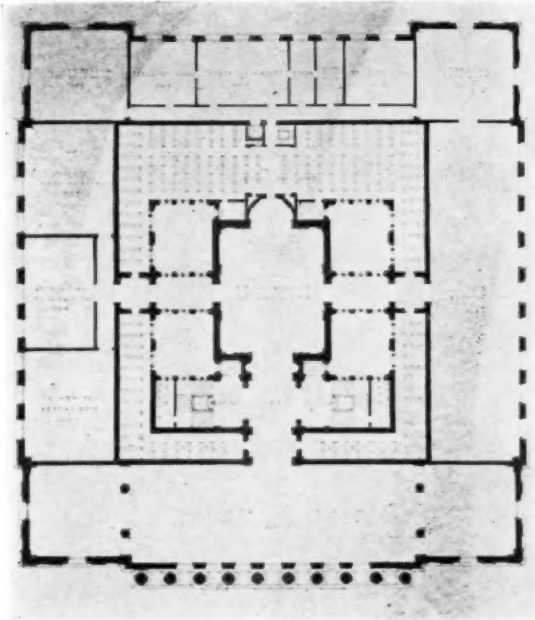
PLATE 27

LIBRARY BUILDING

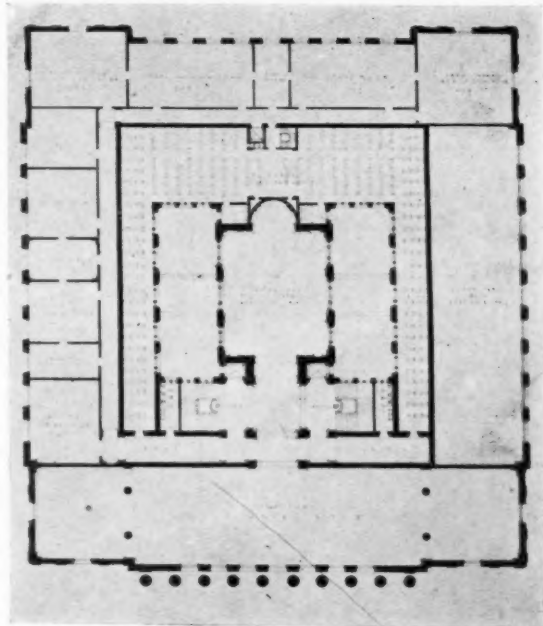
PRIZE WINNING DESIGN
WEEKS & DAY, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION





SECOND FLOOR PLAN



SECOND FLOOR MEZZANINE

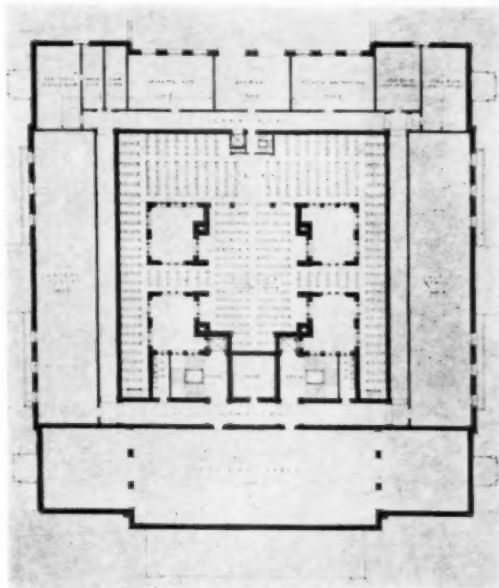
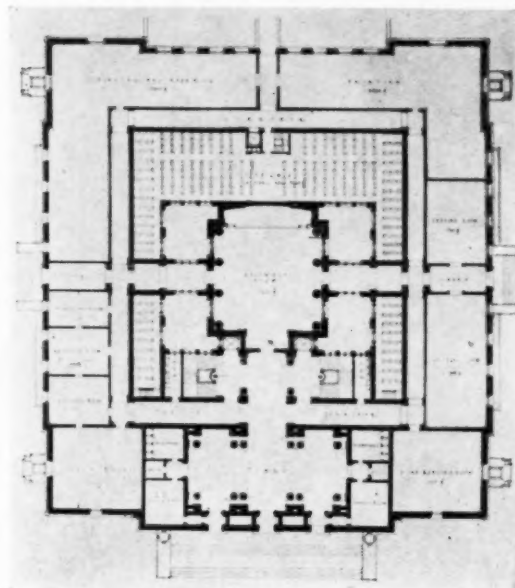


PLATE 28

BASEMENT PLAN



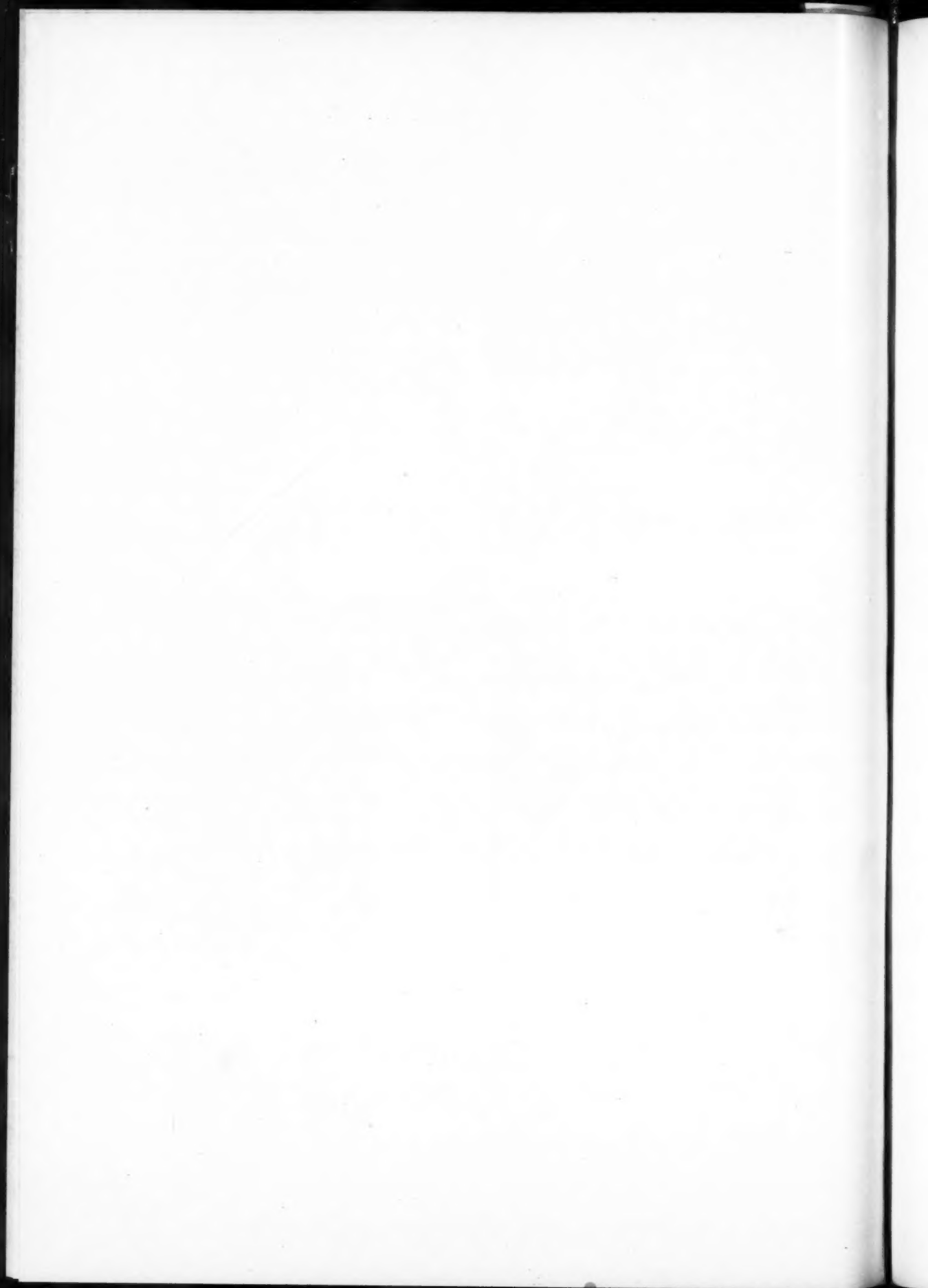
FIRST FLOOR PLAN

FLOOR PLANS, LIBRARY BUILDING

PRIZE WINNING DESIGN

WEEKS & DAY, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION



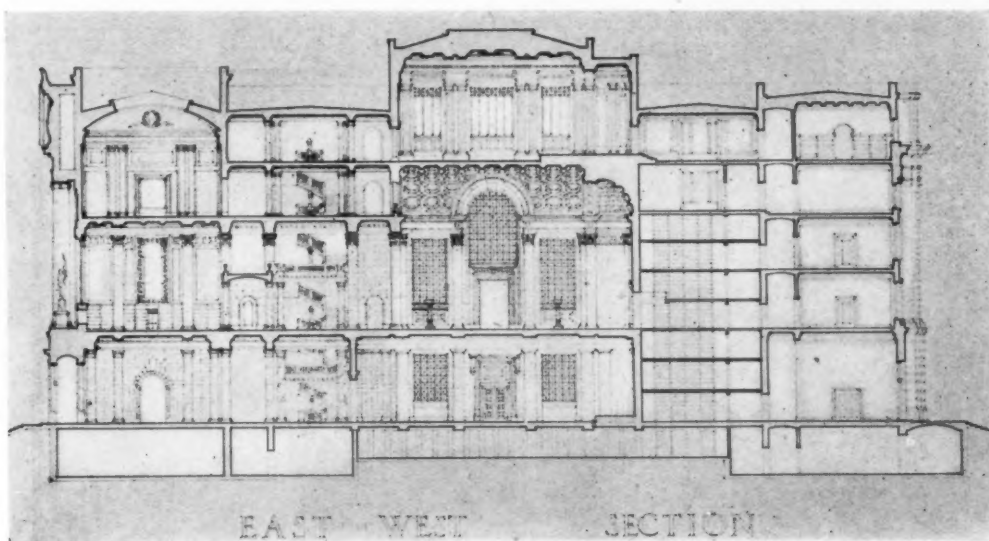
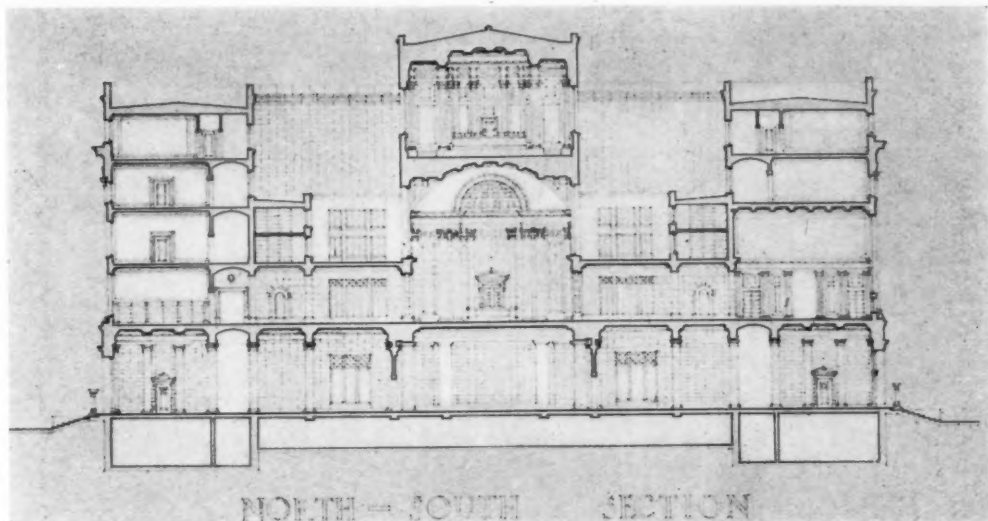


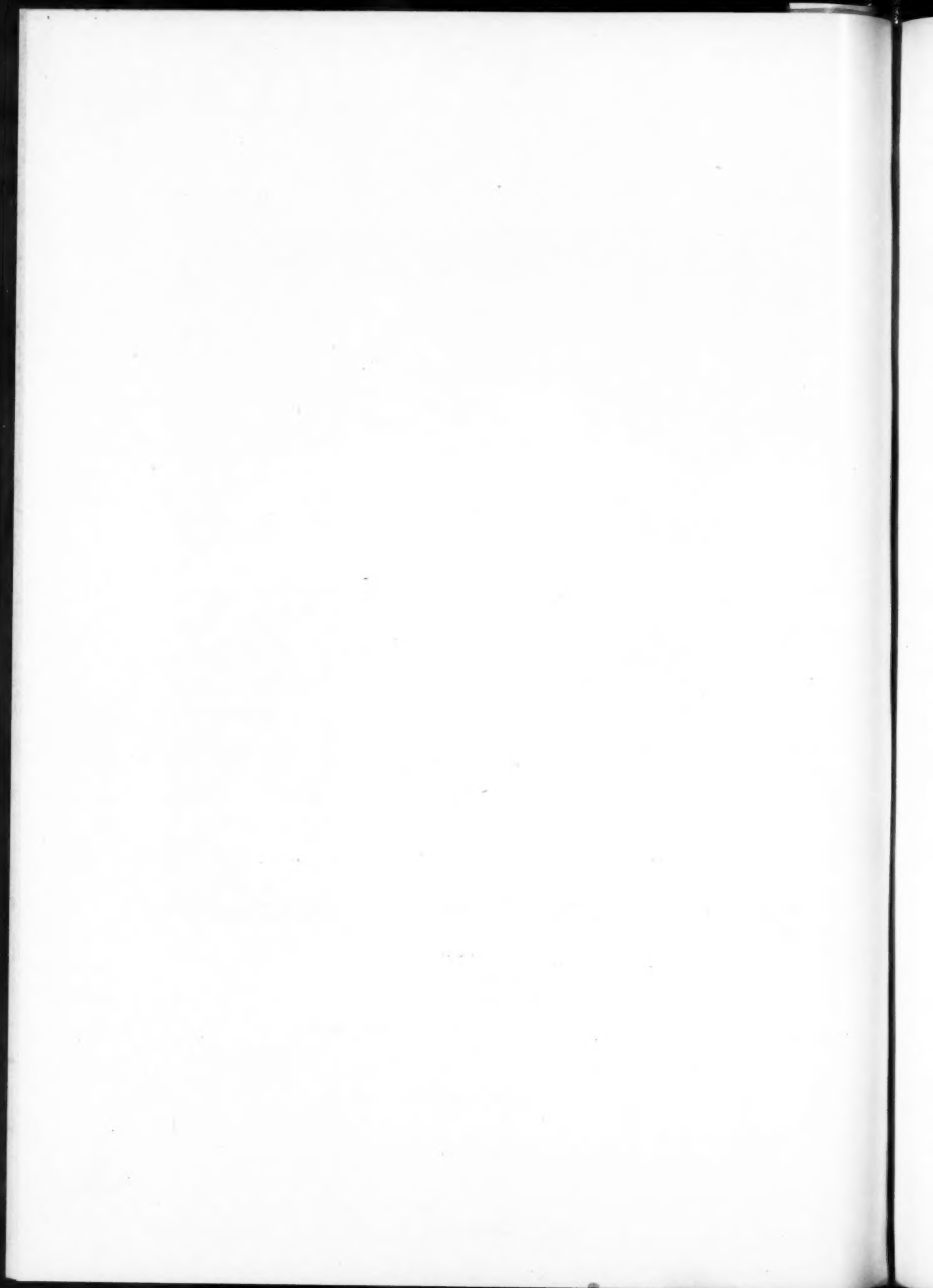
PLATE 29

SECTIONS, LIBRARY AND COURTS BUILDING

PRIZE WINNING DESIGN

WEEKS & DAY, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION



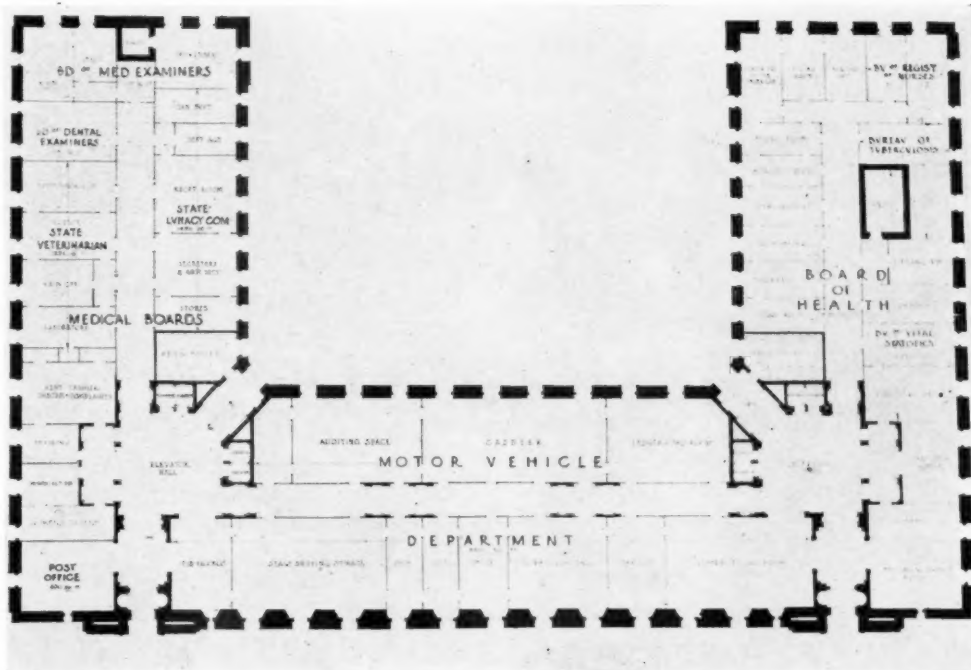
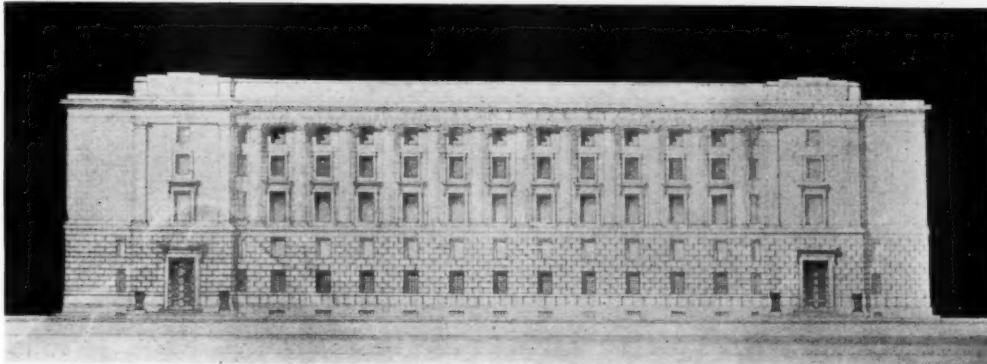
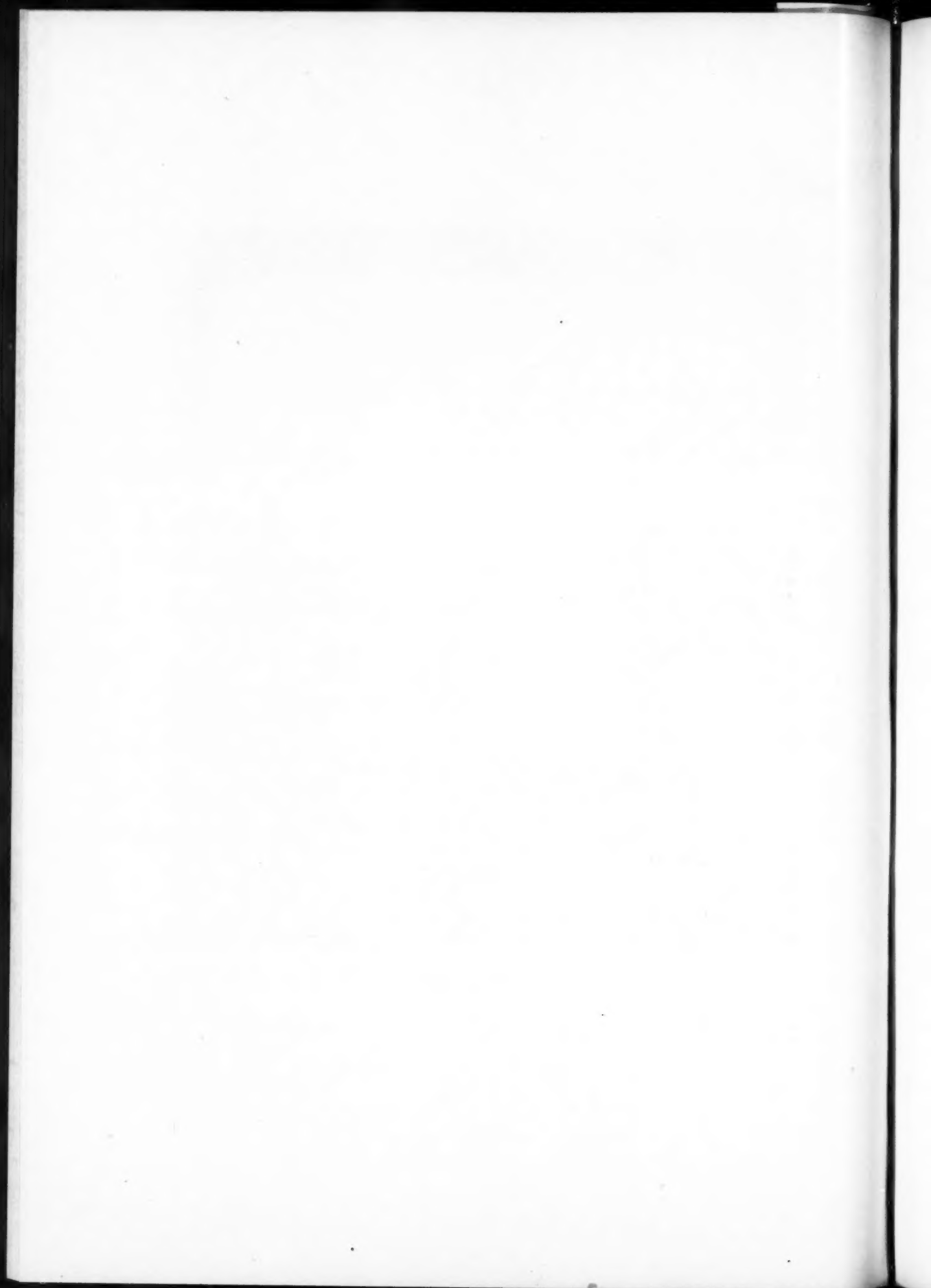


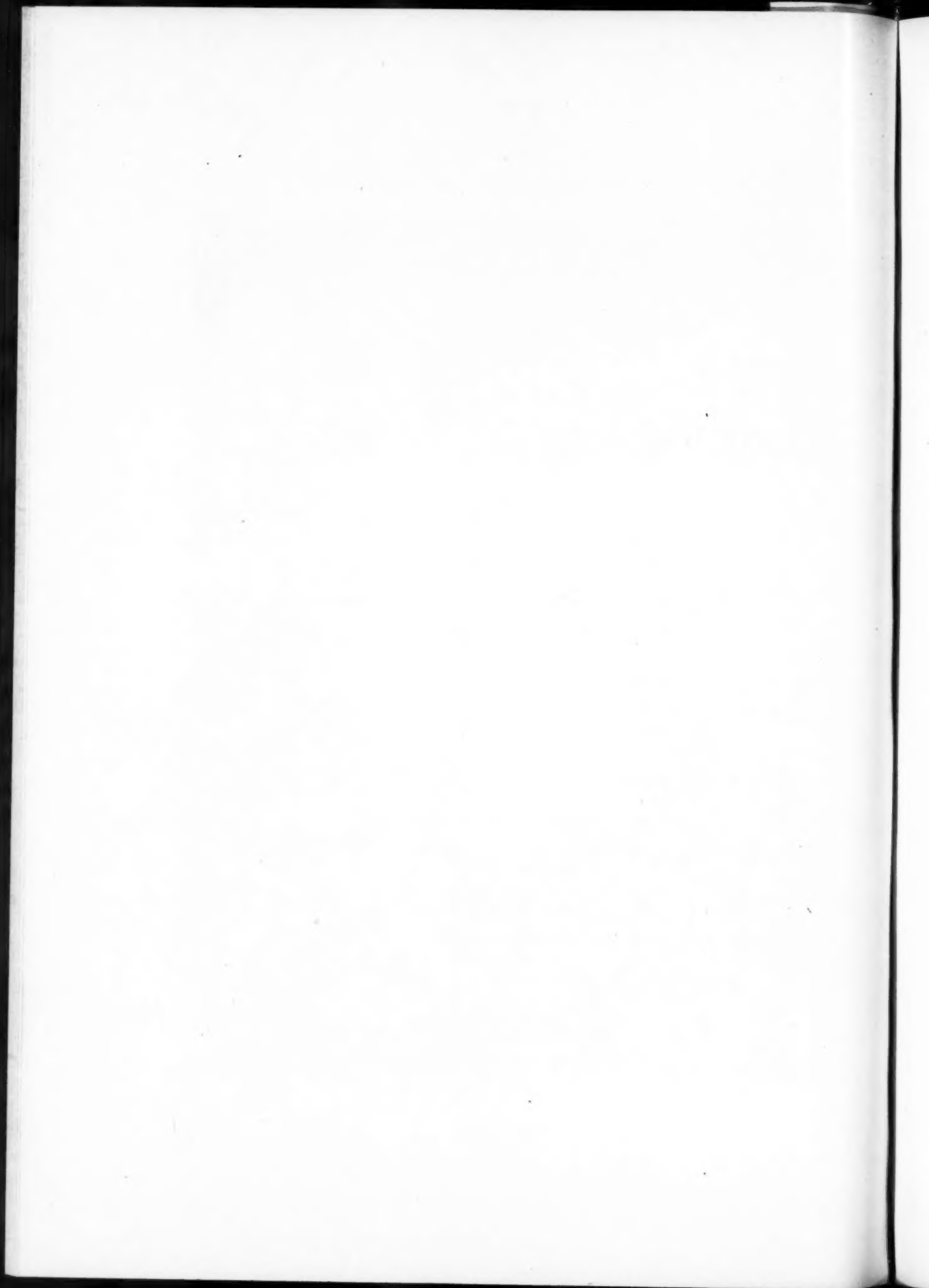
PLATE 30

OFFICE BUILDING

DENNISON & HIRONS, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION





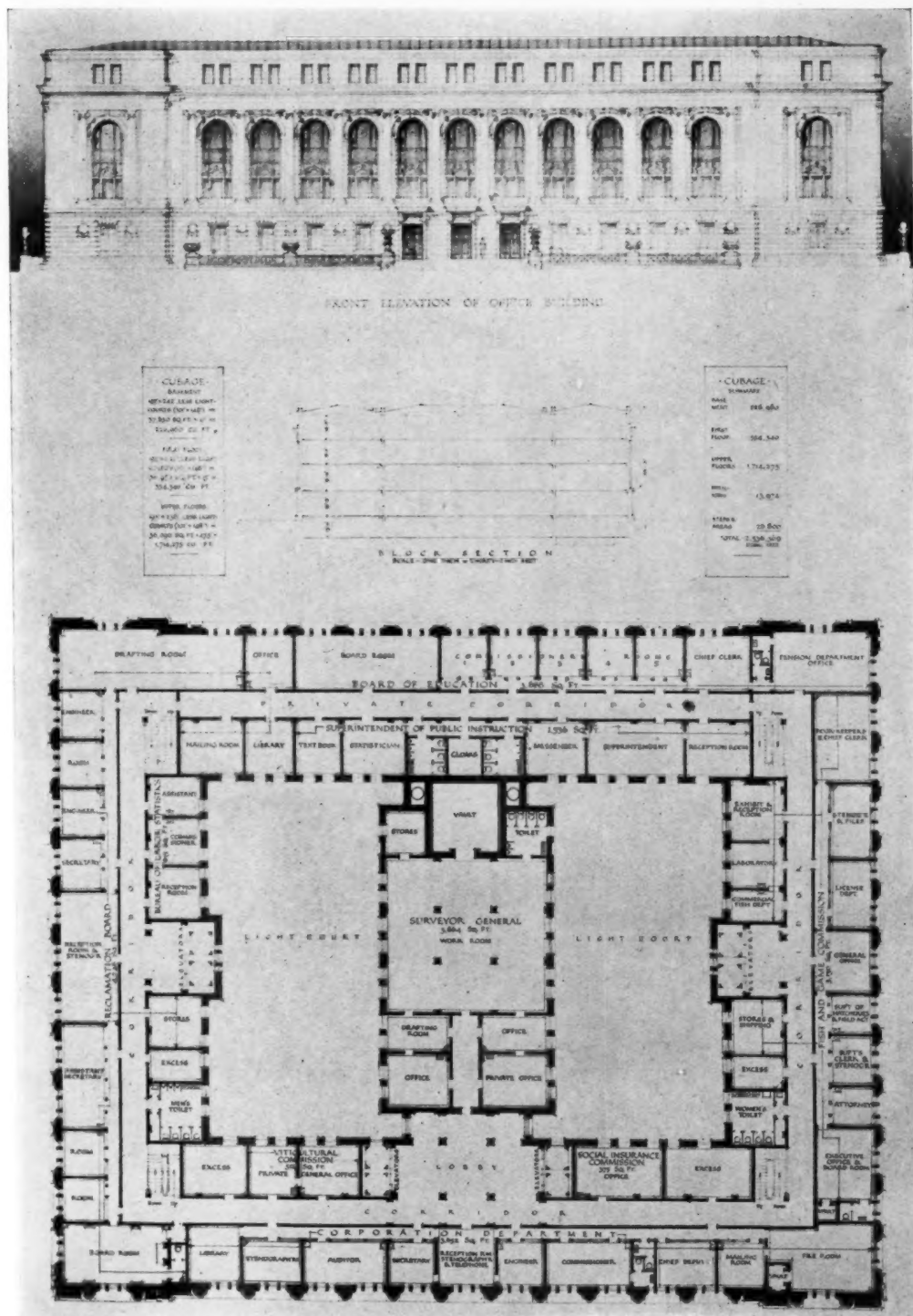
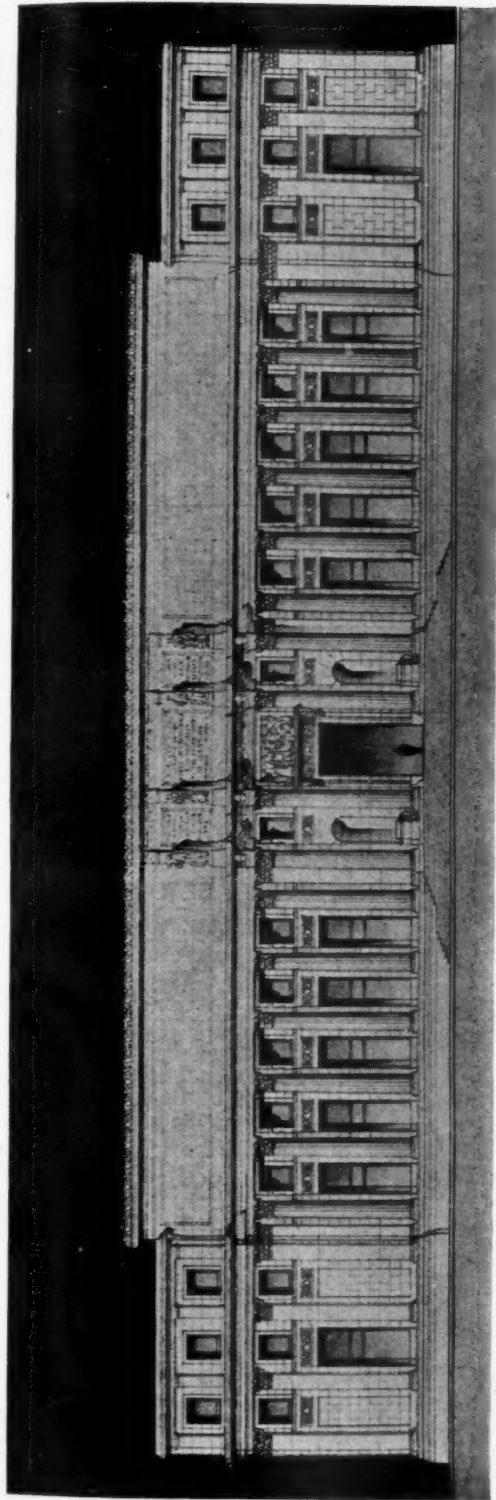


PLATE 32

LIBRARY

HEWITT, ASH & CURTIS, ARCHITECTS

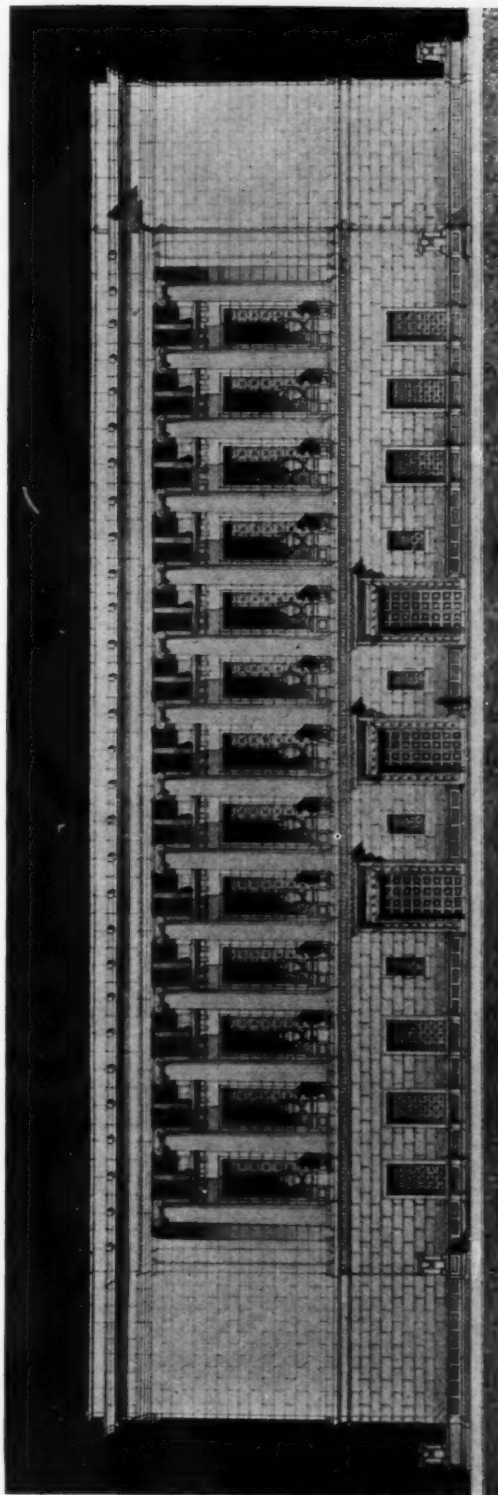
SACRAMENTO, CAL., STATE BUILDINGS COMPETITION



FRONT ELEVATION

LIBRARY BUILDING

BLISS & FAVILLE, ARCHITECTS



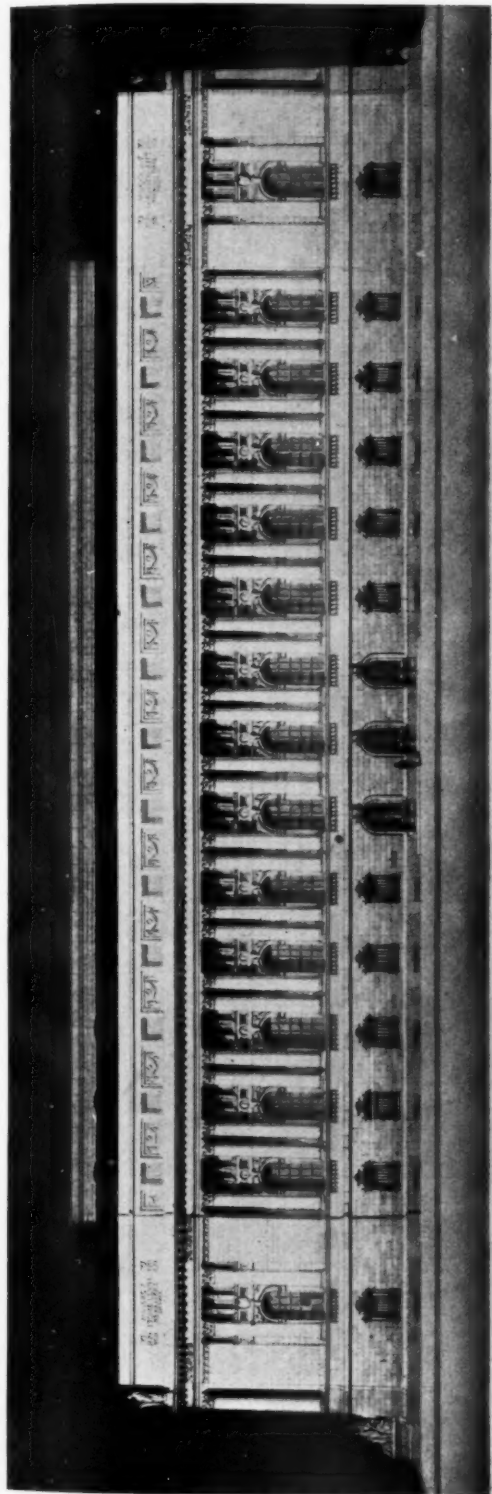
NORTH ELEVATION

PLATE 33

LIBRARY BUILDING

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION

ADOLF SHERRER, ARCHITECT



LIBRARY BUILDING

TRACY & SWARTWOUT, ARCHITECTS

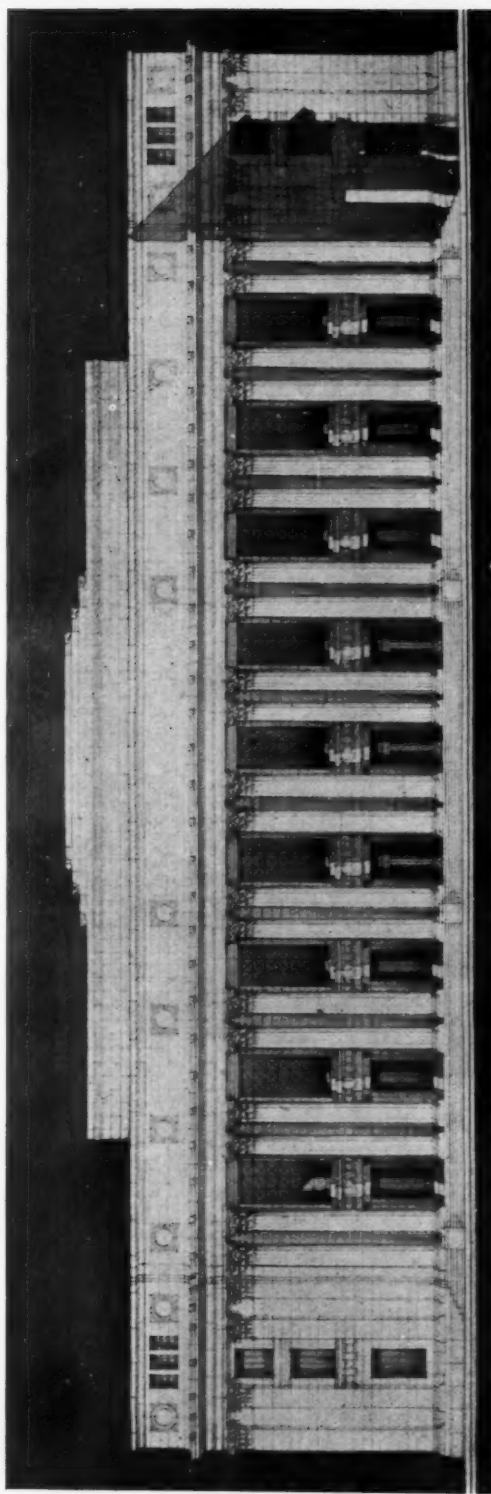


PLATE 34

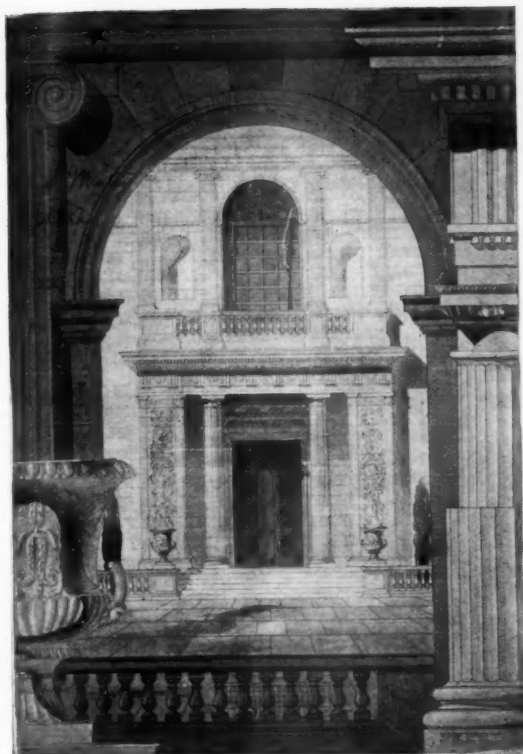
LIBRARY BUILDING

WARD & BLOHME, ARCHITECTS

SACRAMENTO, CAL., STATE BUILDINGS COMPETITION



THE AMERICAN ARCHITECT



WM. ULLRICH FIRST MENTION PLACED, ATELIER
HIRONS

CLASS B—I ANALYTIQUE—A DOORWAY

Beside the necessary interior staircases there should be provided, by means of terraces and stairs or in some other way, exterior communication from the top of the embankment to the lower level.

The greatest dimension in plan of the ground floor must not exceed 75'-0" in either direction.

Number of drawings submitted: 30.

AWARDS

FIRST MENTION PLACED: L. Kurtz, Atelier Wynkoop, N. Y.

FIRST MENTION: W. J. Richards, Beaux-Arts Atelier, Wash., D. C.; G. H. Van Anda, 530 Manhattan Avenue, N. Y.; R. S. McCauley, Stony Point, N. Y.

MENTION: H. T. Bell, Beaux-Arts Atelier, Wash., D. C.; B. Hill, Cornell University, Ithaca; F. R. Schreyer, K. C. Chang, F. Wingate and J. Y. Moo, Columbia University, N. Y.; H. I. Hirsch, W. A. Rutherford, Jr., W. R. Reece and C. L. Armsby, Georgia School of Technology, Atlanta; B. Laub and E. C. K. Schmidt, "T" Square Club, Philadelphia; P. W. Strickland and E. Pickering, University of Kansas, Lawrence; L. J. Ellis, University of Oregon, Eugene; T. F. Price, Atelier Wynkoop, N. Y.; H. Legemann, Atelier DeGelleke, Milwaukee.

H. C.: E. N. Damon, Atelier Schadler, Reno; G. A. Yeomans, Cornell University, Ithaca.

PROGRAM

CLASS "B"—I ESQUISSE—ESQUISSE

The Committee on Architecture proposes as subject for this Competition:

"A WALL FOUNTAIN"

A retaining wall 15' 0" high has been built along one side of a park, separating it from a public thoroughfare. It is proposed to build, on the axis of an abutting street a fountain applied to this wall which will serve as an architectural feature as well as a place where the public may obtain water to drink. There should therefore be provided continuously flowing jets as is the modern practice for public drinking fountains arranged at the proper height. The decorative features of the fountain are left to the competitor, the only requirement being that composition should not exceed the height of the retaining wall.

Number of drawings submitted: 3.

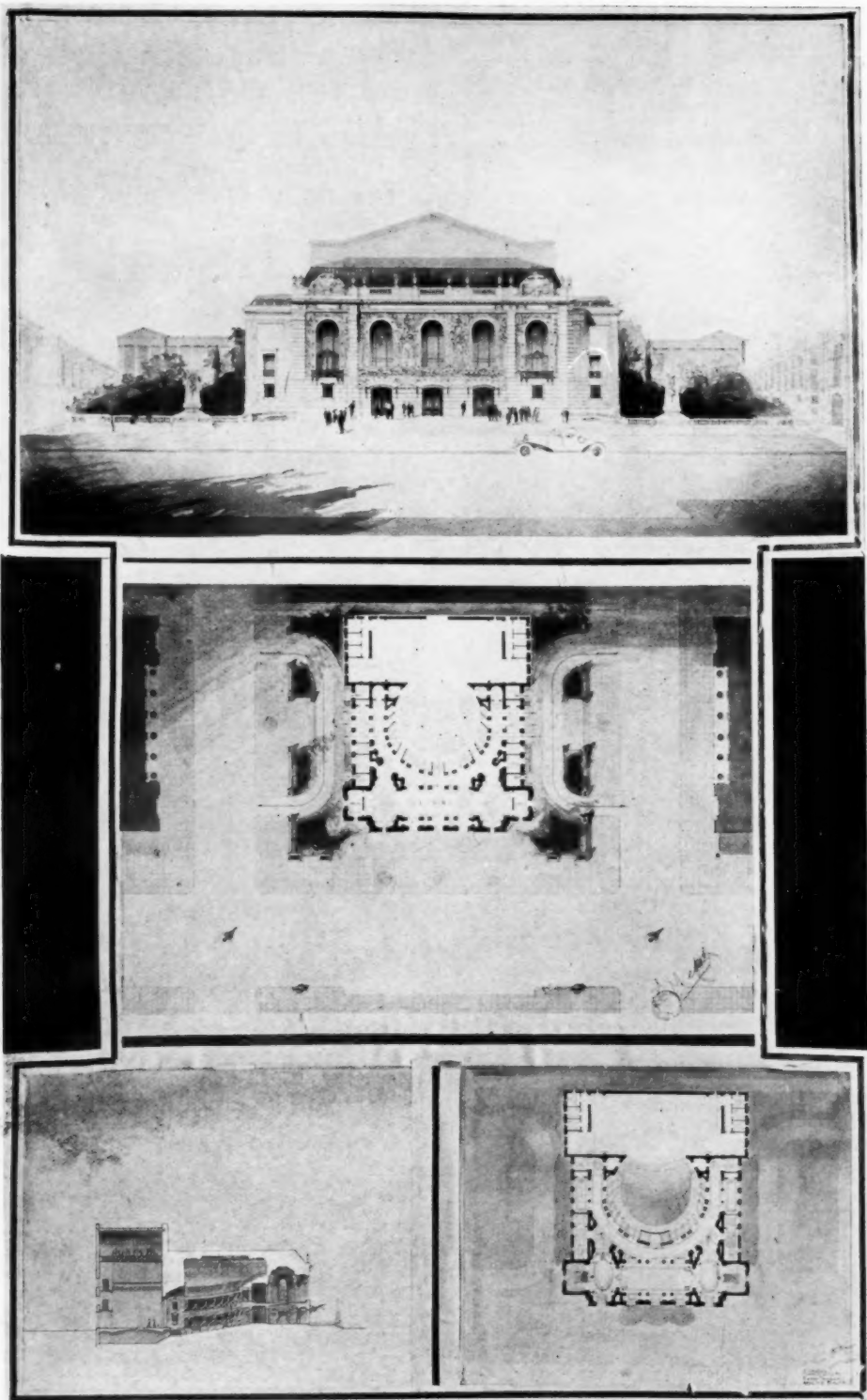
AWARDS

MENTION: H. T. Bell, Beaux-Arts Atelier, Wash., D. C.



A. C. BIEBER—3D MEDAL, UNIV. OF PENNA.

CLASS A AND B ARCHAEOLOGY. I PROJET—A MONUMENT TO A GREEK ATHLETE



F. VON OSTHOFF—1ST MEDAL, ATELIER HIRONS
 CLASS A—I PROJET—A THEATER
 STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

THE AMERICAN ARCHITECT

PROGRAM

CLASS "A"—I ESQUISSE—ESQUISSE

The Committee on Architecture proposes as subject for this Competition:

"A BATTLE MONUMENT"

The first engagement of any importance in which the American Army took part in the present war was at Belleau Wood. While this battle was in no sense a major operation, yet it had a great importance in that it was the first real check to the German offensive on the Marne Salient, and gave to the French a new hope and an increased courage which enabled them to turn that offensive into a retreat. It has, therefore, been proposed to erect in the wood a monument to this battle. For this purpose a clearing has been made in the center and two roads at right angles to each other cut through, branching from the main highways. The monument will be erected in the clearing, and on the axis of the roads, and will commemorate the valor of the United States Marines who took part in the engagement. This monument should not exceed 50'-0" in height.

Number of drawings submitted: 11.

AWARDS

MENTION: E. E. Weihe, Atelier A. Brown, Jr., S. F. A. C., San Francisco; J. C. Janney, University of Pennsylvania, Philadelphia.

PROGRAM

CLASS "A"—I PROJET

The Committee on Architecture proposes as subject for this Competition:

"A THEATER"

A group of wealthy patrons of the drama propose to build a theater, the purpose of which, while not entirely uncommercial, is to provide an opportunity for the development of the highest forms of dramatic art. The project in conception is, therefore, similar to that of the municipal, subsidized theaters in Europe, and, taking on in part the character of an institution, its architecture should express this, although at the same time no sacrifice should be made of the practical elements of the problem. The foyer and circulations should be more ample than is ordinarily the case, and on the exterior, carriage entrances, low terraces and balustrades may be developed, provided they are found within the limits of the site. All such expressions should not, however, be exaggerated.

The site is a rectangular plot 200 by 170 feet, the longer side facing a public square in a large city, and the shorter sides facing two avenues. The building proper shall be placed in the center of the plot, and shall not exceed 120 feet in width. A

service passage of 10 ft. in width shall be kept at the back of the plot.

AUDITORIUM:

The auditorium consists of a main floor, no part of which shall be more than 5 feet above the level of the street, a balcony, and an orchestra pit. Proscenium boxes, or loges, either on the floor or in the balcony, may be used, although this is optional.

STAGE:

The stage shall have minimum dimensions of 32 feet in depth by 70 feet in width, and shall have a clear height up to the under side of the gridiron of at least twice the height of the proscenium arch; the stage shall be fully equipped with a gridiron, fly galleries, electrician's gallery, switchboards, etc. Private dressing rooms for six stars, several larger dressing rooms for the secondary actors, one large room for the male chorus, and one large room for the female chorus shall be provided above the stage level, although two of the stars' dressing rooms shall be arranged on the stage level. A property room and an orchestra room shall be provided in the space below the stage.

GENERAL:

Entrance lobby with tickets booths.

Offices for the manager.

Coat rooms for men and women.

Men's smoking and retiring rooms.

Women's retiring rooms.

Large foyer for promenading during the entre-acts.

The men's rooms may be in the basement.

The balconies shall be reached by at least two broad ramps or stairs, placed either in the auditorium or in the lobby. Additional stairs for exits from the balcony shall be arranged, widely separated from main stairs. No curved stairs or winders are permitted. Exits from the main floor shall be as ample as possible.

JURY OF AWARD: F. A. Godley, W. A. Bottomley, H. W. Corbett, F. C. Hirons, A. M. Brown, L. H. Burnham, J. Wynkoop, and M. B. Stout.

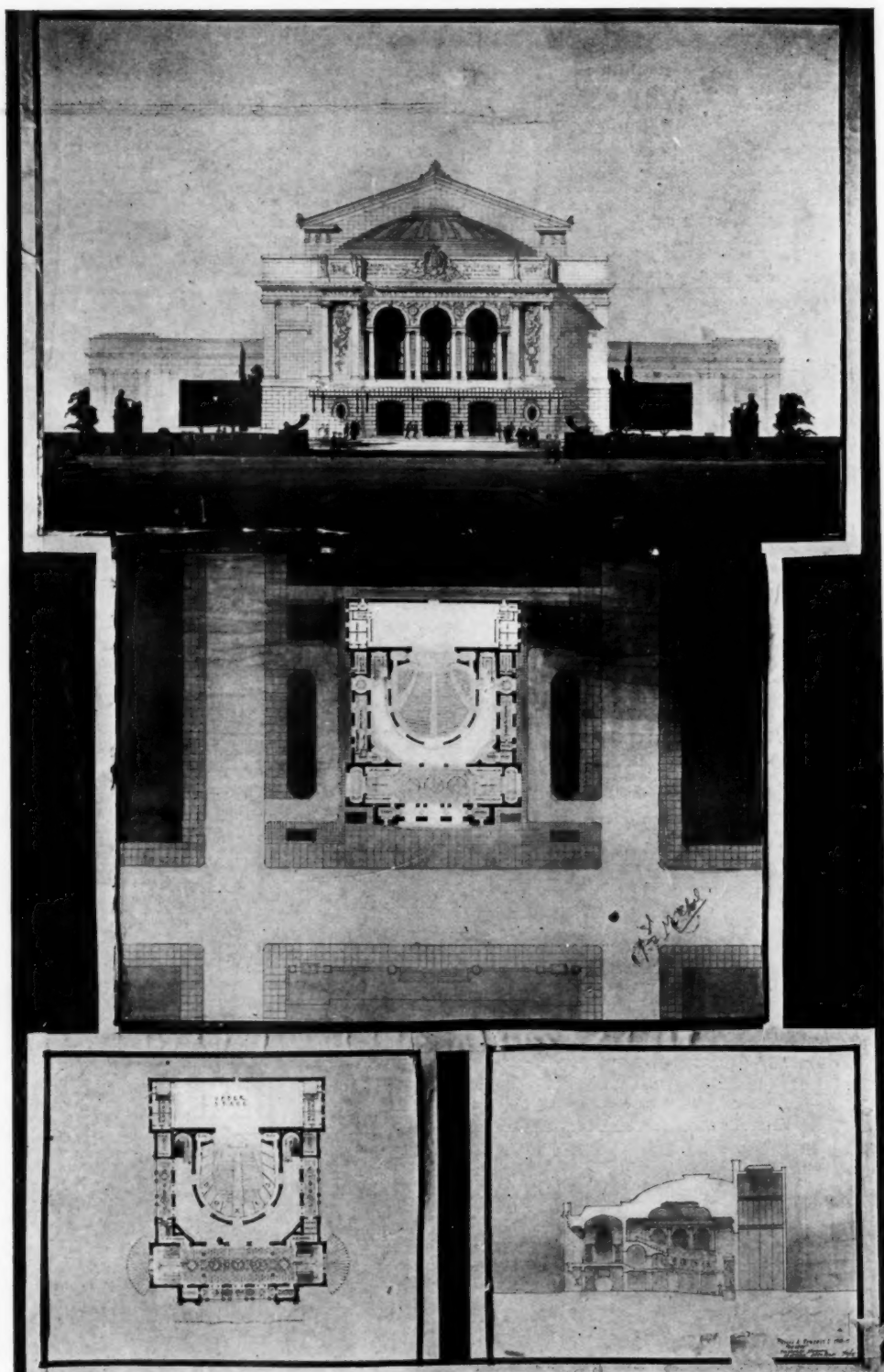
This Jury also served as Jury of Award for Class "A"—II Esquisse-Esquisse, Class "B"—II Esquisse-Esquisse, and Class "A" and "B" Archaeology-I Projet.

Number of drawings submitted: 23.

AWARDS

FIRST MEDAL: F. von Osthoff and T. Shimura, Atelier Hirons, N. Y.

SECOND MEDAL: Charlotte Knapp, Columbia University, N. Y.; P. B. Oteiza, Cornell University, Ithaca; S. H. Brown, "T" Square Club, Philadelphia; A. C. Bieber and J. C. Janney, University of Pennsylvania, Philadelphia; L. Fentnor, Atelier Wynkoop, N. Y.



A. SHIMURA—1ST MEDAL, ATELIER HIRONS
 CLASS A—I PROJET—A THEATER
 STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

THE AMERICAN ARCHITECT

MENTION: L. Williams, W. L. Uhl and E. Rabasa, Jr., Columbia University, N. Y.; E. L. Howard, Y. C. Lu, N. W. Duncan, R. E. de Wolfe and Dorothy F. Levy, Cornell University, Ithaca; R. E. Martins and L. Yu, Syracuse University, Syracuse; J. P. Roberts, G. F. Lafferty, G. A. Anderson, S. H. Gordon and L. D. Cook, University of Pennsylvania, Philadelphia.

PROGRAM

CLASS "B"—II ESQUISSE—ESQUISSE

The Committee on Architecture proposes as subject of this Competition:

"A LOGGIA"

At one end of a public square, devoted on certain days of the week to public markets, is a small public building. Projecting from the lower floor of this building, and raised a few steps above the street level, is a covered space or loggia where the people may find some protection from the sun and rain.

Number of drawings submitted: 2.

AWARDS: No mentions.

PROGRAM

CLASS "A"—II ESQUISSE—ESQUISSE

The Committee on Architecture proposes as subject for this Competition:

"A LIFE-SAVING STATION"

THE PROBLEM:

On a rocky point of the New England coast within which is a tiny protected beach is built a group consisting of a lighthouse, the helper's cottage and a life-saving station, consisting of the boat house and the dormitory and living room of its crew.

Number of drawings submitted: 8.

AWARDS

THIRD MEDAL: D. McLachlan, Jr., Atelier Hiron, N. Y.; J. W. Hershey, John Huntington Polytechnic Institute, Cleveland.

MENTION: E. H. Knight, Atelier Birmingham, Birmingham; E. Hayward and W. C. Stanton, "T" Square Club, Philadelphia.

PROGRAM

CLASS "A" and "B" ARCHAEOLOGY— I PROJET

The Committee on Architecture proposes as subject of this Competition:

"A MONUMENT TO A GREEK ATHLETE"

The devotion of the Greeks to the various forms of athletics is a well-known fact. The Olympic games, which brought together the great athletes of their time were considered so important that very often the successful competitors were immortalized by having monuments erected in their honor. Usually these took the form of a statue, but occasionally an architectural monument was built. The choragic monument to Lysicrates—although erected in honor of a singer—is an example of the type of monument which forms the subject of this program. Sculpture either free-standing or in relief, representing the victory of the athlete, may be employed, but it should be borne in mind that the monument should be architectural in conception. The only dimension given is the height, which should not exceed 30 feet.

Number of drawings submitted: 4.

AWARDS

THIRD MEDAL: J. W. Hershey and S. M. Jokel, John Huntington Polytechnic Institute, Cleveland; A. C. Bieber, University of Pennsylvania, Philadelphia; E. C. K. Schmidt, "T" Square Club, Philadelphia.

Awarding School Building Contracts by Group Method

Plan Just Approved by New York City Board of Education, Whereby
Many More Buildings Will Be Erected Within a Year, Closely
Watched by Other Municipalities

A PLAN which, if successful, will doubtless be put into execution by municipalities all over the country, has just been adopted by the Board of Education in New York City, whereby the awarding of contracts for the erection of new school buildings will be done by a group method, in the belief that the actual time of construction will be materially shortened. The new method for the letting of contracts was suggested in a report made by C. B. J. Snyder, superintendent of buildings for the Board of Education, and was at once adopted. This body was quick to see that by grouping two or three buildings in one section of the city, and awarding the contract to the lowest bidder in the aggregate, the construction of buildings will be hastened. This for the reason that the contractor will be able to purchase materials more economically and to attract more reliable sub-contractors.

If the scheme is brought to successful conclusion, and there apparently is no reason why it cannot be, other cities are as sure to approve the idea as is the superintendent of buildings for the New York City Board of Education. In the New York situation Mr. Snyder has two buildings, one of which he hopes to complete in ten and the other in six months. Heretofore, the contract time for the erection of a forty-eight room building has been three hundred consecutive working days, but delays due to trouble with sub-contractors or strikes has carried the time of construction well beyond that limit.

In the group plan of Mr. Snyder these delays, caused by the award of sub-contracts to unreliable firms, it is expected, will be done away with. Contracts to put up a number of new buildings in the same neighborhood at the same time will attract more reliable bidders. Under these circumstances it will be possible to complete the contract within eight months. Included in the report is another proposal expected to aid in the rapid completion of the buildings. That is the awarding of equipment contracts at the same time as the general construction is awarded, thereby utilizing every possible idea that will help shorten the time of building.

In discussing the methods of letting contracts, Mr. Snyder states that the plan of letting a contract to include more than one building represents certain distinct advantages over the only remaining one—that of letting contracts for each building separately to the lowest bidder—with the award to be made

on the basis of the lowest aggregate bid. He believes that these large contracts, presenting as they do greater opportunity for the economical purchasing of materials, would attract a number of strong, reliable contractors, who might be depended upon to employ first-class sub-contractors, something which is of the utmost importance, since it is through the sub-contractors that most of the delays occur.

The viewpoint of many of the contractors, as seen by the building superintendent, is that inasmuch as they know they cannot secure a contract unless they are actually the lowest bidder, they must make every effort to secure the lowest bid possible for all of the various trades or work which they do not actually perform with their own organizations. This leads them sometimes to accept estimates from sub-contractors whom they know to be inexperienced, or who have limited capital or facilities. This results, more often than otherwise, in delays, but where there are so many trades at work, as well as independent contracts under way, the contractor may be held liable.

The report to the Board is made so that the building of schools may proceed with the minimum of delay, and it is of the utmost importance that sub-contractors of sound qualifications with adequate facilities for doing the work properly be engaged.

A possible need of increasing the amount required as security on contracts is mentioned by Mr. Snyder. The amount of this security or bond has usually been fixed at a sum that is about 40 per cent of the estimated cost of the work, while the certified check or cash deposited with the bid must be 8 per cent of such sum. If the estimated cost of the work is \$400,000, the security or bond would be fixed in the advertisement at \$160,000, which would require a certified check or cash to the amount of \$8,000, which is returned to the contractor upon the execution and approval of the contract. The fixing of the percentage for estimating the security is based upon a minimum allowance of 10 per cent to cover errors in contractors' estimates and 15 per cent for possible rise in markets, a total of 25 per cent. Experience has indicated the wisdom of increasing this arbitrarily to 40 per cent.

The present form of contract meets all of Mr. Snyder's requirements, except that it does not provide for the making of the surety company a party of the third part. The United States Government

THE AMERICAN ARCHITECT

found it necessary to adopt this measure as the only possible guarantee against the delays experienced with contractors with insufficient capital.

In the recommendation of the building bureau that the group method be adopted it is stated that the bids received will undoubtedly be high when tested by those of any previous contracts, but that, on the other hand, the need for providing additional school accommodations is very great and the period of time required for construction will be shortened. Consequently the main causes of delays, which had heretofore prevented the early completion of buildings, will be done away with. The various methods employed in making contracts are each taken into consideration by Mr. Snyder.

Of the cost-plus method Mr. Snyder says that it will secure the completion in the shortest space of time, but not at the least cost. This method can also be used with a fixed compensation for the contractor, which removes some of the objections inherent in the first plan, but does not remove them entirely as far as public work is concerned.

Letting contracts to include the construction of the building, together with its equipment, to one man, frequently done in private work, should not, Mr. Snyder avers, be applied to school construction. Another method brought out is the awarding of the

contract to that bidder who will guarantee to do the work within the shortest time, under a very heavy sum for liquidated damages in the event of his failure to live up to the terms of the agreement. When this system was tried out a few years ago one of the arguments against it was that if the contract was awarded for the shorter period at the larger amount there might be delays from any one of a number of causes over which it would be claimed that the contractor had no control, so that the time finally consumed would be equal to the longer period for which the lower estimate had been submitted, while the contractor would be actually receiving the larger compensation.

Another plan discussed, but which was found not to work well unless the contractor can have complete control of the entire work, was the payment of a bonus or premium by the owner of a given amount for each day the contractor may have completed his work within the time limit fixed in the contract.

In order to carry forward as rapidly as possible the program for the relief of congestion the group method was adopted and the Board of Education will select sites for a number of buildings that are to be included in the first two years of its three-year program.

Financial and Commercial Digest

As Affecting the Practice of Architecture

Our Bank Loans Abroad

It is of noteworthy interest in financial circles that since shortly before the outbreak of the European war there has been a gradual but steady unloading of American securities on the market by their European holders, until, it is estimated, the liquidation has reached \$8,000,000,000. The result of this, consequently, is that when these nations wish to borrow they cannot hypothecate these securities as they formerly did.

Furthermore, this means that the reconstruction needs of the Allies can be taken care of only by educating American investors to take European securities. So, while McAdoo's statement to the Finance Committee was that in his judgment the needs of the Allies would be taken care of "through ordinary banking methods," it is believed by many that Mr. Glass will be confronted with the necessity of advancing further funds to the European governments.

That the United States may continue to hold its position as the leading creditor nation of the world it is necessary that American banking houses make a thorough survey of foreign investment securities so that they will be able to recommend foreign opportunities with the same degree of intelligence that marks their handling of domestic securities.

Should Take Up Public Improvements

Assistant Secretary of Labor Louis F. Post does not look forward to any unemployment crisis. "There is no reason," he states, "why either business men or wage-earners should be apprehensive with regard to commercial stagnation. The war has on the whole increased the purchasing power of the masses and has created new markets. America must assist in the rebuilding of Europe, and avenues for foreign trade hitherto closed to us are now open. Raw materials which were denied to private and non-essential industry during the war are now accessible to the manufacturers of America through their release by the War Industries Board. Credits which were similarly denied to private concerns because they were needed for Government use have also been released by the Capital Issues Committee. There is no reason for anyone to be alarmed over the future.

"We must remember, however, that we have large numbers of men under arms who must be transferred to industry as rapidly as possible and that this number is many times larger than that which we have been accustomed to absorbing. Industries cannot be resumed overnight. Consequently there will be for some months to come the necessity for providing some form of employment for our demobilized soldiers and war workers, pending the resumption of normal activities. We must stimulate work which is valuable for peace-time purposes. Many municipalities throughout the country, and many states as well, have during the war either abandoned or suspended considerable amounts of public improvements. The Federal Government itself has practically abandoned its building program for the past two years. This accumulation of work should be undertaken at once as a means of providing buffer employment to carry us beyond the transition period and take up such unemployment slack as may result not so much from the inability of the industries to eventually absorb demobilized soldiers and war workers as to the rapidity with which they will be required to absorb them."

More Certificates for Treasury Requirements

Announcement has just been made by the Treasury Department of the issuance of two new certificates of indebtedness, one for \$600,000,000 in anticipation of Fifth Liberty Loan receipts, and the other for an indefinite amount in anticipation of tax collections in June. This raised the aggregate of certificates, outstanding or offered, to approximately \$4,500,000,000 and represents the current debt of the Government, most of which will be refunded in Liberty bonds.

About \$3,000,000,000 of certificates have been offered since the Fourth Liberty Loan, including \$794,000,000 of tax certificates, but not making allowance for the issue of the indefinite amount just announced. In addition \$1,200,000,000 of certificates issued in anticipation of Fourth Liberty Loan receipts are outstanding.

The Government's cash requirements are now at their maximum, ordinary disbursements having reached \$125,900,000, the largest in the nation's history. By reducing the minimum amount of bond

THE AMERICAN ARCHITECT

certificates offered from \$750,000,000 to \$600,000,000, and at the same time offering an indefinite amount of tax certificates, the Treasury hopes to meet its cash requirements and also reduce the amount of certificates sold directly to banks.

Reports from 102 banks operating the Morris plan of industrial loans show that \$34,500,000 was lent to some 212,500 small borrowers during 1918. Up to Dec. 31 of last year the total number of loans made under this plan exceeded 600,000, the amount lent being approximately \$87,500,000.

The Fire Loss

Eighty per cent of America's fires are due to carelessness, says J. P. Heynes in the *Efficiency Magazine*. Statistics are presented showing that in 1917 America burned up \$268,000,000 worth of goods. Carelessness with matches in that year caused a loss of \$7,000,000, and smoking stumps destroyed \$9,000,000 worth of property. New York City's fire losses are about four and one-half times as heavy as those of London, while a comparison of Vienna and Chicago, cities of about the same size, shows that Vienna's fire losses amounted to \$303,000, while Chicago's were \$5,500,000.

During the year 1913, which is the last upon which reliable statistics can be had, the average fire loss for each man, woman and child in France was 49c; in England, 33c; in Germany, 28c; in Holland, 11c; in Austria, 25c; in Italy, 25c; in Switzerland, 15c; in the United States, \$2.10. Our record, therefore, was four times as bad as that of France and nearly twenty times as bad as Holland.

Meeting the Peace-Time Problems

William B. Dickinson, vice-president of the Midvale Steel & Ordnance Company, New York, discussing recently the problems of industry, labor and government which must be solved with the return to a peace-time basis, said that the situation should be approached, not in the spirit of class prejudice, but in that of the great-hearted Lincoln, "with malice toward none, with charity toward all." He cited the following: "Many years ago a noted steel man was asked which was the most important factor in his business—labor, capital or management. His reply was in the form of a question: 'Which is the most important leg on a stool with three legs?' While this conclusion as to the equality and interdependence of these three factors has been generally accepted as a theory, in very few instances has it been given practical application."

Current News

Soldiers Trade School at Camp Dix

The organization of a Government trade school for soldiers crippled in battle, in connection with the overseas convalescent center, has been started at Camp Dix, New Jersey, under command of Major Harry L. Twaddlell. Camp headquarters has announced plans greatly to increase the size of the convalescent center in order to relieve congestion among patients now under treatment in other camps in New Jersey and eastern Pennsylvania. The school will be an experiment in development work for wounded men, and if it proves a success, similar courses of instruction will be established elsewhere.

Government officials will inspect the Camp Dix school shortly in view of the proposed extension of the system to other convalescent stations. The aim of the school will be to provide wounded and crippled men with new occupations, if war has unfitted them for their old work, and many of the methods that have proven most successful will be incorporated in the system of training. The War Depart-

ment has announced that a soldier may return after he is actually discharged from the service and take the school course.

Lieutenant Carl Lellmaker of Buffalo, N. Y., who is in charge of the organization, has arranged that initial courses will include stenography, typewriting, auto repairing, shoe repairing, tailoring, printing, telegraphy and wireless. Instructors will be furnished by the Quartermaster's Department and the army Y. M. C. A.

Building Boom Hits Midwestern States

Architects and contractors in the larger cities of Minnesota and Wisconsin are anticipating a general revival of building operations within the next few months. Enthusiastic reports from these sections claim that building records will surely be broken in 1919. One dispatch from the city of Wausau, Wis., a live paper manufacturing community, states that

THE AMERICAN ARCHITECT

citizens there have already planned \$350,000 worth of new construction.

The construction of St. Paul's new Union Depot will be speeded to the limit from now on. This is insured by the recent sale of an \$8,000,000 bond issue. One-half of the issue will be utilized for construction work in 1919. In the expectation that steel prices and labor will drop shortly, the new street lighting enterprises of that city are being held temporarily in abeyance by Commissioner Keller. The cost of lighted ways provided for amounts to \$85,000, estimated on a pre-war basis.

St. Paul hopes to surpass all previous building programs by completing \$4,196,000 worth of new projects. It is the biggest building program ever prepared by that city and officials are confident that it will be carried out.

U. S. Selling Agency to Market Timber

A special agency, with a director of sales, to dispose of vast quantities of timbers and other wood products on hand at various cantonments and building projects throughout the United States at the time the armistice was signed has been created by the War Department. The sudden ending of the war, with all this great construction work for the Government under way, for a time threatened to make a serious problem.

It was at first feared that millions of feet of lumber not consumed on the Government contracts would be thrown back on the market and that chaotic conditions might result. The director of sales, whose office will be in the Munitions Building at Washington, will confer with committees representing industries affected by disposal of different kinds of supplies in order that business conditions may be disturbed as little as possible.

Forest Reserve in New York Big

A summary just compiled by Conservation Commissioner George D. Pratt shows that a forest reserve of over 2,000,000 acres is assured to the people of New York State, with the purchase of more than 200,000 additional acres now under negotiation with owners. Statistics of the commissioner show that since the approval of the bond issue for the acquisition of lands in the Adirondacks and Catskills for State park purposes, 460,731 acres of forest land have been offered for sale to the State. After deducting such tracts as by their location were manifestly unsuitable for forest preserve pur-

poses, 411,650 acres have already been examined and appraised by the commission's foresters, which is nearly a quarter of the size of the entire preserve owned by the State previous to the bond issue, which had gradually been accumulated since the year 1883.

The lands purchased in the Adirondacks average \$5.79 per acre, and those in the Catskill \$7.10 per acre. A total expenditure of \$900,000 is involved.

Urges Planting of Trees

Practical consideration of the value of tree planting is urged by John Y. Cuyler in a letter to the *New York Sun*, who writes that it should be treated as a matter of common interest, as are other necessities upon which health, comfort and happiness depend. Not far removed in its dreadful significance from the appalling destruction of human life abroad is the devastation, and in many instances the complete destruction, of the woods and forests, the parks and gardens of France, Belgium and other fields of the sanguinary conflict just ended.

In our own country we can no longer delude ourselves with the boastful claim of an exhaustless timber supply. The shifting scenes of the lumber interests, the story of which is so startling as evidencing the magnitude of such inroads upon this once incomparable resource, forced upon us the widespread need of reproduction and the unremitting service of wiser conservation. Great areas of our Middle Western States once invested with dense forests of valuable timber are now so bare as scarcely to yield a local supply of firewood.

Model Towns in British Problem

With the announcement of the British Local Government Board that 100,000 houses will be erected by the Government without delay, plans are well under way in London for a great building boom when demobilization is further advanced.

The Essex County Council has decided to purchase 400 acres near Colchester for settlement by farmer soldiers. Model towns are being built at many centers, including Avonmouth, Swansea and Barry.

British Suburban Development

The British Ministry of Reconstruction is embarking upon a great scheme of rural development by the construction of a large number of light railways to connect the country districts with the main

THE AMERICAN ARCHITECT

railways, according to the *London Daily Mail*. The cost will be borne in part by the county authorities and part by the Government. Upon completion the lines will be leased to the operating companies under adequate guarantees.

Enormous quantities of material used by the British army in France will be utilized, reducing the cost of construction to about \$12,000 per mile. The rails are of the narrow gage type and were used by the British army mostly for transporting light munitions from the ordnance bases to the battle front.

The first rural railway has been begun at Giggleswick, Yorkshire.

Fire Protection Furthered by Concrete Roads

By the construction of fifty-five miles of concrete roads radiating from Appleton, Wis., fire protection has been extended a distance of ten to fifteen miles into rural districts around that community. When the entire system of permanent roads is completed, the Appleton Fire Department will be able to respond to fire calls in the most remote part of the county within thirty minutes. A fee for this service, according to the distance of the run, will be levied by the city. This means that the insurance rates of the farmer will, in many cases, be reduced.

New Branch for Steel Society

An Indianapolis section of the Steel Treating Research Society, which numbers some 1200 members throughout the United States, Canada and England, is being organized under the direction of J. Weaver Smith of that city. At the first meeting Prof. John F. Keller of Purdue University gave an illustrated lecture on the subject "Steels—From Ore to Finished Heat-Treated Products." William R. Chapin outlined the plans for the future of the Indianapolis society.

Montana Has World's Tallest Chimney

There are but two buildings among New York City's skyscrapers, the Metropolitan building—700 ft. 3 in.—and the Woolworth building—750 ft. high—that are taller than the new brick stack of the Anaconda Copper Mining Co., in Montana. It is 585 ft. and 1½ in. in height and is twelve feet taller than any chimney in the world. According to the engineer's estimates the capacity per minute of the smoke treater and stack will be three million cubic feet of hot gas with one million cubic

feet of cooling air. The stack was built in 142 working days and consists of an octagonal base 86 ft. in height. It has a taper of 64 per cent.

Large Purchases of Copper by Italian Government

Italy has been the only one of the large allied powers to be a large purchaser of copper in the American market. The Italian Government has just placed an order for 5,000,000 lb., while not long ago an order for 10,000,000 lb. was negotiated. The price is supposed to be 23 cents a pound, which was the figure announced for export recently. England has not been in the market for some time, it being said that the government has 62,000,000 lb. of the metal on hand.

Note Rise in Steel Trade

Little significance is attached to the slightly increased business activity in the iron and steel industry since the first of the year by *The Iron Age*, which believes that as yet there are no real signs of a big buying movement. Some steel plants are said to be operating about 85 per cent of their capacity, but the general average is placed at nearer 65 per cent, which is equivalent to about 90 per cent of the capacity attained during the four years before the war.

Personal

The office of Frederick A. Schweiger, architect, has been moved from Romer, Minn., to Moose Lake, Minn., where he requests manufacturers' samples and pamphlets be sent.

The firm of Bleckley & Irvin, architects of Augusta, Ga., has been succeeded by Willis Irvin, who will continue the practice of architecture at 1404 Lamar Building, that city. Mr. Irvin desires manufacturers' catalogues and samples sent to him.

The firm of Eckland, Fugard & Knapp, architects, formerly located in the Harris Trust Building, Chicago, Ill., has been dissolved. Messrs. Fugard and Knapp have secured quarters in the Rec- tor Building, 79 W. Monroe St., that city. Mr. Eckland has established a new office in the Old Colony Building, East Jackson Boulevard, Chicago, under the name of Henry C. Eckland & Co., architects. James N. Hatch, civil and structural engineer, of Chicago, will be connected with the Eckland company.

THE AMERICAN ARCHITECT

Late News from Architectural Fields

NEW YORK CHAPTER, A. I. A., URGES COMPETITION FOR PERMANENT WAR MEMORIAL

A definite plan, and one that embodies a competition of ideas and suggestions for a proposed permanent war memorial in New York City, outlined in the form of a resolution to the Fine Arts Federation, was adopted by the New York Chapter of the American Institute of Architects at a meeting held Friday evening, January 17, in the rooms of the Architectural League in the Fine Arts Building, West Fifty-seventh Street, New York.

The program agreed upon by the thirty members present at the meeting after a lengthy discussion urged that "all citizens residing or maintaining an established place of business in Greater New York" be given a chance to present their ideas for the memorial in either letter, sketch or plastic form in exhibition. It was suggested that a jury of award of fifteen members, including representatives of the New York Chamber of Commerce, the Merchants' Association, the Fine Arts Association, the Society of Arts and Letters, and other organizations, judge the work entered in the competition. The idea awarded first place will be made the subject of a final competition, the winner of which will be awarded the commission to execute the memorial.

The resolution adopted by the New York Chapter follows:

"Whereas, The Fine Arts Federation is about to appoint a committee to consider the form to be taken by a permanent memorial in New York City to commemorate the valor of the American soldiers and sailors in the world war, and

"Whereas, The realization of such a memorial, of whatever nature, is of vital importance to the community in that it should be a true expression of the sentiment of the citizens of New York as to form of memorial deemed most appropriate; be it

"Resolved, That the New York Chapter of the American Institute of Architects present to the Fine Arts Federation, for its earnest consideration, the following program and plan of procedure:

"That a committee be appointed to institute a preliminary competition of ideas or suggestions to be open to all citizens residing or maintaining an established place of business in Greater New York.

"That their ideas or suggestions be presented in one of the following mediums:

"A—In letter form;

"B—In sketch form, a perspective and plan;

"C—In plastic form, a model and plan.

"A location or plot plan to be submitted if the idea be in the form of a structure.

"As an essential part of this preliminary competition, a first prize with possibly secondary prizes should be awarded.

"That the judgment of this competition of ideas be rendered, after public exhibition, by a jury composed of representative citizens. It is suggested that the jury of award be composed of fifteen members, three members appointed by each of such organizations as the New York Chamber of Commerce, the Merchants' Association, the Fine Arts Federation, the Society of Arts and Letters, etc.

"That the idea awarded the first prize in this preliminary competition be made the subject of a final competition.

"That the winner of this final competition be awarded the commission to execute the memorial.

"In conclusion, the New York Chapter feels that in this manner can best be obtained the opinion and the sentiment of the citizens of New York as to the form of the memorial."

At this meeting members of the the institute listened to a talk by Thomas Hastings on the Victory Arch now being erected across Fifth Avenue at Madison Square. Mr. Hastings is one of the designers, and he assured the architects that the arch was a temporary one, but that he personally favored the site and the design for the permanent memorial.

The question of "post-war activity" was also brought up for full discussion at the meeting. It was decided that a definite program should be worked up by the committee in charge of this subject and sent to every architect in the country, with a request for an expression of opinion.

Again, "Shadows and Straws"

In the December issue of *The Journal* of the A. I. A., received on Jan. 2, the following appears: "Authorities seem to agree that no immediate decline in the cost of materials is to be looked for, while the price of labor is, of course, shrouded with considerable doubt."

It is interesting to note that the following reductions in prices were all made prior to Jan. 7: Pig iron 10 per cent, finished iron and steel 15 per cent, copper and tinplate 20 per cent, sanitary earthenware 25 per cent, enameled iron goods 20 per cent, boilers, radiators and furnaces 10 per cent, iron pipes and fittings 5 per cent.

Department of Architectural Engineering

Useless Waste in Concrete Construction Due to Legal Requirements*

By W. STUART TAIT, *Assoc. M. Am. Soc. C. E., Assoc. Mem. Inst. C. E.*

UNIFORMITY OF MATERIAL STRENGTH AND WORKMANSHIP

TEN or fifteen years ago the Portland cement used in America was a somewhat uncertain and variable material, and the reinforcing steel was in little if any better position. Both of these materials are to-day, however, manufactured to standard specifications and under the control of skilled chemists. In consequence of this, and due also to the fact that the standard specifications referred to are reasonable and can be lived up to by the manufacturers with ease, these materials are to-day highly uniform and reliable. As an additional safeguard and guarantee of this, most building specifications to-day require that these materials be tested by an engineering laboratory. There are in existence a large number of such laboratories which are thoroughly competent and whose charges for inspection are really an insignificant item. If, therefore, this inspection is required and carried out, we have a double check on the cement and steel, and may therefore classify these two materials as approaching 100 per cent of what is required as their characteristics.

Torpedo sand and either gravel or crushed stone vary somewhat in different localities, but competition being keen in these materials, clean and thoroughly satisfactory aggregate is now available throughout the country at little if any increase in cost over material of a lower grade. The inspection of concrete aggregate is a very small matter, and in consequence obtaining aggregate that will class as entirely satisfactory is a relatively easy matter to provide for. With proper inspection, therefore, it is entirely unnecessary to provide in the factor of safety any quantity to cover the possibility of the materials themselves falling short of the standards upon which our assumed concrete strength is based.

The mixing and placing of concrete as practiced

to-day leaves a lot to be desired. With the knowledge, however, that has been gained in the past few years we are now in position to determine in a fairly definite manner what must and what must not be done in the proportioning of, the mixing of, and the placing of concrete in order to assure the desired strengths. Engineers have always striven to obtain better concrete by insisting on certain principles which had been established in a more or less indefinite manner, but up to the present time building ordinances in general will not recognize that 1-2-4 concrete has a greater strength at 28 days than 2000 lb. per square inch in compression. The most recent tests show that with a 1-2-4 concrete, in which the aggregate has been properly graded and sufficient water only used to make the mass workable, and in which the mixing has been carried on for a period of about 1½ minutes, that a strength of 2600 lb. per square inch at 28 days is easily obtainable. Engineers who are in close touch with reinforced concrete construction as practiced by some contractors, will agree that in many cases the concrete resulting from the poorly graded aggregate mixed with an excess of water and mixed only for a period of about 45 seconds, has resulted in many cases in concrete which would not come up to the 2000 lb. crushing strength value assumed in the building ordinance. Many of us have seen concrete which would fall below this to the extent of 10 or even 15 per cent, but this, as in the case of the materials themselves, can all be overcome by proper inspection, particularly as we now have a real definite knowledge of what must be done in these three respects. One inspector to each mixing plant on any construction work could easily, during the course of the day and without interfering with his other duties, make about four tests on the fine and coarse aggregate and determine in a few minutes the proportion of each to be used in the normal 1-2-4 concrete. Proper measuring devices can easily be provided on any hopper for charging the

*Continued from our issues of December 11-18, 1918, and January 8, 1919.

THE AMERICAN ARCHITECT

mixer, and it would consequently appear that the control of the mixture itself can easily be regulated to the desired degree. Continuing the period of mixing of a batch from about 45 seconds to one minute would necessitate the use of the two mixers where one mixer is now used and worked to capacity. Since on all concrete work of any extent an inspector is stationed constantly at the mixing plant, the only added expense necessary to obtain a 30 per cent increase in the assumed strength of concrete is the installation of two concrete mixers where one is at present used, and this only where the mixer referred to would be employed to its entire capacity with the rapid mixing now practiced.

In the past six years we have seen the spouting of concrete carried to a point which many of us feel resulted in an expense rather than in a reduction in the cost of placing concrete. A few years ago on building construction work, one could even see a swinging spout used to deposit concrete directly upon the forms. Contractors have, however, found that in the ordinary building construction this method was more expensive than using fixed spouts and distributing by buggies from temporary hoppers placed on the formwork. It is the opinion of many to-day that the construction of high temporary towers and the carrying of concrete through long chutes is not as economical as had been thought a few years ago. Conveying concrete from one hopper to another through a long run of spout always tends to separate the aggregate from the mortar and also creates a tendency among the construction forces to use a greater quantity of water than is really desirable. Some people who have studied this matter have reached the conclusion that the difference in cost between transporting concrete by buggies direct from the mixer tower to its final position in the forms is very little more expensive than transporting the material in the same way from the distributing hoppers placed throughout the structure, and in few cases is this added expense great enough to offset the cost of constructing a high wooden tower and of providing and rigging the distributing spout. In some plant layouts the towers and spouting are made use of to bridge the gap between the point of delivery of the aggregate and the point where the finished concrete is to be deposited. In few cases is it more economical to elevate all of the materials to a considerable extra height instead of transporting the materials by horizontal conveyor to a location for the mixing plant, based upon the economical distribution of concrete direct from this mixing plant. Good concrete can be obtained by spouting, but the temptation to use an excessive amount of water in the mixture, in order to facili-

tate spouting, is so great that it would appear that better concrete could be ensured by entirely prohibiting the transportation of concrete in this manner. It would seem also that the difference in cost resulting from these requirements would not be material.

One of the duties of the inspector supervising the placing of the concrete should be to take samples from the buggies or from the mass as placed in its position at various times throughout the day, and I feel that fully six or even twelve standard test pieces should be made up from each day's run, properly marked and stored in a bed of damp sand at the building site. Testing these cylinders would demonstrate from time to time just what the condition of the structure was, and would provide a reliable basis for determining upon the removal of formwork. In the construction of reinforced concrete skeletons for hotels, apartment buildings, and other structures designed for a light live load, one of the most important features insuring good construction is to determine definitely that the various floors in the structure shall not be overloaded due to a premature removal of the formwork. Under ordinary construction conditions it is usual to have about three or four stories of formwork in place. The writer has never come in contact with any engineer or inspector who has known how to make fairly definite figures as to how much load was carried on the various floors while several stories of formwork were in place. In considering this subject it will be apparent that the amount of load carried by each of the floor slabs bears a definite relation to the relative deflections of these floors. The deflection of any construction varies directly as the bending moment and inversely as the modulus of elasticity and the moment of inertia of the member considered. Now, in most cases, the moment of inertia of the construction is the same for each story but the modulus of elasticity of the concrete will vary with its age. Taylor and Thompson state that the modulus of elasticity of concrete seems to bear a fairly direct ratio to its strength; assuming this to be the case, we may, with a fair degree of accuracy, arrive at the proportion of the total load occurring in the three or four stories by proportioning the total load between the various floors in a direct ratio to the crushing strength of the concrete existing in the various floors at the time the calculation is made. The test data now in existence show the normal development of the strength of concrete under laboratory conditions, and, excepting under extreme summer and extreme winter conditions, these strengths could be used to determine the load carried by each floor when several floors of formwork were in position. If there was any doubt in

THE AMERICAN ARCHITECT

the chief inspector's mind as to whether the concrete was not developing in strength normally, it would be a very simple matter to have one or more cylinders from each of the various floors tested before making his decision as to the removal of the formwork. With these safeguards, and with a reasonable inspection control at the building to see that construction materials were not piled too high on any of the finished floors, we can be reasonably secure in the assumption that the floor construction will not be overloaded and thereby damaged during construction.

The placing of reinforcing steel is to-day so thoroughly well understood by construction foremen that the inspection of this feature to assure our obtaining construction according to our design is a relatively easy matter. If specifications require the use of mechanical spacing and supporting bars for the reinforcement, we can also be sure that the steel is held securely in its correct position while the concrete is being placed. There are to-day on the market a number of mechanical supporting and spacing bars, and many engineers now require the use of them in their specifications. By these safeguards we can be assured that the placing of the reinforcing steel is such that little allowance is necessary to provide for its deviation from the assumptions made in the design.

Some engineers and architects to-day are in the habit of requiring the formwork design prepared by the contractor to be approved. While the formwork designs used by our most experienced contractors are entirely satisfactory, the architect or engineer should insist on examining this design. All formwork which is not rigid and stiff enough to prevent sagging may result in a material reduction in the strength of the construction, and this must be guarded against. Formwork designs, too, should be made so that repropping after the formwork has been wrecked is not practiced. If the whole of a formwork under a floor is once removed, no material benefit can be gained by repropping. If the load coming on a floor is going to overstress the construction this overstressing will occur immediately the formwork is removed, and nothing is gained by later inserting temporary props. This is a matter which should receive considerable attention, and is one which can easily be provided for in the formwork design.

With proper inspection control it is noted, therefore, that the item of material strength may be controlled within a very small margin. The only factor which may appear on casual examination to be hard to control would be the cleanliness of concrete aggregate. Under existing conditions of competition in the sale of concrete aggregates, it would

be a fairly simple matter to enforce specifications covering the cleanliness and character of the aggregate. The sales forces of progressive companies would soon, under these conditions, offer, when recommending their aggregate, test data showing what strengths had been developed on certain recent work where their aggregate was used, and it is the writer's opinion that they would be willing to guarantee to deliver aggregate in which the percentage of loam and foreign material was controlled to below a certain percentage. The inspection of a car of aggregate to see that it came up to this specification requirement would be a very simple matter, and it is the writer's opinion that jobbers of sand and crushed stone would take the necessary steps to insure that none of their material was rejected, provided they knew that this requirement of the specifications was going to be enforced. By the added safeguards suggested above, little, if any, extra expense is placed on the construction, but the engineer would be in position to know definitely that he was going to get 2600-lb. concrete at an age of 28 days, instead of under some conditions wondering whether his concrete was going to deliver a strength of 1800 or 2500 lb.

I would like to add that the figure of 2600 lb. per square inch for 1-2-4 concrete at 28 days is one that can easily be obtained under the methods of inspection, mixing, and placing outlined above.

(To be continued)

Important Code Revision

THE first gun in the campaign against the antiquated and wasteful requirements of building codes, has been fired by the Board of Standards and Appeals of New York City, John P. Leo, Chairman.

Exhaustive tests were made, by duly authorized persons, to determine the efficiency of certain anti-siphon traps. The conditions of test were standardized and were as near actual conditions in practice as it was possible to make them. Based on the results as observed, a ruling was adopted by a vote of twelve in favor and one negative. Such a radical departure from the usual plumbing regulations aroused considerable opposition from those interested in the purely monetary aspect of the proposition. The reasonableness of the proposal was apparent to the Board, resulting in the vote mentioned above.

The result of the application of this ruling will be to decrease the cost of plumbing installations under certain conditions, which will naturally stimulate the more extensive use of plumbing equipment and relieve the building industry of one use-

THE AMERICAN ARCHITECT

less burden. If entire codes could be revised with the view of eliminating useless requirements the effect on building enterprise would be noticeable within a very short time. Our codes have been formulated, in many instances, with the apparent intention to aid certain manufacturing and trade interests rather than the owner. Codes should be made with one object only in view; to permit the construction of structurally safe, fire-resisting and sanitary buildings in the most simple and inexpensive manner.

This ruling by the Board of Standards and Appeals, under the aggressive leadership of its chairman, is but a fore-runner of other revisions in the interests of the owner. Other cities may well follow this example for the elimination of waste due to building code requirements.

Rules 91, 95, 98, 99, 111, 113, 114 and 116 of the Rules and Regulations for Plumbing and Drainage, Water Supply, Gas Piping and Ventilation of Buildings, as amended by the Board of Standards and Appeals, December 27, 1918; effective January 16, 1919.

RESOLVED, that rules 91, 95, 98, 99, 111, 113, 114 and 116 of the Rules and Regulations for Plumbing and Drainage, Water Supply, Gas Piping and Ventilation of Buildings, adopted by the Superintendents of Buildings of the City of New York, effective April 23, 1912, be and they hereby are amended, effective January 16, 1919, to read as follows:

Vent Pipes.

Rule 91. All traps, except approved anti-siphon traps connected to main waste or soil lines or to the house drain by branch piping not over seven (7) feet in length with a fall not exceeding two (2) inches per foot, shall be protected from siphonage and back-pressure by special lines of vent pipes; provided that where approved deep-seal siphon-jet water-closet or slop sink fixtures are installed with branch piping not over five (5) feet in length from fixture to main soil or waste line, the vent pipe may be omitted for such fixtures in buildings not over eight (8) stories in height, and where the main soil or waste line is made one inch larger in diameter than required by these rules, the vent pipe may also be omitted for such fixtures in buildings over eight (8) stories in height.

Rule 95. Except where "yoke type" ventilation is installed, vent connections for water-closets and slop sinks must be made from the branch soil or waste-pipe just below the trap of the fixture, and this branch vent pipe must be so connected as to prevent obstruction, and no waste-pipe connected between it and the fixture. Earthenware traps must have no vent horns.

"Yoke type" ventilation shall be taken to mean a cross connection, by means of a horizontal branch soil or waste-pipe, between the main soil or waste line and the vent line, and in which the connection between the branch pipe and the vent line is made at least six (6) inches above the line of fixtures discharging into such branch pipe.

Rule 98. When the plumbing fixtures installed in any building are arranged in groups or batteries, "yoke type" ventilation may be installed, provided that for batteries of water-closets each fixture shall be set not more than two (2) feet distant from the horizontal branch soil pipe into which it discharges, and for batteries of fixtures other than water-closets each fixture shall be so located that its trap will be not more than two (2) feet distant from the horizontal branch waste line into which it discharges. When the ordinary type of venting is installed and the number of branch or back vents from the traps of fixtures connecting to any main branch vent exceeds the number

and size given in the following table, a 3-inch main branch vent must be provided for the additional vent connections.

2-1½ inch branches on a 1½ inch main branch.	
4-2 inch branches on a 2 inch main branch.	
7-1½ inch branches on a 2 inch main branch.	
2-2 } inch branches on a 2 inch main branch.	
4-1½ }	
1-2 } inch branches on a 2 inch main branch.	
5-1½ }	

Traps.

Rule 99. No form of trap will be permitted to be used unless it has been approved by the Superintendent of Buildings or the Board of Standards and Appeals.

No anti-siphon trap or deep-seal siphon-jet fixture shall be approved until it has successfully passed such test as may be prescribed by the Board of Standards and Appeals.

Rule 111. Every plunge bath shall be provided with a trap at least four inches in diameter, the waste from trap to bath to be reduced two diameters and this waste to be controlled by a gate valve. Overflow pipes, if provided, must be connected on inlet side of trap. Except where an approved anti-siphon trap is installed in the manner specified in Rule 91, such trap must be ventilated by a separate vent line extended above the roof, of the same size as trap and water connection.

Rule 113. Every dental cuspidor must be separately trapped by a trap of at least one and one-half (1½) inches in diameter, which shall be vented except where an approved anti-siphon trap is installed in the manner specified in Rule 91, and placed as close to the fixture as possible. The connection between trap and cuspidor may be three-quarters (¾) of an inch in diameter.

Rule 114. No plumbing fixtures, except bar sinks, soda fountains or drinking fountains, shall be installed with an indirect waste connection to the plumbing and drainage system. The waste of every bar sink, soda fountain and drinking fountain, if not directly connected, must discharge over a properly water-supplied, trapped sink, with trap vented, unless an approved anti-siphon trap is installed in the manner specified in Rule 91. The main waste lines shall be two (2) inches in diameter, and the branches to fixtures at least one and one-half (1½) inches in diameter. Drinking fountains must be trapped and the waste line extended through the roof. No vent connections need be provided.

Rule 116. Safe and refrigerator waste-pipes shall not be trapped. They must discharge over a properly water-supplied, trapped sink, with trap vented unless an approved anti-siphon trap is installed in the manner specified in Rule 91, such sink to be publicly placed, and not more than 4 feet above the floor. In no case shall any refrigerator or safe waste-pipe discharge over a sink located in a room used for living purposes.

Friendly Possibilities of Engineering Societies*

By PHILIP N. MOORE

Past President, American Institute of Mining Engineers

ENGINEERS and masters of enterprise are waking fast to the realization that there is something more in the relations of employer and employee than mechanical output, which can be measured mathematically, and that the human side of service must receive greater consideration for

*From the Bulletin of the American Institute of Mining Engineers, January, 1918.

THE AMERICAN ARCHITECT

the future. So much has been said and written on this subject that it has passed into a truism.

Should not the same element, long neglected, be considered as of even greater importance than questions of administration and membership, in the plans of engineering societies? Should mutual service and interest end with mere technical output by members and the rendering of care and management by officers?

The world is recognizing, as never before, obligations for service to fellowmen due from all, high or low, in rank or wealth. Our technical societies, organized for professional protection and advancement, are, insensibly to themselves, almost without conscious intent, widening their field of service to members and dealing heartily with questions broader than technique. Those who are doing such service find unconsciously more and more satisfaction in work so rendered.

The growth of knowledge that comes to subaltern engineers or veterans by converse and contact with their fellows, working along and versed in the same subjects, brings interest and friendship. In this way are built some of the warmest friendships of life, coming as incidental and pleasurable results of meetings undertaken for other purposes. Should not the friendly purpose, the desire for service one to another, and especially the wish on the part of the established man and organizations to help their young fellows, be felt to demand attention as an issue of its own rather than as a by-product?

The thought that such service should be an essential part of society life and obligation is strong and growing. It has shown itself in criticism from time to time against hard and indifferent attitudes and routine, as well as by protests that have taken form in the founding of new societies having the social and the service feature for their reason.

In our Institute, not only has the friendly spirit been growing but the call for service was recognized long since by the establishment of an employment department. With the nation at war, more engineers than ever before were demanded quickly. The task of finding them was assumed by Engineering Service, whose mission was a patriotic attempt to give the Government the right engineer for the right place and, incidentally, to help the right man to find it. This service has now, under a changed name, been placed by the Engineering Council under the secretaries of the four Founder Societies. As the Engineering Societies' Employment Bureau, it possesses the largest cataloged body of information in existence regarding engineers of the country and will, without doubt, grow into a department of increasing value that will carry on

its files the records of the great majority of engineers of the country. To young engineers, members or not, it will offer services, practically free, for placement in positions; for employers, it will carry a body of men from which can be drawn capacity for almost any task.

This is a forward step of great value, which will be welcomed, especially by the younger men of our societies. There are those who believe it is but the beginning and that the societies should increase their points of social contact. Elder men who have achieved their place in the world owe cordiality and acquaintance toward the younger engineers; on the other hand, the younger men should not conceal their vanity or awkwardness under the cloak of modesty, but should show themselves at all times ready to meet, greet, and show interest in the elders, who are far more desirous of knowing and welcoming them than they know.

Further, with such increase of friendly meetings will come not only greater value to the members from their society connection, but there must and will grow a feeling on the part of such members, especially those who are younger, that they have obligations of service, as well as privileges, when they join a national society. All these organizations suffer from the fact that too few members take the trouble even to vote at an annual election and but a small proportion at any time attend the meetings. If each member living within the country should make it a rigid item of his annual schedule to attend at least one meeting of the national society to which he belongs, not only would he benefit greatly thereby through coming to know face to face the men who are doing the bigger things in the profession and the society, but he would find his own powers of influencing other men growing proportionately. The obligation of cordiality is on everyone.

Engineering Societies Employment Bureau

The American Institute of Mining Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers have established the Engineering Societies Employment Bureau under the management of their secretaries. One of the purposes of the Bureau is to keep in touch with all engineering firms with a view to supplying them with desirable men. Plans are under way to assist in placing men who are retiring from the Government service. The Bureau is not intended to be exclusively for the benefit of unem-

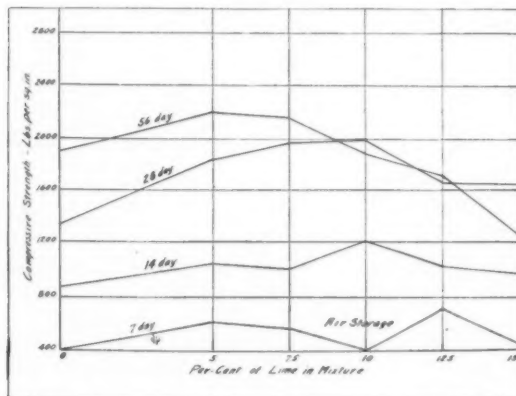
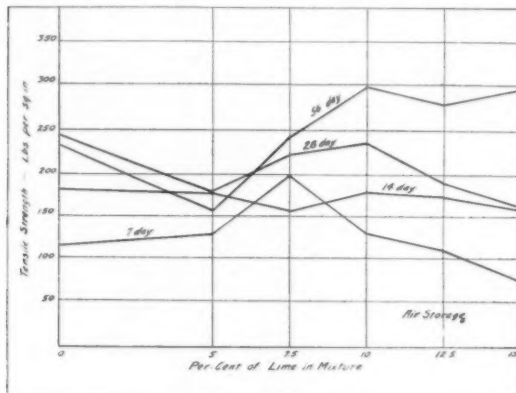
ployed members of the Founder Societies; non-members who are introduced properly will be registered. Information, registration forms, etc., may be obtained from the office of the Bureau, Engineering Societies Building, 29 West Thirty-ninth Street, New York, Room 903.

The Effect of Lime on Strength of Cement Mortar

THE effect of hydrated lime on cement mortar has been investigated by means of a series of tests and are reported by M. O. Fuller.* These tests supplement a series previously made and reported in 1916, which showed that the addition of hydrated lime up to 10 per cent not only increased

not present. Longer storage periods showed results in favor of the addition of lime.

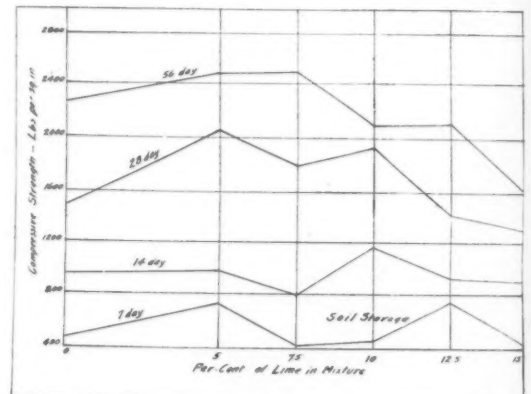
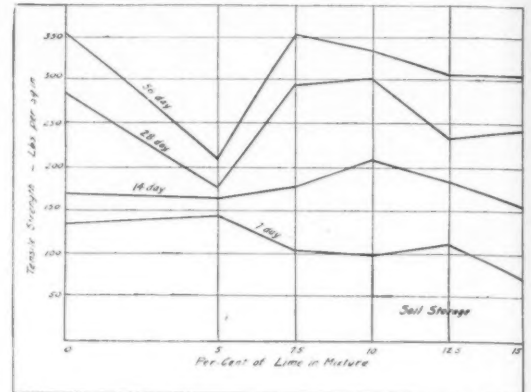
The tests here reported were made to determine the percentage of hydrated lime that was best to increase the plasticity and impermeability of the mortar and not affect its strength. The storage conditions were three, outdoor air, water and soil and the test periods 7, 14, 28 and 56 days. In addition



Tensile and Compressive Tests on Samples Stored in Air

the plasticity but also in some degree the tensile strength of specimens stored in water and in earth. The stored specimens showed greater gain in strength up to the ten-day period when lime was

*Asst. Professor Civil Engineering, Lehigh University, Bethlehem, Pa.



Tensile and Compressive Tests on Samples Stored in Soil

to the tensile briquettes, 2-in. cubes were made and tested in compression on a Universal testing machine.

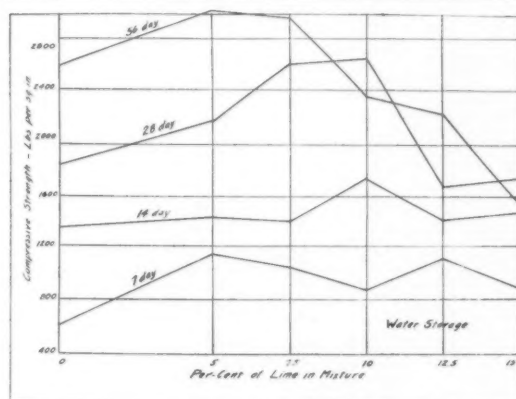
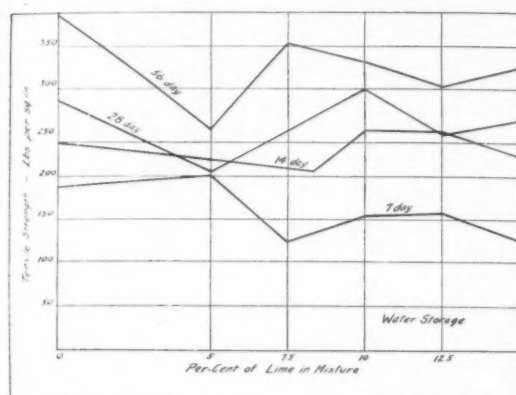
The cement had the following physical properties: specific gravity 3.08, fineness 18 per cent retained on 200-mesh sieve, normal consistency 25 per cent water. Tensile strength neat cement, 7 days, 454 lb. per sq. in., and 28 days, 753 lb. per sq. in. Compressive strength neat cement, 7 days, 4701 lb. per sq. in., and 28 days, 6737 lb. per sq. in. Tensile strength 1-3 mortar, 7 days, 188 lb. per sq. in., and 28 days, 326 lb. per sq. in. Compressive strength 1-3 mortar, 7 days, 1130 lb. per sq. in., and 28 days, 1997 lb. per sq. in.

The proportions of sand and cement were taken

THE AMERICAN ARCHITECT

by weight, the percentage of the total weight of the mixture being added to give what is known as working consistency, i.e., normal consistency plus 50 per cent. The hydrated lime was added to the dry cement and thoroughly mixed before adding the sand and water. Test pieces were stored, one-third in water, one-third buried in moist clayey soil, and one-third outdoors subject to the elements.

The plotted results are given for various per-



Tensile and Compressive Tests on Samples Stored in Water

centages of hydrated lime up to 15 per cent. As applied to building construction, architects will be more interested in the air storage tests as more closely approximating field conditions. Reinforced concrete design is based on the compressive strength and these tests show that from 5 to 7.5 per cent of hydrated lime apparently improves the strength and this appears to be the safe limits. In tensile strength tests it develops that 10 per cent of hydrated lime gives the best results, but as resistance to tension is negligible in concrete design, this percentage should not be used accepting these tests as a basis for specifications.

The effects of soil and water storage are inter-

esting, although such conditions do not obtain in building constructions except in underground foundation work. They do, however, emphasize the value of keeping concrete in as moist a condition as possible and corroborate the results of the tests made by Prof. Duff A. Abrams which were published recently in *THE AMERICAN ARCHITECT*. An important result of using hydrated lime, in addition to the increased impermeability of the concrete, is the increased plasticity, which will aid the placing of concrete without the use of excess water. This is well worth considering, as the time of mixing and the percentage of water used are the two most important factors that affect the making of concrete, materials not considered.

A Duty to Your Profession

"ENGINEERS who are not given to writing articles on technical and practical subjects should bear in mind that to-day, experiences are not handed down from one generation to the next by tradition, but by written books and magazines; that they have received their own knowledge from this source and therefore are in duty bound to reciprocate."

This is true also as to architects, for the day of the apprenticed draftsman is over, many of them in these days coming from technical and architectural schools. In any event, the architect of to-day has such a remote contact with his drafting forces that he does not have the opportunity to give them the benefits of his experiences even were he so disposed. The teacher or professor in the technical school is, unfortunately too often, a person without practical experience and one whose knowledge is limited to that available in text books and technical journals.

Quoting further from Albert M. Wolf, Assoc. M. Am. Soc. C.E., in *The Wisconsin Engineer*, he states that: "An engineer often has to solve problems regarding which little direct information can be found. In such cases he must draw upon his technical and practical knowledge for the solution. If, after the work is completed, he will write a description of it, and the methods employed in design, with some comments as to whether the design has proven satisfactory in all respects or not, and send it to one of the technical papers for publication, other engineers looking for light on the same subject will be rewarded for their search. They will be able to profit by his contribution to the literature, and undoubtedly will make improvements in their design, suggested by his experience. Then, if they in turn would write up their experience along this particular line, soon we would have mate-

THE AMERICAN ARCHITECT

rial enough at hand to allow someone to set forth clearly that which can be considered good practice."

This can apply equally as well to the architect. A comparison of engineering and architectural journals discloses the fact that the former publications contain many practical observations based on experience, contributed by practising engineers. Without considering the efforts of the able editors of engineering journals to secure this class of material, there is always a stronger feeling of fellowship among engineers and contractors than between architects. This fellowship is based on the fact that they have to combat floods, quicksands and all the efforts of the elements to destroy property and life. These common dangers so humanize them that they willingly yield the results of all their experiences to help their professional brethren.

The absence of such data from architectural journals may be entirely the fault of their editors, who may not have a keen appreciation of the value of such information to the architect. It is true, however, that architects do not contribute such data to these journals. There can be but two reasons, either architectural publications are not considered to be mediums for the dissemination of such knowledge, or architects lack that unselfish human desire to help their fellows. In extenuation of the latter hypothesis, if it be correct, it might be assumed that the practice of architecture is such a placid and cold-blooded procedure that it has not occurred to the average practitioner of the art that he has a duty to perform in aiding the profession and his fellows in this respect.

Every project in building construction has its story and lessons, practical and many times romantic. Sometimes the solution of the unexpected or ordinary problem may appear to be too simple to justify its telling, but it should be kept in mind that the younger ones are reading and coming on and that some of the older ones may not know. Everyone has made mistakes and generally has corrected them successfully, and that correction is to their credit. This knowledge, even if anonymously given, may save another from the same or similar troubles. THE AMERICAN ARCHITECT will be pleased to publish any practical solutions of the many difficult problems that confront the architect in his work.

Book Review

A SCHOOL BUILDING PROGRAM FOR CITIES. By N. L. Engelhardt, Ph. D., 6½ x 9½, tables and diagrams, 130 pages. Teachers College, Columbia University, New York. Cloth \$1.60. Paper \$1.20.

This book is in three parts. Part one is devoted to studies in population, measurement of school

population and the geographical distribution of population. Part two treats of the factors that enter into the school building plant. Part three is devoted to the financing of a building program, considering the ability to pay for the necessary additions to a school building plant and the payment for new school buildings.

The unfortunate conditions that affect the public school system of this country are due mainly to the fact that the boards of directors are either elected or appointed, which results in such frequent changes of personnel that a well-conceived program is seldom formulated. There is also little incentive for a member of a school board to become thoroughly informed of the various elements that are involved in the construction and operation of the system. These conditions also affect the school superintendent in a similar manner.

It then follows that any addition to the literature pertaining to the determination of true requirements on which an intelligent building program can be constructed is of value and importance. In many cases the development of school building programs are the result of haphazard consideration, too often influenced by political or private realty interests.

Fundamentally, the program must be based on a measurement resulting from a survey of the controlling factors, which are the measurements of the population, the plant and the ability of the community to finance the program. Such a procedure is similar to that which is required to design a sewerage and drainage system or a transportation system. All intelligent designing must be based on the real requirements.

An architect who has occasion to design school houses either enters into a competition for the work or is awarded the commission outright. The program is generally formulated before he comes in contact with the project. In that case it is simply an order to design a building of a certain capacity. As a practitioner of an essentially constructive profession, there should be no one better qualified to measure and formulate the requirements for school buildings than the architect. Certainly he should be better qualified than the members of the average school board, consisting of merchants, professional men and ladies serving by virtue of their interest in "mothers'" or other clubs. The average school superintendent is a well-qualified pedagogue but too often lacking in the business ability required to solve these problems.

The architect should broaden his knowledge of the basic requirements that underlie the proper solution of these problems and thus be enabled to better serve his clients, the community in which he lives, and himself. To those having such an ambition the reading of this book will be of assistance.

Industrial Information

In this Department there is published each week information as to the development of materials and methods, derived from reliable sources.

The Art of Stippling

Conspicuous both for clarity of discussion and artistic merit of its illustration is a valuable booklet issued by the Western Brick Co. of Danville, Ill., on *The Art of Stippling*. Herein the reader is carried through a concise history of the subject in its original and artistic aspect. Its definition and early application are illustrated by several ably reproduced stipple engravings done by great engravers famous for this class of technique.

The practice of stippling in painting, we learn, is chiefly confined to miniature water color work where delicacy requires the use of small dots, almost microscopic in size, for producing softly shaded effects. To obtain the exact degree of color, surfaces are frequently stippled more than once, each time with a different tint.

While dotting or stippling was present in the work of the earliest engravers, a mechanical process to overcome the arduous work involved in hand methods was not perfected until 1885. At that time an American inventor, Benjamin Day, made public a machine for producing stipple effects on the negatives used for making line engravings by the photographic process. This, of course, widely increases its use.

Architecture also has come into its share of benefit from the art of stippling, for it is now being employed in building materials to produce beauty of surface, color and texture. The use of the mallet and chisel to soften the appearance of stone has been a custom for long years. Recent adaptation of stippling to the treatment of burnt clay substances has resulted in the production of a stippled brick for use in building construction which opens up wholly new possibilities for face or exterior brick as a building material.

The effect of stippling brick as done by the Western Brick Co. is to produce a surface beautifully soft in texture and sufficiently rough to give depth and richness. By the use of stippled brick an effect is produced at once which for mellowness of tone and blending of color can be compared only with the master brick work of past centuries, and which ordinarily would take decades to mature.

Stippled brick have been produced in a variety of pleasing colors. The heads as well as the faces of the brick are stippled so that any desired bond or method of laying may be used. To meet the demand for brick of which to construct buildings

suitable for all purposes, stippled brick are offered of two wholly different mixtures of clay and two entirely different color ranges. These may all be studied from samples sent free upon request directed either to the general office and factories of the Western Brick Co. in Danville, or to the branch sales offices and exhibit rooms in Indianapolis, Peoria, Grand Rapids and Fort Wayne.

Standardized Metal Caging

The advantages of wire as used in wire glass have frequently been discussed in these columns; the advantages of "S. M. C." as manufactured by the Mitchell-Tappen Co., 50 Broad St., New York, perform a similar function in soffit protection.

Standardized Metal Caging is a continuous metal cage, made of specially drawn wires electrically welded, to avoid all danger of the material disintegrating after it is in place. When it is applied, it automatically grips and locks on to the projecting rims of steel parts, and will hold the concrete in place regardless, it is claimed, of heat, vibration, knocks or cracks.

An important point is that this caging extends out into the lower corners of the soffit, thus preventing the crumbling of these corners when subjected to intense heat. There is a distinct and valuable asset in the use of standardized metal caging resulting from its fire resistant qualities, regardless of its strengthening attributes. It is also claimed to be immune to the usual causes of corrosion.

It is well known by architects and engineers that steel construction is not fire resisting unless protected by concrete. Steel in buildings is not ordinarily worn out in structures for long periods of time. It is incorporated as a material which assures strength and unusual durability. Therefore in protecting steel from fire or corrosion, the concrete, should, it is urged, be locked to the steel with proper soffit metal. "S. M. C.," it is claimed, produces this result, and adds the advantage of ease and economy in handling. A four-foot collapsed length of this material is sufficient when pulled out to cover about eighty feet of beam.

Typical structures, designed by leading architects and protected with the Mitchell-Tappen product, are illustrated in their bulletin No. 14, together with diagrams of its construction.

Philadelphia Branch for Walworth Mfg. Co.

The Walworth Mfg. Co., with general offices at Boston, and works at Boston and Kewanee, Ill., and with branches in New York, Chicago and Seattle, has recently purchased the business of Hunter & Dickson, at 241-247 Arch St., Philadelphia. The Walworth Mfg. Co. is a pioneer in the steam supply line of this country. The purchase of the Kewanee works of the National Tube Co. in 1917 by the Walworth Mfg. Co. so increased their production of valves and fittings for steam, water and gas work, that they expect to enter the Philadelphia field well prepared to take care of the growing trade sure to come with the rapid expansion of after war activities in that section.

A Standardized Truss Unit System

Although architects may cherish certain prejudices as to the standardized building this should not deter them from getting a thorough acquaintance with what has been done with this principle in modern structures to serve as a further basis upon which to expand their ingenuity.

In accomplishing rapidity of construction, so important in the face of the present dearth of necessary buildings, standardization has certain unsailable advantages. These are made clear in a pamphlet published by Milliken Bros. Mfg. Co., Woolworth Building, New York, and active in this field. For the best results to obtain, it would seem desirable for the architect to accept the engineer's contribution toward effecting speed, avail himself of its best features, and continue from that point to a development whose architectural merit shall be only enhanced thereby.

Worth-while results depend upon elemental factors; standardized building depends upon standardized units. Through such an agency, the result should not be confused with a ready-built structure which must be confined rigidly to a predetermined size and shape. The small common unit which makes this course feasible is possible of endless combinations and permutations and makes variety and novelty in design as easy of attainment as it is in any other form of construction.

Noteworthy among systems of this kind is that evolved by Milliken Bros. Mfg. Co., and referred to above. Here the trusses and columns of their Standardized Truss Unit System are composed of a series of triangular units, easily and quickly coupled together in many different forms. A typical unit

measures 10 feet by 3 feet 4 inches, and weighs 200 pounds. It is built up with standard structural steel shapes and plates complete in itself. The method of fabrication insures the accuracy of the units, and whether they are used as parts of columns or trusses, will be found alike and interchangeable. The completed structure, it will be seen, can be extended, modified, or even removed to another site, without injuring the component parts or impairing their durability.

This type of construction is used with particular success in mills, warehouses, garages, machine shops and power houses, general manufacturing buildings and structures for commercial purposes. Interesting diagrams are presented in the literature of the Milliken Bros. Mfg. Co. on this subject. One graphic comment appears in a photograph therein which shows that a single carload of knocked down material is equivalent in weight and function to a fifteen car trainload of riveted trusses in the background, thus demonstrating compactness in packing and economy in transportation.

Color of Surroundings

As a result of a campaign of education on the part of certain paint manufacturers, the industries now realize that natural light is greatly aided if the interior surfaces (walls and ceilings) are white in color. Any light striking these parts of the room is reflected in a degree, depending upon the color. If dark brown or smoke covered, possibly only five per cent will be reflected. If pure white the reflection co-efficient may be as high as seventy per cent.

If this feature is of importance in the daytime, when intensities run far above those ordinarily supplied artificially, how much more essential is it at night? Even the color of the floor affects the resultant illumination, for part of the light which strikes it goes back to the ceiling and then again down. It takes considerably more power to give the same illumination on the loom or other work place if the ceiling and walls are dark rather than white. It is a real paying investment to keep these light in color.

The lower part of the side walls is of less importance in reflecting light, and for purposes of appearance it is often desirable to have a dado of dark green or some neutral color, as finger marks and other disfigurements are not so noticeable. This treatment of the walls reduces the brightness in the field of view, a desirable feature.—From a bulletin issued by the Edison Lamp Works, General Electric Co., Harrison, N. J.