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FIG. 18. TYPICAL WARD

Our Overseas Hospitals

By EDWARD F. STEVENS AND CHARLES BUTLER, *Architects*

NEVER before in the history of this country have there been created great cities in a night, as it were, such as was witnessed in the erection of the sixteen army cantonments and the sixteen National Guard camps, built between the middle of June and the first of November of last year. Each city houses from 25,000 to 42,000 soldiers. Moreover, with each of these thirty-two cities the Government has supplied a hospital of larger proportions than would be needed for a civilian population of the same number. In the cantonments the hospitals will accommodate 1000 beds each and in the camps from 500 to 1000.

These cantonments, camps and hospitals, however, are but the clearing houses for the troops for overseas service, and hospitals planned for the training camps are not in every way suited to the care of our disabled soldiers on the fighting line, where there must be facilities for the quick handling of a large number of injured men and where the conservation of human energy must be studied and quick and easy means provided for transporting patients, food and utilities. Then, too, a type of construction must be adopted that will enable the buildings and equipment to be actually assembled and shipped to the field of operation, and there very speedily erected.

Before the commission to plan and equip the evacuation and base hospitals for overseas service was placed in the hands of the writers by the Chief

of Engineers, United States Army, under the direction of Colonel W. H. Rose, a thorough study was made of the various types of so-called portable hospital construction, both of those used in France and of the few demonstration war hospitals in this country. A system similar to that used by Mr. Butler in the Rockefeller War Demonstration Hospital in New York was adopted.

With a portable construction it was necessary to consider lightness and ease of erection, but protection from the elements, hygienic qualities and, to a certain extent, esthetic qualities were considered also. While the walls were kept low, an air of spaciousness was maintained by the use of light iron trusses. These units consist of eighty-seven buildings each, comprise all the essential departments and buildings of an up-to-date hospital, and still are of portable construction.

The block plan (Fig. 1) shows the ideal grouping of buildings, but the actual layout on the ground must depend, of course, on the available site, on the contour of the land, on the local surroundings, etc. In war hospitals as well as in civilian hospitals the orientation of certain buildings must be considered; thus, to obtain the ideal lighting of the ward buildings, the wards should run approximately north-south, and the ideal condition for operating buildings is to have the operating rooms facing approximately north.

In the war hospital, especially in one near the front, ample facilities must be provided for the reception of the patients; thus, the Receiving Building (Fig. 2) approached through the ambulance court, will accommodate a large number of stretchers at one time and will allow for proper segregation and classification of the patients, the taking of the histories, etc. The Bathing Room adjoining is provided with high slab tubs, with spray bath. In this bathing room the patients' clothes and effects are removed and tagged and, after washing or fumigating, are deposited in properly indicated receptacles in the adjoining Patients' Effects Building, No. 3 on general plan.

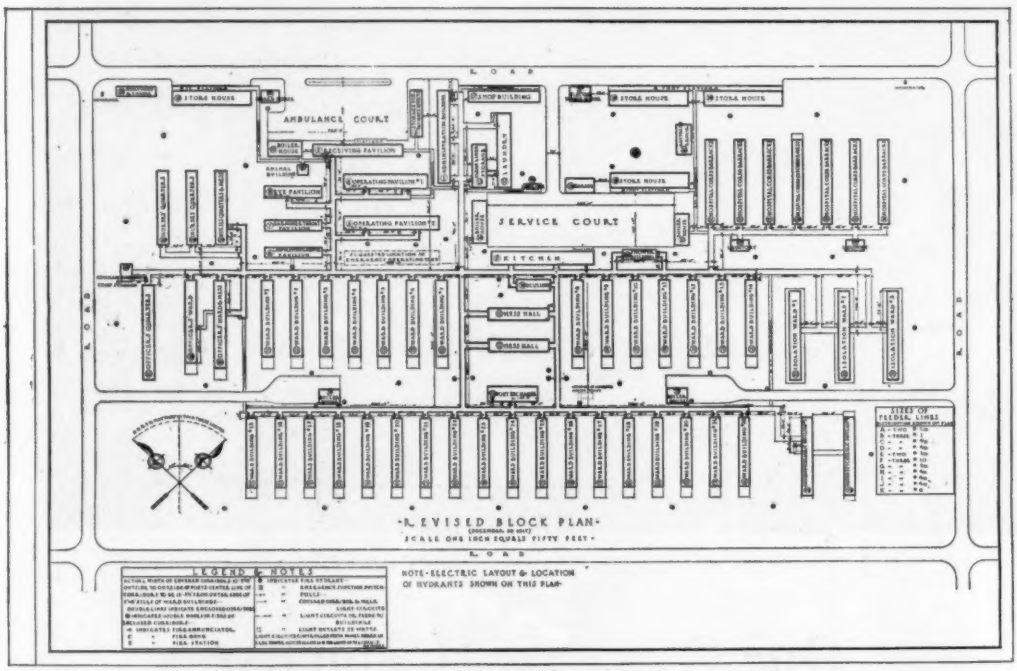


FIG. 1

As practically all buildings are connected by enclosed glazed corridors, the patient can be taken by stretcher or otherwise to the Operating Building or to the ward, according to his condition.

The Operating Buildings (Fig. 3), two in number, for the general operating service, consist of thoroughly equipped suites of rooms with every convenience of a modern operating unit in a surgical hospital. The rectangular building, made necessary by the type of construction adopted, does not interfere with the efficiency of the plan except,

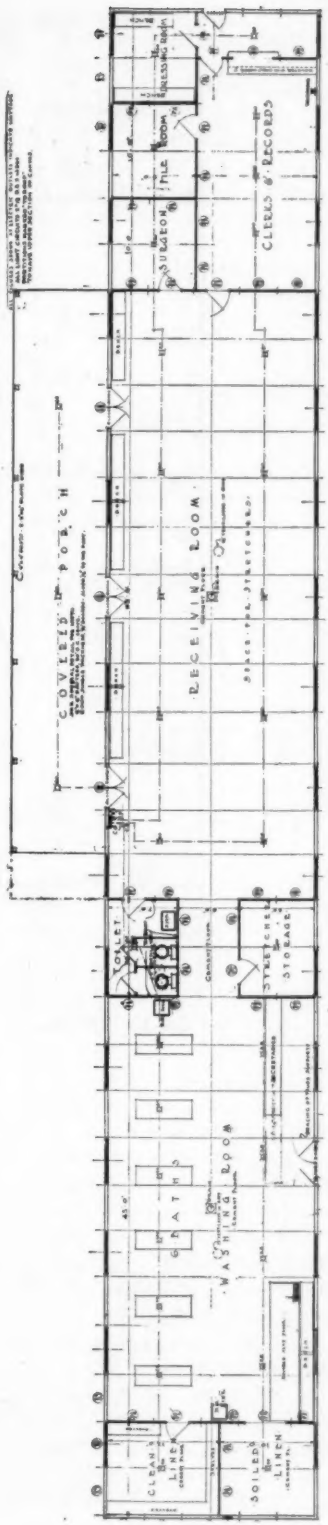


FIG. 2. RECEIVING PAVILION

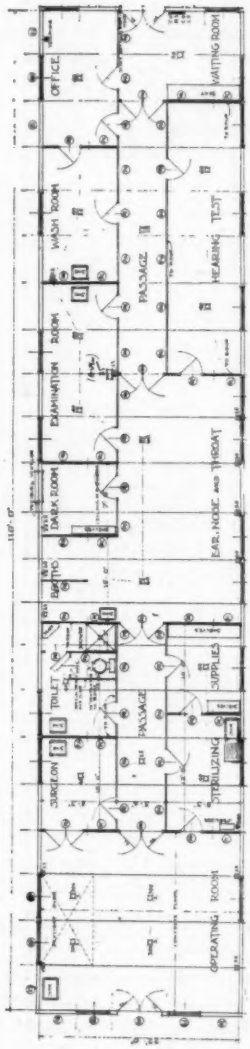


FIG. 4. EAR, NOSE AND THROAT PAVILION

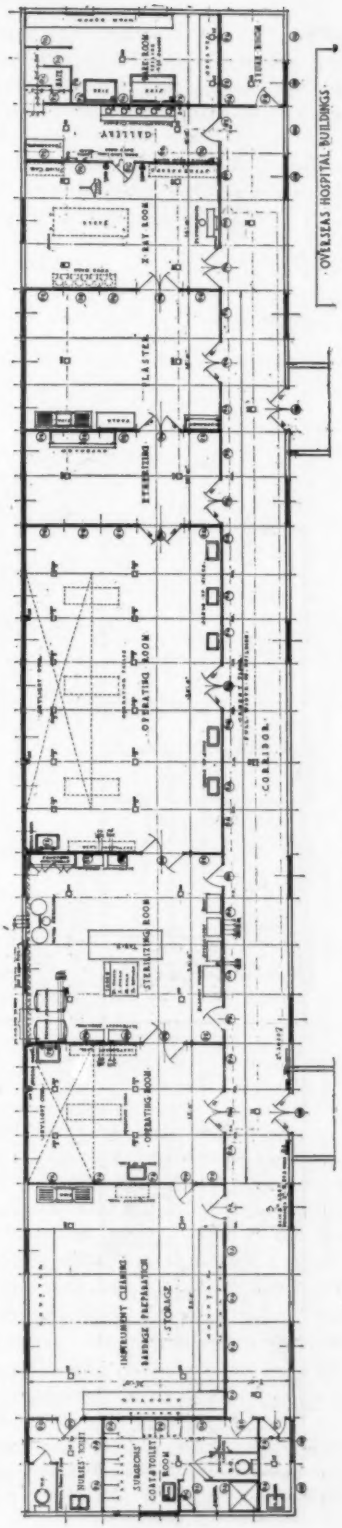


FIG. 3. OPERATING PAVILION No. 1

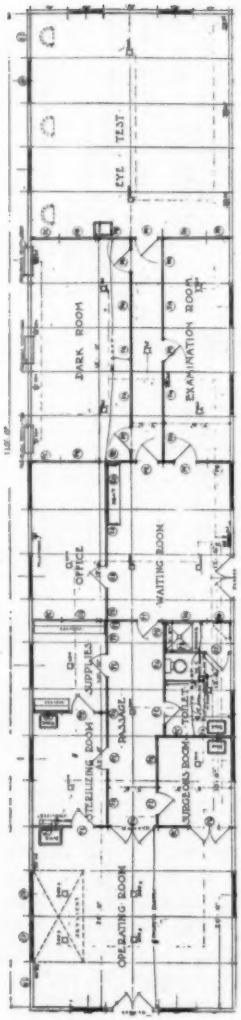


FIG. 5. EYE PAVILION

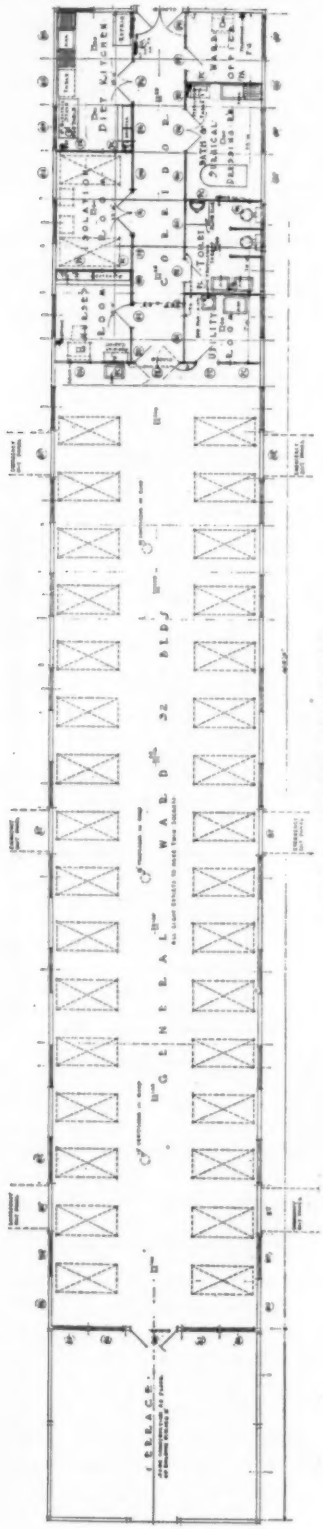


FIG. 7. WARD BUILDING

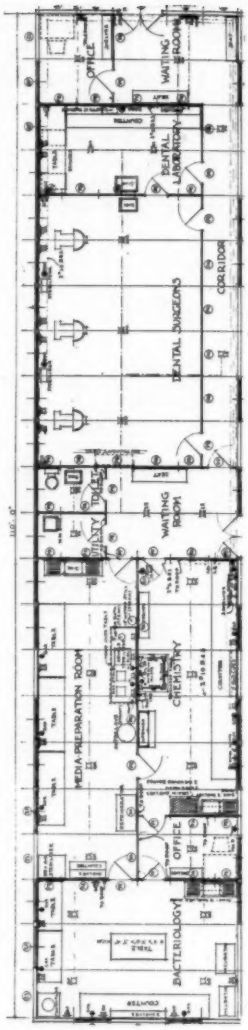


FIG. 6. LABORATORY AND DENTAL PAVILION

perhaps, that there is a superabundance of corridor. The operating rooms are provided with abundant light, by means of both windows and skylights. Between the two main operating rooms is the sterilizing room, and sterile water is brought to the scrub-up sinks in each operating room. The scrub-up sinks, while they are simple enameled sinks, are provided with the most approved elbow-action scrub-up devices. Steam sterilizers and blanket warmers, a complete X-ray suite, a plaster room and general utility are all provided.

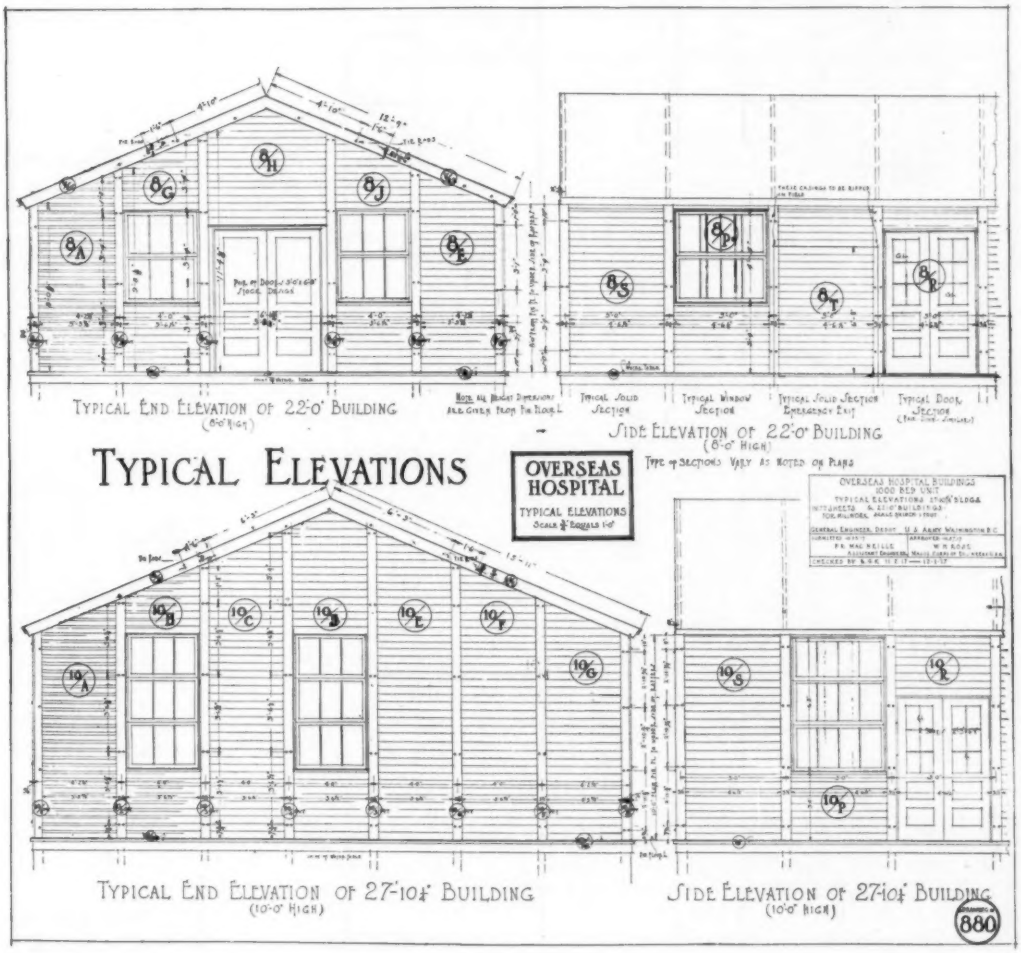
For the units placed near the front, the two buildings, Nos. 4 and 5, would be needed, providing for ten operating tables. There is also space for an emergency third building or tent.

The walls of the operating rooms are rendered smooth by an additional surface of enameled canvas, while the floors are cement.

A separate operating and treatment building is provided for the ear, nose and throat (Fig. 4); another for the eye (Fig. 8), and another for the dental and laboratory work (Fig. 6), each with operating room skylight.

The Ward Building (Fig. 7), of which there are thirty-two in each unit, is much the same as that adopted by the French and English armies. It consists of the ward of thirty-two beds and of a 20-ft. airing balcony at the south end. The ward itself is 22 ft. wide, 102 ft. long and has twenty-four windows. These windows, occupying about 28 per cent of the wall surface and opening from the top, with side wings to prevent down-draught, afford the maximum amount of light and air.

In each ward there are six emergency exits. The side wall panels, hinged at bottom and opening out, form a ramp down which the beds can be run in



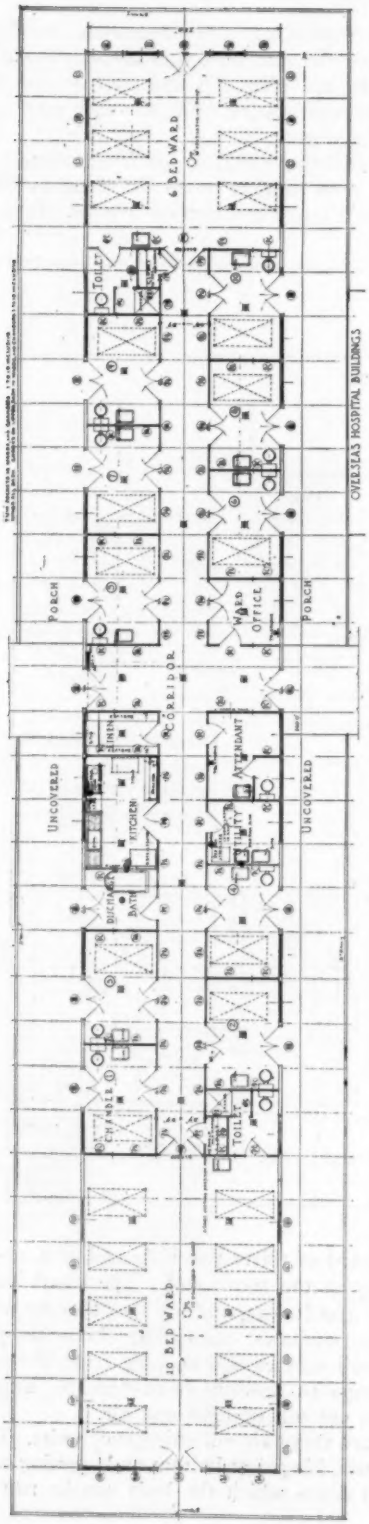


FIG. 8. ISOLATION WARD

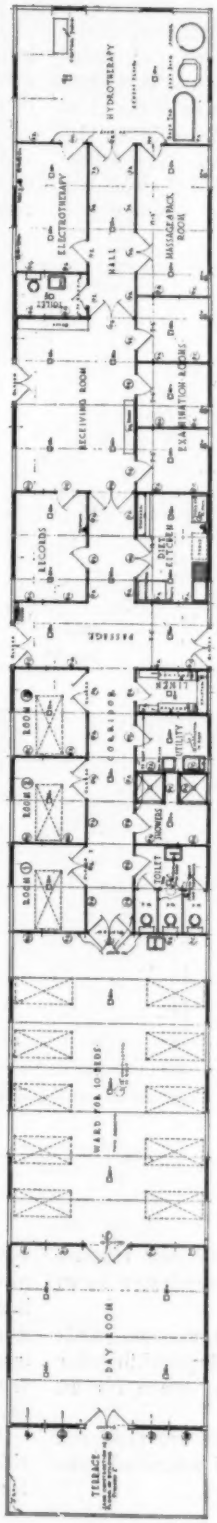


FIG. 9. NEURO-PSYCHIATIC PAVILION No. 1

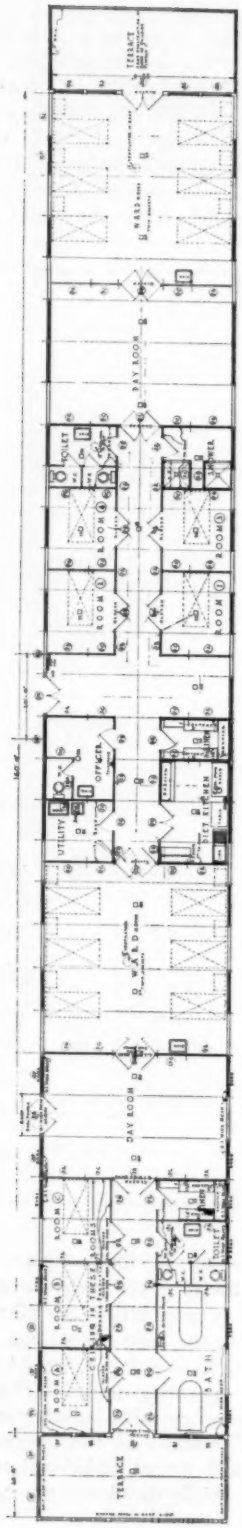


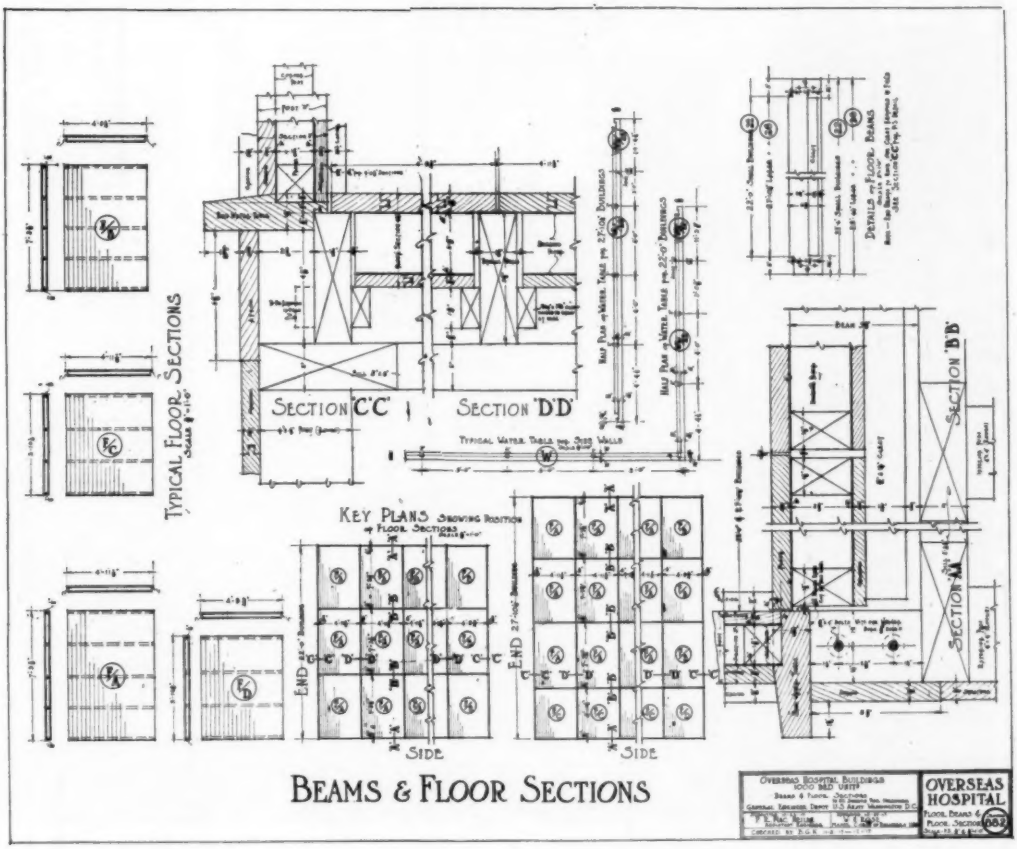
FIG. 10. NEURO-PSYCHIATIC WARD NO. 2

case of fire or other cause for quick exit. The walls, floors and roofing being double, with air space between outer and inner sheathing, these buildings are comfortable in both winter and summer.

The utilities consist of a linen room and nurses' office, a toilet room, bed pan sink room, a surgical dressing room, a small serving kitchen, a small office for the military attendant and an isolation room for delirious or moribund patients.

In each group there are three Isolation Buildings (Fig. 8), for the care of communicable or contagious diseases. These provide for twenty-six patients each, and are planned on the most approved single-room system. The ten single or isolation rooms, as well as the ten- and six-bed wards, are entered from the outside. Each room and ward is self-contained, having a water-closet and a sink with special elbow faucets, making it unnecessary for a patient to leave the room until he is discharged. Bed pans may thus be emptied in the rooms and not carried through halls. The service of food and attendance to the patient are from the inside corridor. Provision is made for linen, serving kitchen, utility room and discharge bath. The discharge bath is approached from the outside as well as from the inside.

For convenience in bathing, a portable "slab" bath, which can be wheeled into any room, is provided with water supply through hose and spray from the sink and with drainage through flexible rubber waste into the water-closet bowl. Thus the bathing can easily be accomplished by the attendant.



BEAMS & FLOOR SECTIONS

The two convalescent wards in each building have a shower in addition to the water-closet and sink.

For the care of the psychopathic and neurologic patients, two buildings, called the neuro-psychiatric wards (Figs. 9 and 10), are provided. The more violent cases are confined in the portion set apart for them, consisting of isolation rooms, a day room and a room with continuous-flow baths. This portion of the building is protected by wire guards to protect and prevent the escape of patients. The milder cases of insanity are cared for in a different section of the building.

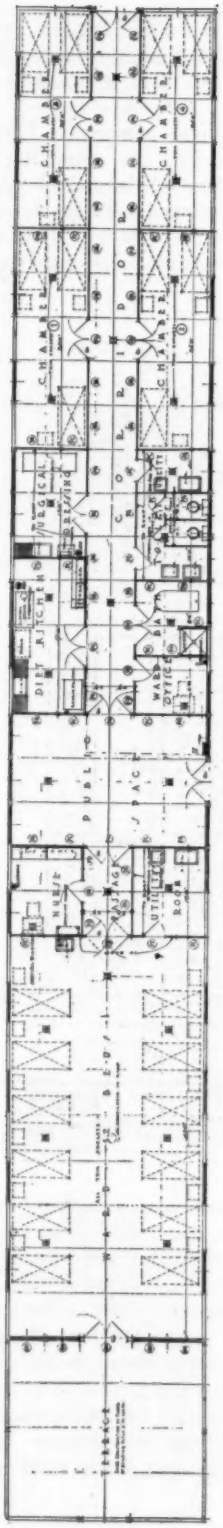


FIG. 11. OFFICERS' WARD

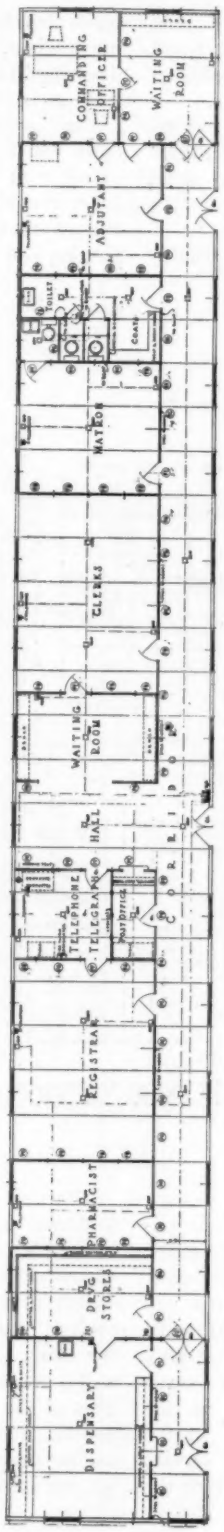


FIG. 12. ADMINISTRATION BUILDING

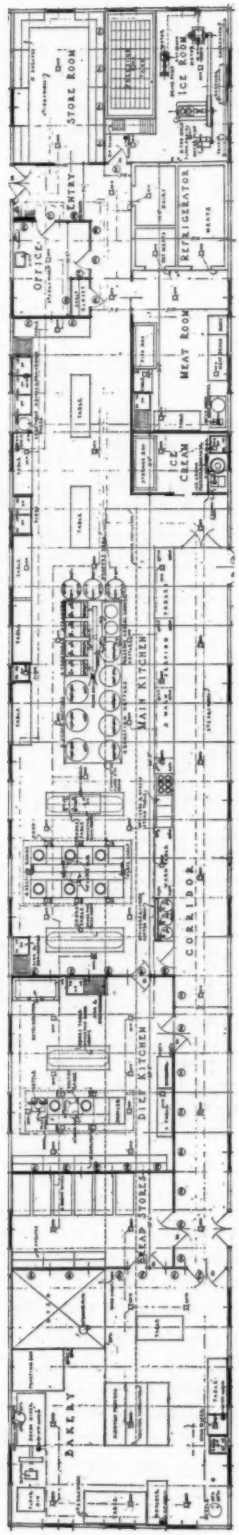


FIG. 13. KITCHEN

The building for the strictly neurological cases has special bath and medical treatment rooms, as well as wards, day rooms and rest rooms.

For the sick officers, two officers' ward buildings are provided (Fig. 11), one with wards and semi-private rooms, and one with private rooms and officers' mess. The construction and finish are the same as that of the general wards.

For the convalescent patients, about 50 per cent of whom are ambulatory or walking patients, dining-rooms or mess halls are planned, also a central bath house. For recreation, the assembly hall or post exchange is provided.

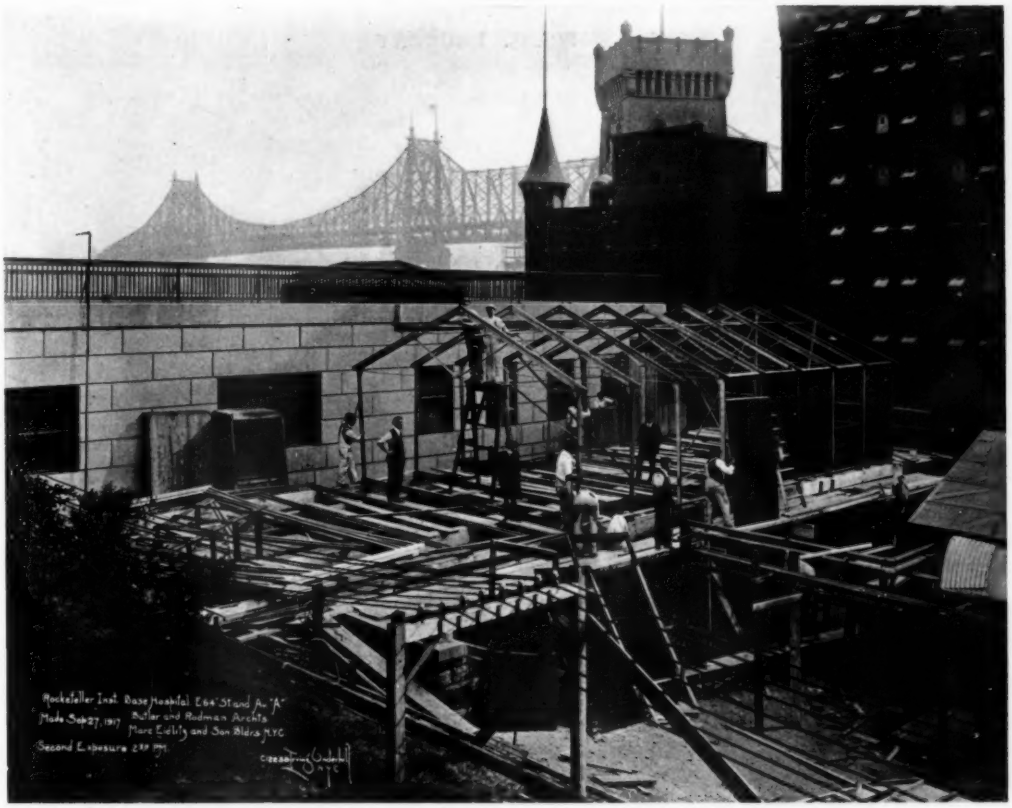
The administration, utilities and mechanical buildings occupy a central position of each group.

In the Administration Building (Fig. 12) are, of course, the offices for administration, and they are much the same as in a civilian hospital. Headquarters for the commanding officer, secretaries, matron and pharmacist are provided, as well as postal and telegraph offices. The purpose of this structure is purely as an office building.

The commanding officer and chief surgeon are given a small house; the other officers are in a separate building. The female nurses have separate buildings, with single rooms for each nurse. Hospital barracks for housing the enlisted men are located near the mechanical plant.

The kitchen building (Fig. 13), complete in itself, was studied with great care, and contains the bakery, the bread room, the main kitchen and the store-rooms; also a complete ice plant for cooling refrigerators in this building and for the making of ice for the hospital. High pressure steam will be used largely for cooking, and is obtained from a nearby boiler plant.

The dish washing is taken care of in a separate building (Fig. 14), which is located between the kitchen and mess halls, serving as well for the housing of the food carts.



ROCKEFELLER WAR DEMONSTRATION HOSPITAL IN NEW YORK, DURING CONSTRUCTION

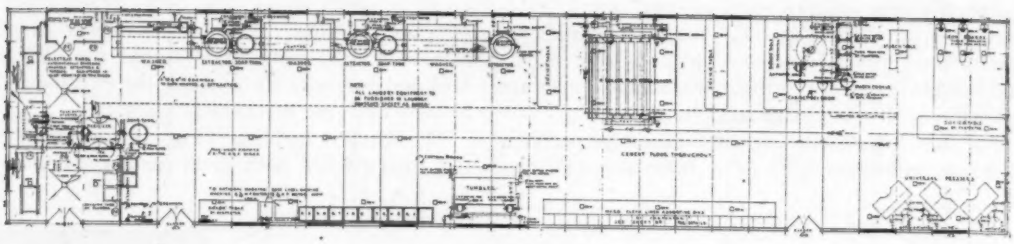
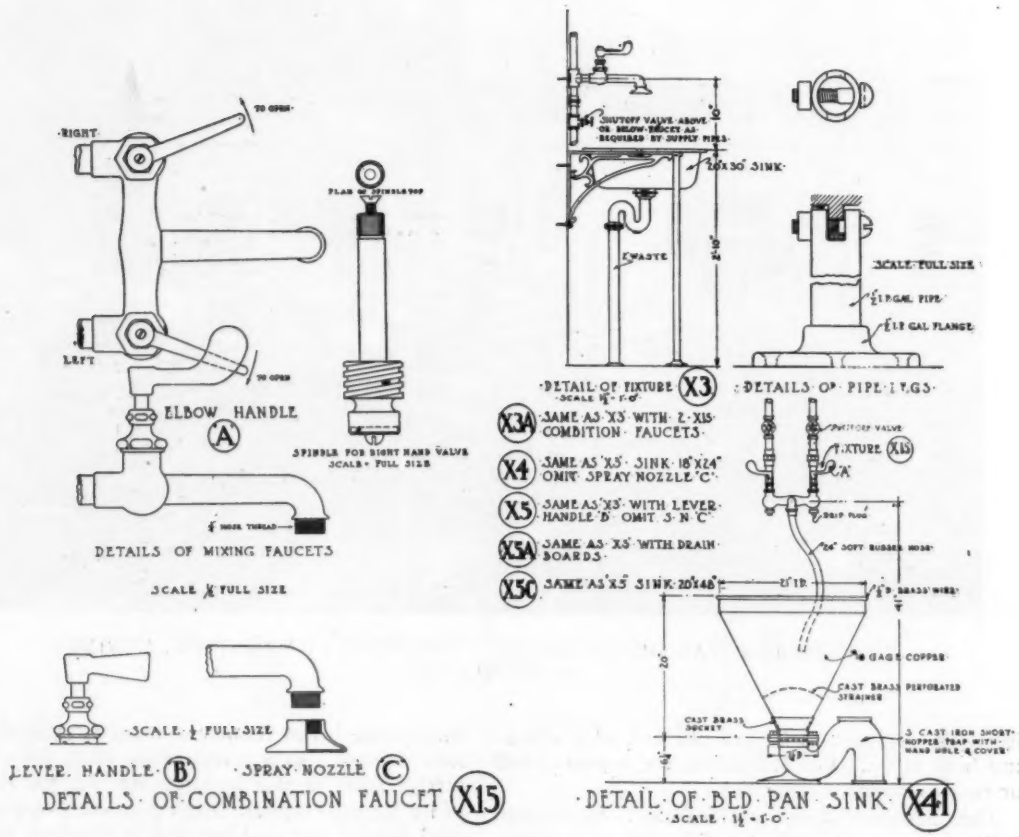


FIG. 15. LAUNDRY



PLUMBING DETAILS

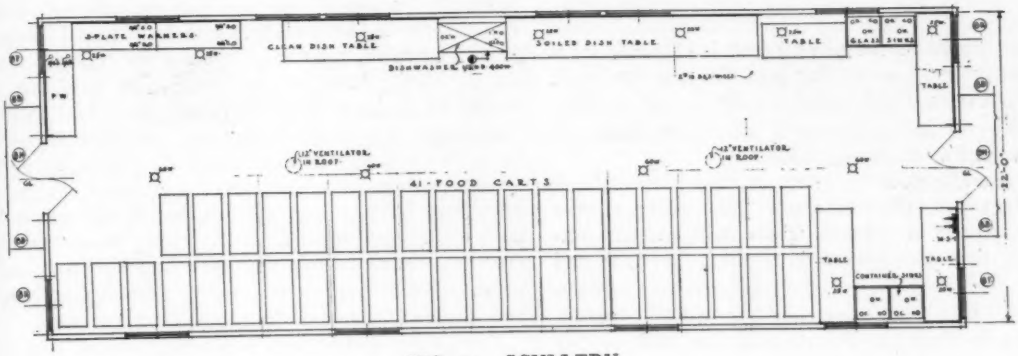
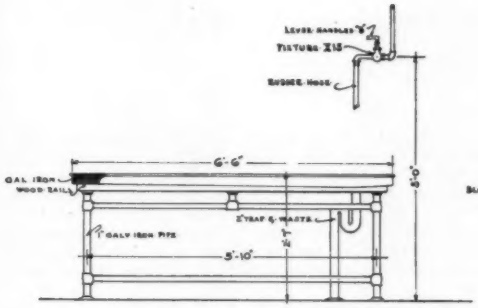
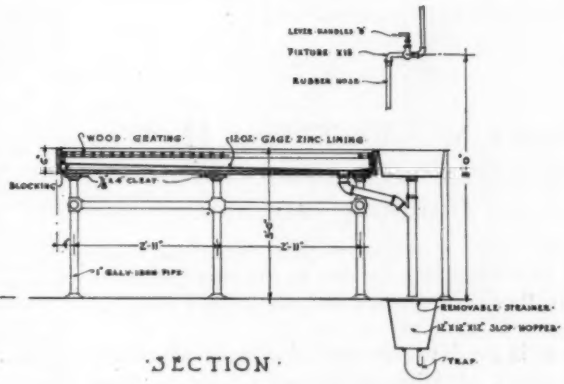


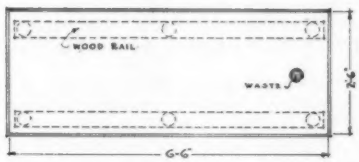
FIG. 14. SCULLERY



ELEVATION



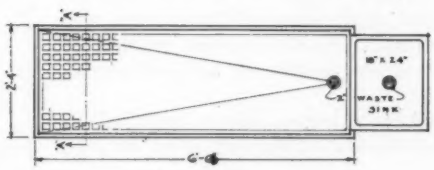
SECTION



PLAN

FIXED BATH TRAY

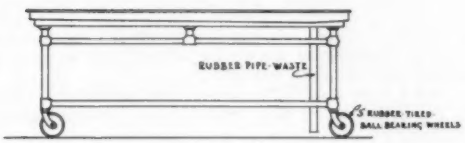
SCALE 3/4"-1'0"



PLAN

AUTOPSY TABLE

SCALE 3/4"-1'0"



PORTABLE BATH TRAY

The process of serving food is simple. The orderly starting with his food car first obtains his quota of hot dishes from the dish-washing room, then passes through the closed corridors to the kitchen, where the required bread is obtained from the bakers; next to the hot table for the hot food; then for the cold dishes and dessert, and so through a closed corridor to the ward, where the food cart can be used as a serving table.

The laundry building (Fig. 15) has been planned with regard to efficient work. The soiled clothes are brought in at one end, where, with modern machinery, they are sterilized, washed, dried, ironed and folded, and then taken to a general storage building for distribution. This central storage building is used for linen storage as well as for washed goods.

The buildings are heated by five high pressure plants (Nos. 14, 15, 16 on block plan), the piping being laid out so that no pipe larger than three inches in diameter will be needed outside the boiler houses. Supplies and returns are suspended from corridor roofs, to avoid trenching.

The lighting is from a central gasoline-driven plant, generating electricity for all lighting and power. The buildings are simple—all of one story, built up of standard five-foot units. These units, whether for roofs, walls or floors, are double thick, with an air space with two thicknesses of building paper between inner and outer sheathing. The panels composing the buildings will be built in shops in this country or abroad, and transported to the war zone and there erected. They will be hygienic, easily cleaned and painted both inside and outside. To simplify the work of erection, steam piping has been standardized and actually cut to established lengths, and all plumbing and electric fixtures reduced to standard types.

The sheets of elevations and sections (Fig. 16 and Fig. 17) show the general type of construction.

The general appearance of the interior of the wards will be much like the Rockefeller Hospital, view of which is here shown (Fig. 18).

The reproduction of a few sheets of detail drawings will indicate the construction adopted and the simple standards used for plumbing fixtures.

Secretary McAdoo Claims He Was Misquoted as to His Attitude on Building Situation

Many confusing and oftentimes misleading statements have recently appeared in the press with respect to the Government's attitude toward building operations in general.

Below is reprinted a copy of a letter addressed by Secretary McAdoo to Senator Calder of New York. It appears that Senator Calder was also under misapprehension as to the real attitude of the Government in the matter of building operations.

Secretary McAdoo's letter, which appeared in the *Congressional Record* of May 17, is as follows:

The Secretary of the Treasury
Washington, May 11, 1918.

Dear Senator Calder:

From the proceedings of the Senate of May 9, 1918, Congressional Record, page 6755, you are quoted as saying:

"At no time in the history of New York have we needed more than at present new buildings for people to live in. We are prevented from having them to some extent because of the attitude of the Treasury Department in advising the banks and mortgage companies against loaning money upon mortgages on real estate. If the Treasury Department changed its attitude, the money could be obtained, new building would be encouraged, and we might then be able to help the housing problem we are facing here."

This statement is so wholly without foundation that I am amazed that you would make it. The Treasury Department has at no time taken any such attitude, nor has it ever advised banks or mortgage companies against loaning money upon mortgages on real estate.

I have advised against the construction of unnecessary buildings during the period of the war, but I have laid emphasis upon unnecessary building. I have stated publicly that—

"Where it is a question of need—be it on account of sanitary conditions or because without such new construction other operations essential at this time for the welfare of the country would suffer—there is no doubt that the work should be undertaken. This applies equally to construction work in cities and towns and in farming districts."

In a letter to Mr. Gompers, dated March 15, 1918, in reply to a resolution adopted by the Building Trades Council of San Francisco, I said:

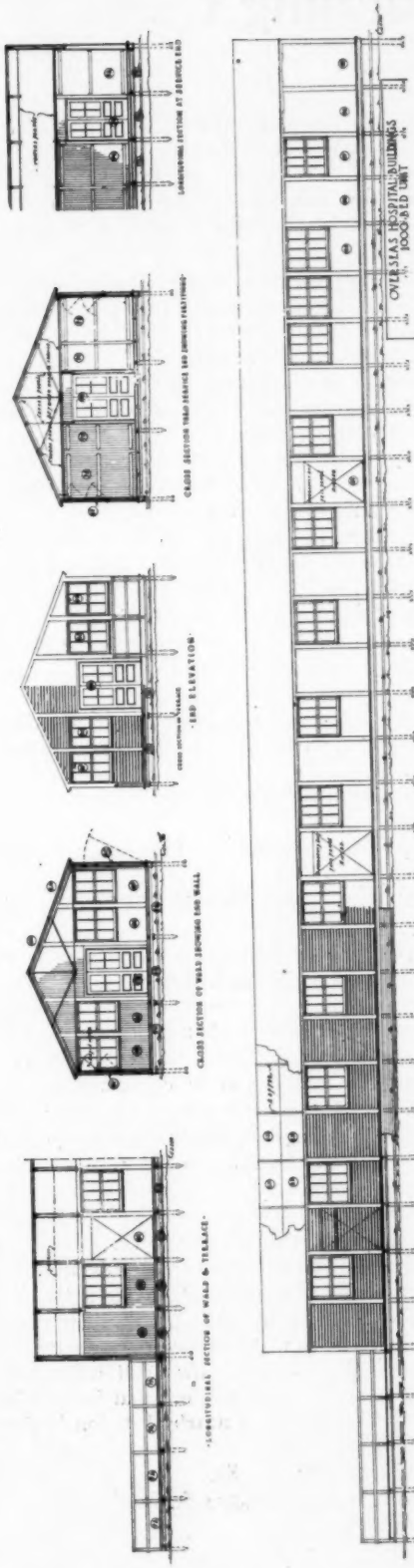
"Building operations which are not required to protect the health or provide for the comfortable needs of our people or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war should be postponed." I inclose a copy of that letter, also.

The attitude of the Treasury Department has been that capital which is needed during the period of the war should not be employed in the construction of unnecessary buildings at this time. But there has never been any suggestion that buildings actually needed for the health and protection of the civil population or for the conduct of essential business of the country should not be constructed during the period of the war.

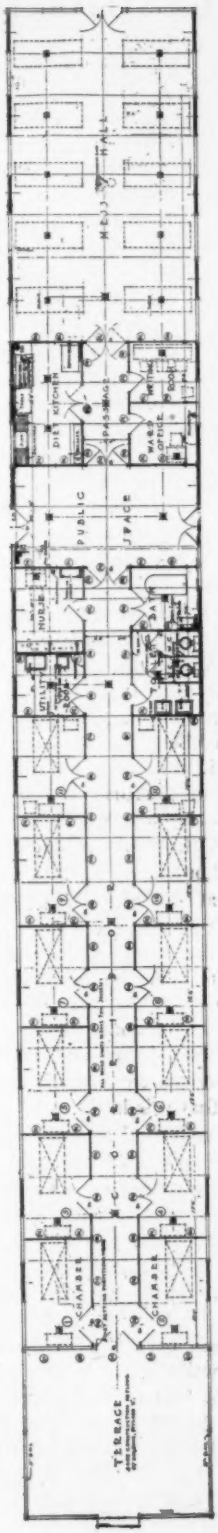
I hope that you will correct your erroneous statement by the inclusion of this letter in the proceedings of the Senate.

Faithfully yours,

W. G. McAdoo.



FIGS. 16 AND 17. ELEVATIONS AND SECTIONS OF TYPICAL 28-FOOT BUILDINGS AND COMMUNICATING CORRIDORS



OFFICERS' WARD AND MESS

Estimating and Building Costs

By W. F. ANDERSON

THE wording of this title is chosen advisedly, because there is often such an unfortunate discrepancy between the beginning and the ending, when the final bills are rendered and the owner is politely requested to remit the balance due. From the time when the architect was the builder as well as the designer until now, the owner has looked to him, consciously or unconsciously, to state in advance what the finished building would cost. In these latter days, when the cost of material rises over night and labor is in unstable equilibrium, the architect's burden in this connection is enormously increased.

The author is prepared to admit in advance that the architect cannot be expected to guarantee the ultimate cost of the structure, nor should his agreement with the owner be in any way bound thereby, except as such cost is used as a basis of computing the architect's fee.

On the other hand, we must consider the owner and his point of view. It may be a truism, but one we can well afford to keep in mind, to say that an architect who is able to turn over the completed building without extra charges has done much to keep a satisfied client and a friend.

In making this statement I do not mean that as architects we can perform the impossible, for I believe there never was a client who would not make changes in the contract documents; but I do mean that we should endeavor to make our drawings and specifications complementary and that both together should constitute a whole.

The general conditions of the specifications may define the architect as the interpreter of the true intent and meaning of the plans and specifications, and may put upon the contractor the responsibility for checking these documents and advising the architect of discrepancies or omissions. We all know, however, that this latter provision is one most difficult to enforce and that when such cases arise the blame always falls on the architect.

Although the only way of obtaining a bona fide bid on a proposed building is by means of complete plans and specifications, yet it should be possible for an architect to make up an approximate bid which might serve as the basis of decision whether or not to proceed with the work to a more complete state. I am aware that there are various rule-of-thumb methods, such as comparing, in a very general way, two sets of plans, and guessing the cost of the proposed building by its general size compared to the size and known cost of the building already erected. Such a proceeding is almost useless, for any one of half a dozen factors may radically change the whole result. To mention only a few: the difference between winter and summer conditions for the outside work, location of the two buildings with respect to a convenient supply market, and the distance from the railroad station.

With these points established in mind it becomes necessary to consider the type of building, both as to type of construction and of finish, and then to take up the matter of comparative size. The more accurately this is computed the closer will be the figure, and for this reason the author favors the cubic contents method.

Each architect undoubtedly has his own pet scheme, but, whatever that is, the established formula should always be followed.

The systems suggested are the following: For use on country work: Measure height from underside of cellar floor and use only the net cubic contents. Include

Covered piazzas at ¼ their cubic contents;

Uncovered decks at ⅛ their cubic contents taken to the bottom of the retaining walls.

For city work the height should be taken from underside of cellar floor to top of roof beams or finish.

Pent houses should be added at net cubic contents.

Any especially heavy foundations should be figured separately.

Omit open courts, but add cost of the paving for them.

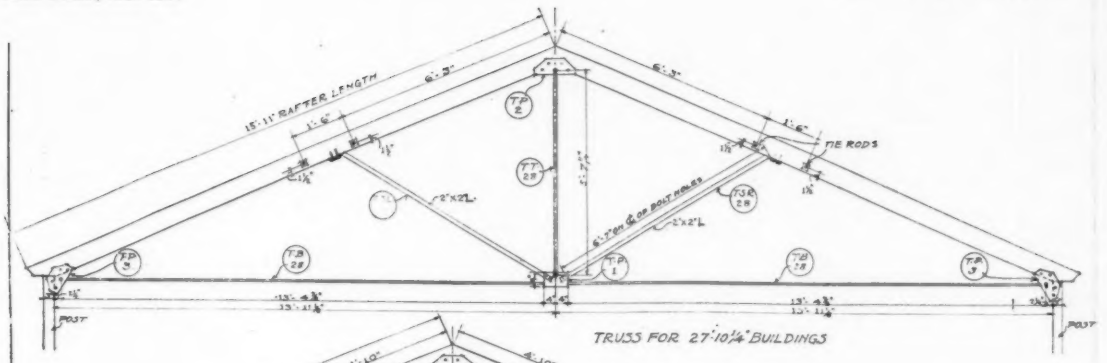
It would be of immense advantage to any architect to have the known building costs of completed buildings reduced to a unit of cost on some such system, figured both with and without special cabinet work. These figures could be filed on cards and dated with the year of construction.

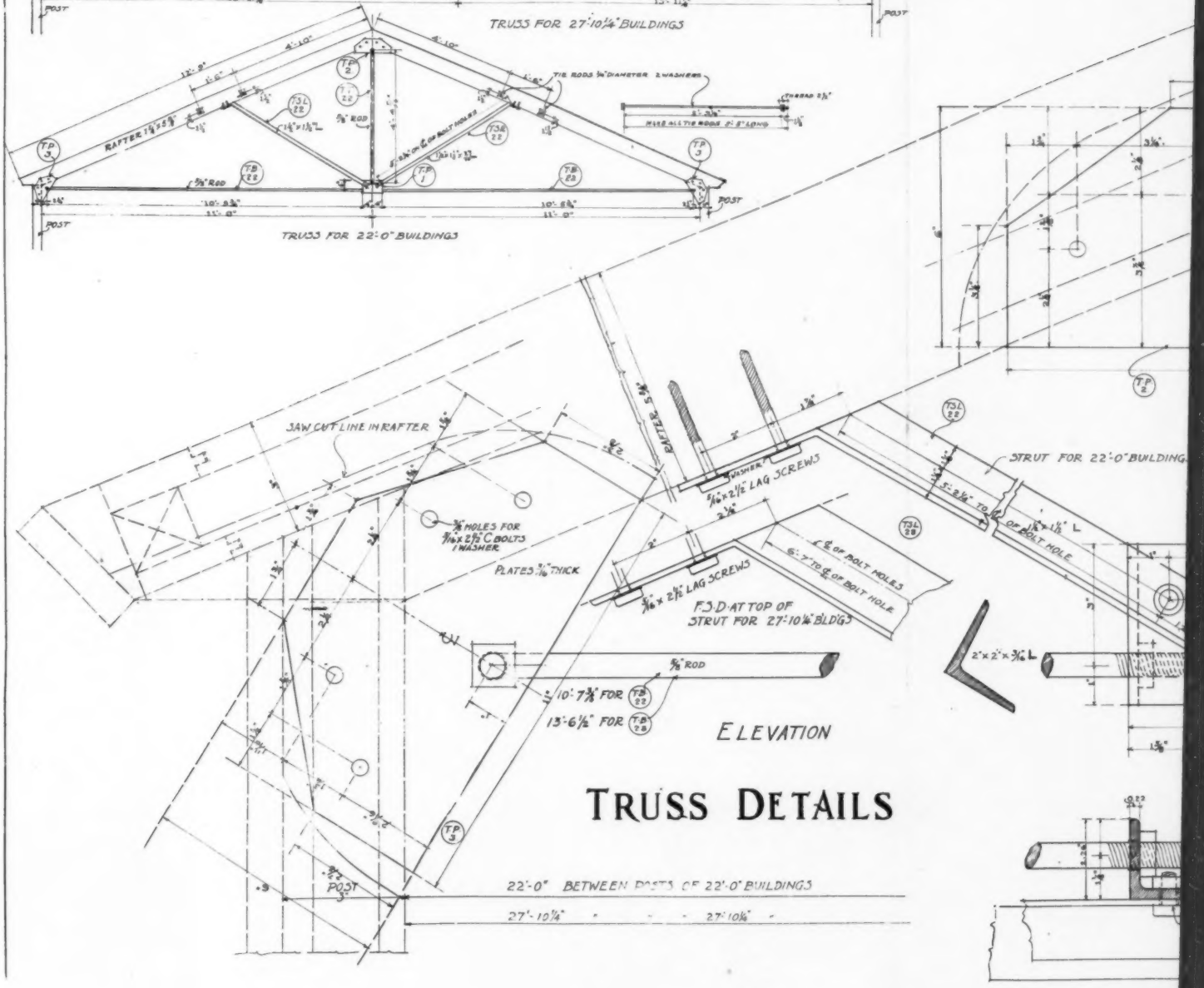
In actual practice it is not only necessary to compare two buildings as nearly alike in general features as possible, but also to take into consideration any variation in vital details, such as the comparative number of bath rooms, the type of heating plant, the amount of electric work, and any radical variations in the amount of mason's work or carpenter's finish. This may seem like a lot of work, but to be accurate we must get down to details.

Being asked to make up an approximate estimate on house plan No. 10, how shall we start? Referring to the records we find that house plan No. 8 recently finished in a nearby location in the same city reads:

Total cost, $129,161.87.

Cubic contents, 219,374 ft.



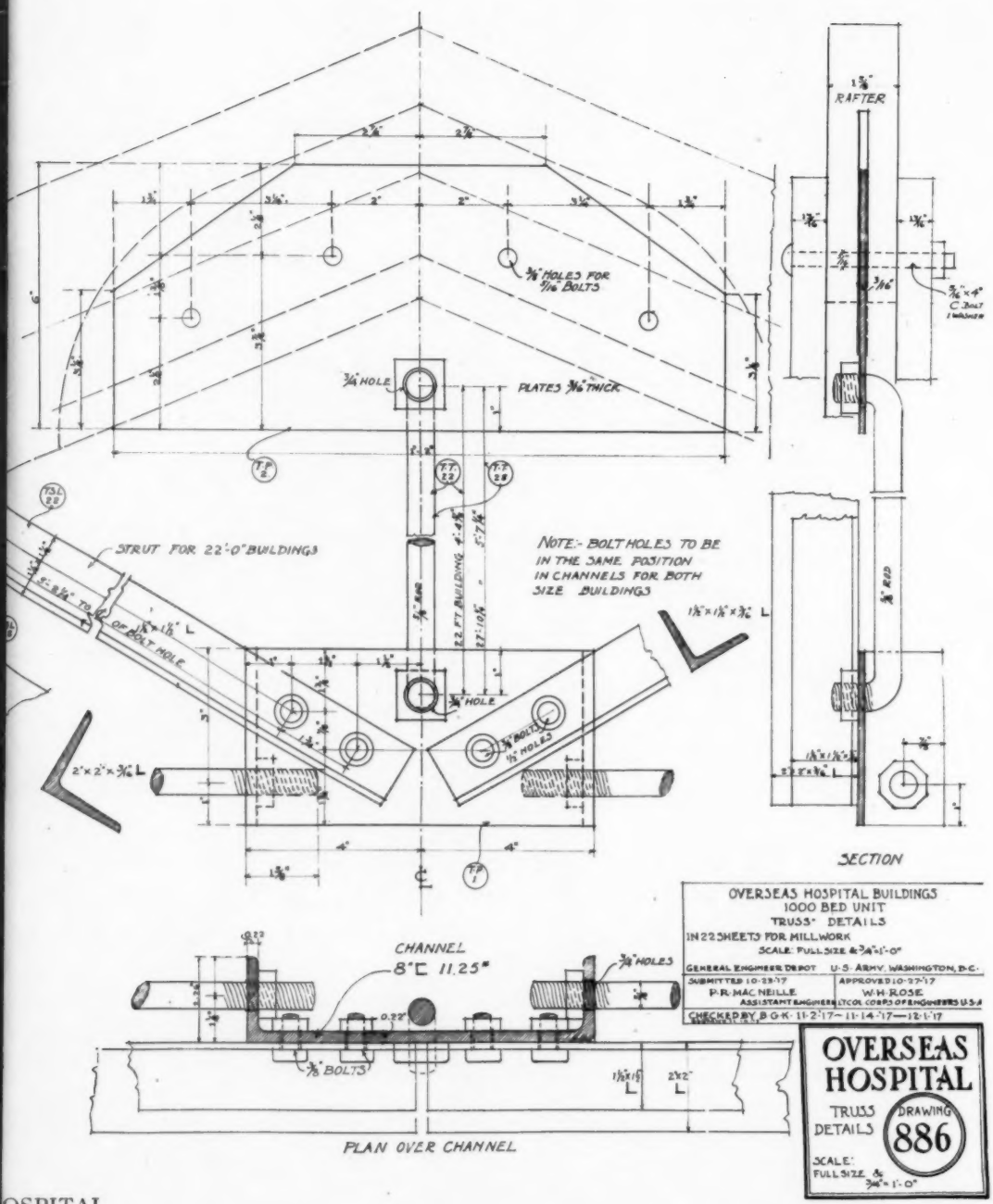


TRUSS DETAILS

PLATE 206

OVERSEAS HOSPITAL

EDWARD F. STEVENS AND CHARLES BUTLER, *ARCHITECTS*



OVERSEAS HOSPITAL BUILDINGS
1000 BED UNIT
TRUSS DETAILS
IN 22 SHEETS FOR MILLWORK
SCALE: FULL SIZE & ¾"=1'-0"

GENERAL ENGINEER DEPOT U.S. ARMY, WASHINGTON, D.C.
SUBMITTED 10-29-17 — APPROVED 10-27-17
P.R. MAC NEILLE — W.H. ROSE
ASSISTANT ENGINEER — LT.COL. CORPS OF ENGINEERS U.S.A.
CHECKED BY B.G.K. 11-2-'17 — 11-14-'17 — 12-1-'17

OVERSEAS HOSPITAL
TRUSS DETAILS
DRAWING 886
SCALE: FULL SIZE & ¾"=1'-0"

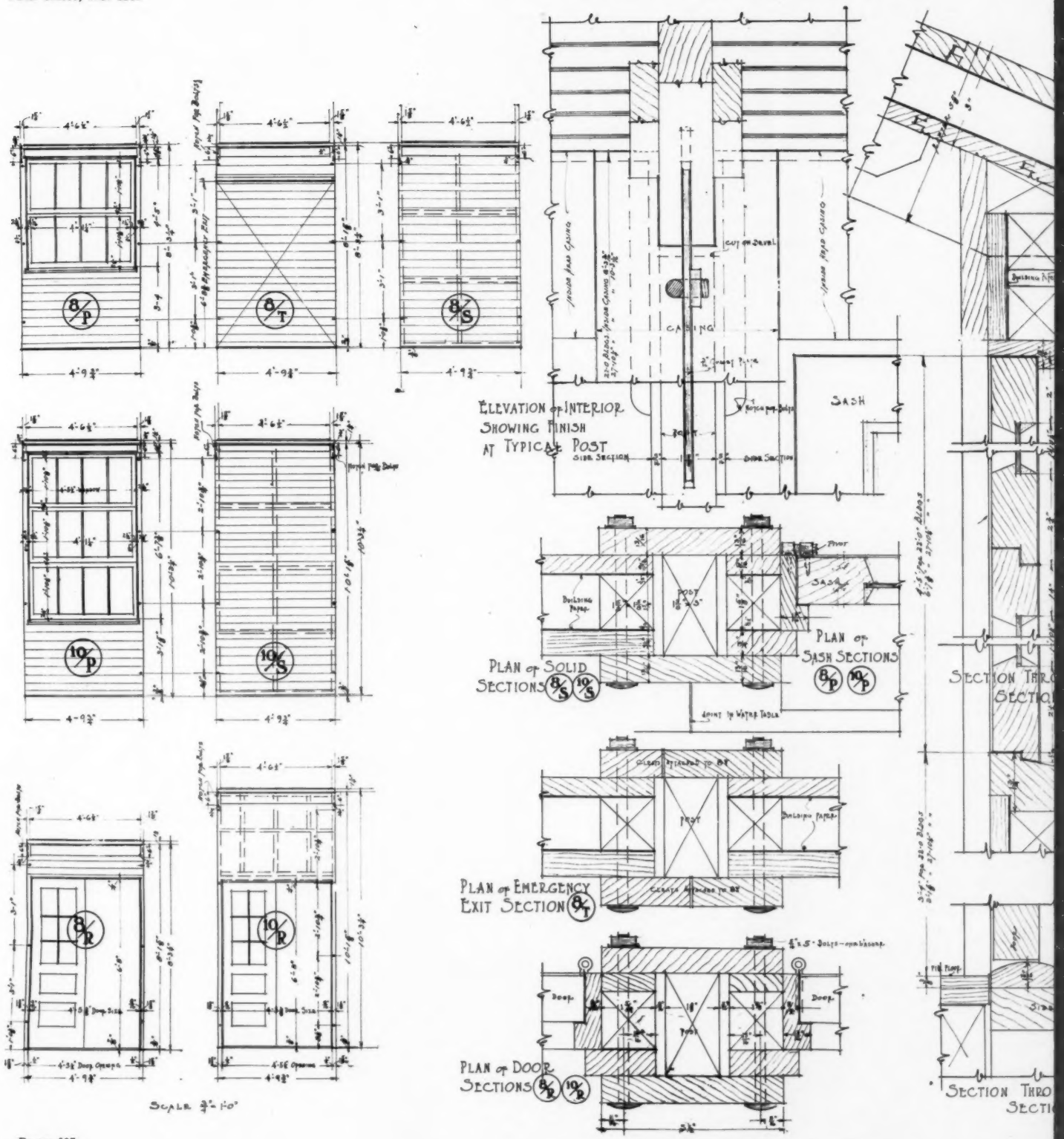
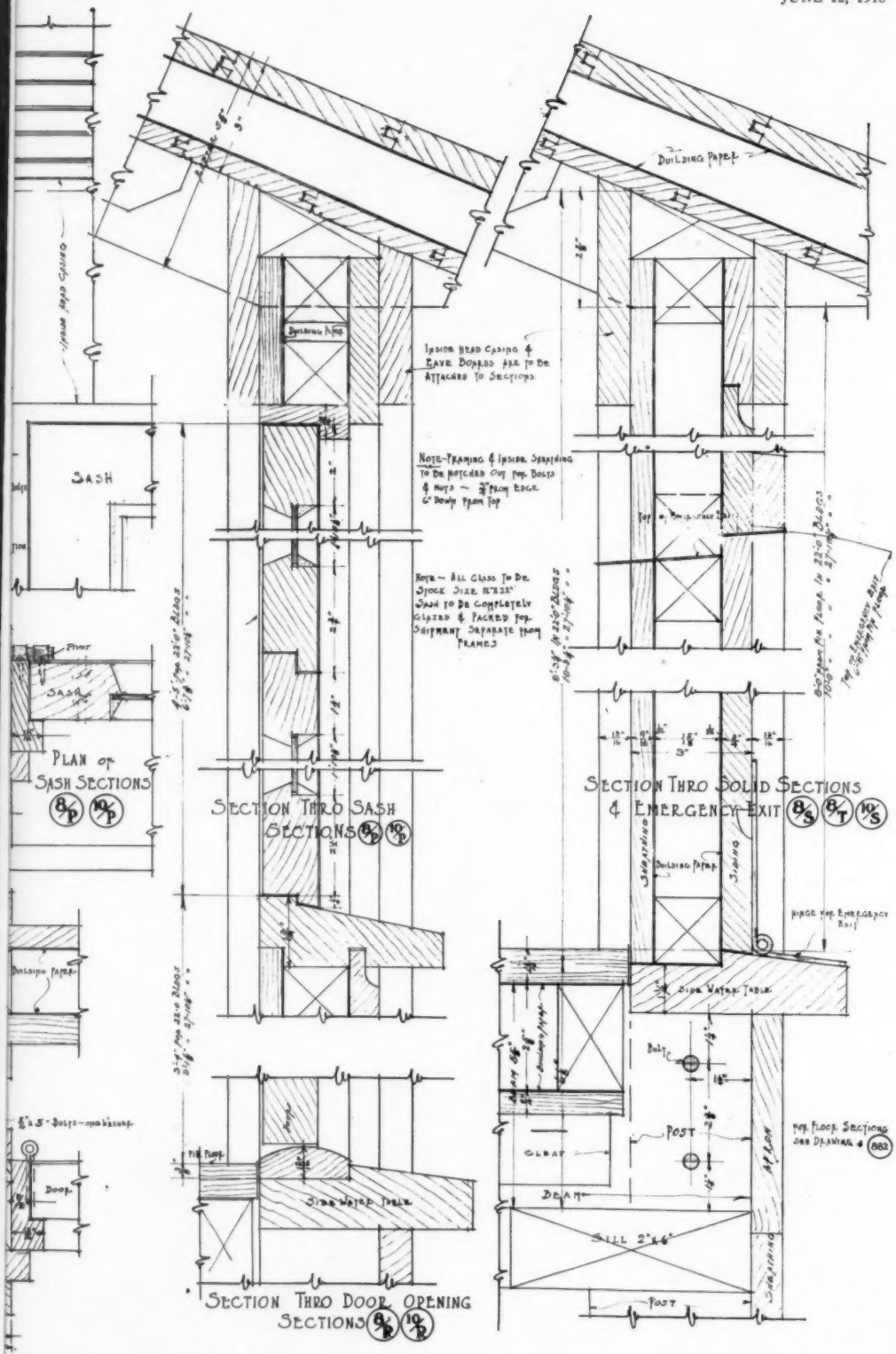


PLATE 207

SIDE SECTIONS—OVERSEAS HOSPITAL

EDWARD F. STEVENS AND CHARLES BUTLER, *ARCHITECTS*



RSEAS HOSPITAL

RLES BUTLER, *ARCHITECTS*

LUMBER

Number	Building	Width	Length	No. of each type in one unit	4"x4" Foundation Posts Ft. B.M.	2"x6" Sills Ft. B.M.	3"x12"x16 Ft. Lg. No. Pieces	2"x9"x15 Ft. Lg. Plank No. Pieces	2"x4" Stringer Ft. B.M.	7/8"x6"x5 Ft. Lg. Boards No. Pieces	3"x3" Rails Ft. B.M.	7/8" Sheathing Ft. B.M.	Floor Beams (28) No. Pcs.	Floor Beams (22) No. Pcs.	Floor Beams (C.) No. Pcs.
1.	Administration Bldg	22'	170'	1.	1152	800						1300		35	
2.	Receiving P.	22'	160'	1.	688	470						1300		8	
-	Porch for #2.	10'	60'	(1.)	350	570		12.	50			800			13
3.	Patients Effects.	22'	85'	1	608	450						700		18	
4.	Operating P. #1.	28'	160'	1.	936	630						1300	15		
5.	Operating P. #2.	28'	180'	1.	1000	670						1400	15		
6.	Laboratory & Dental P.	22'	110'	1.	768	330						900		23.	
7.	Ear, Nose & Throat P.	22'	110'	1.	720	480						900		20	
8.	Eye Pavilion.	22'	110'	1	720	480						900		20	
9.	Kitchen.	28'	195'	1.	736	490						1500	2.		
-	Platform for #9.	[illegible]	40'	(1.)	144	90			30				5.		
10.	Scullery.	22'	65'	1	288	200						600		2.	
11.	Mess Hall.	22'	115'	2.	1600	1100						2000		48.	
12.	Laundry.	28'	135'	1.	544	360						1100	2.		
13.	Clean Linen Storage	28'	80'	1	728	500						800	17.		
14.	Boiler House #14.	28'	85'	1	384	260						800	2.		
15.	" " #15.	28'	65'	2.	640	400						1400	4.		
16.	" " #16.	28'	40'	2.	480	300						1000	4.		
17.	Shop Building.	22'	135'	1.	512	350						1100		2.	
18.	Store House.	28'	150'	4.	9952	3600	400	1600				4800			
-	Platform for #18	8'	150'	(4.)	3488	1200	174	616							
19.	Officers Ward.	22'	150'	1.	1024	710						1200		31	
-	Terrace for #19.	22'	20'	(1.)	176	110					150			5	
20.	Officers Ward & Mess.	22'	160'	1.	1088	750						1300		33	
-	Terrace for #20.	22'	20'	(1.)	176	110					150			5	
21.	Ward Building.	22'	140'	32.	30720	21440						35200		928	
-	Terrace for #21.	22'	20'	(32)	5632	3520					4800			160.	
22.	Isolation Ward.	22'	160'	3.	3264	2250						3800		99	
-	Porch for #22.	[illegible]	38' / 160'	(3.)	2256	1520			240		2900			117.	
23.	Neuro-Psychiatric P. #2	22'	160'	1.	1088	750						1300		33	
-	Terrace for #23.	22'	10'	(2)	224	140					100			6	
24.	Neuro-Psychiatric P. #1.	22'	160'	1.	1056	720						1300		31	
-	Terrace for #24.	22'	10'	(1.)	112	70					100			3.	
25.	Post Exchange.	28'	95'	1	848	580						900	20.		
26.	Comm. Officer & Ch. Surg. Qr.	22'	35'	1	288	210						400		8	
27.	Officers' Quarters.	22'	170'	1.	1152	800						1400		35	
28.	Nurses' Quarters.	22'	145'	2	1984	1380						2400		60	
29.	Nurses' Qrs. & Mess.	22'	145'	1.	992	690						1200		30	
30.	Hosp. Corps Kitchen & Mess.	22'	160'	1	944	640						1300		24	
-	Terrace for #30.	22'	10'	(1.)	112	70					100			3	
31.	Hospital Corps Barrack.	22'	160'	6.	6528	4500						7800		198	
32.	Hospital Corps Lavatory.	22'	35'	2	384	260						800		4	
33.	Garage.	28'	55'	1	288	190						600	2.		
34.	Mattress Repair.	28'	55'	1.	528	370						600	12.		
35.	Mortuary & Chapel.	22'	75'	1	448	300						700		10	
36.	Guard House.	22'	35'	1	288	210						400		8	
37.	Electric Power House.	28'	35'	2	448	280						800	4		
38.	Latrine.	22'	10'	1	112	70						200		2	
39.	Shower Building.	22'	70'	1	336	220						600		4	11
40.	Animal Building.	22'	20'	1.	192	140						300		5	
	4100 Lin. Ft. Enclosed Corridor.				19,680	13500			6000						982
	2700 Lin. Ft. Open Corridor.				12960	8900			4000		2500				630
	1900 Lin. Ft. Board Walks.								4200	3800					
	Total.			57	[illegible]	72,300	662	2228	14,520	3800	12,800	[illegible]	104	2018	1636
	Order.				130M	80M	700	2,300	15M	4000	13M	40M	110	2050	1650

MILL WO[RK]

Number	Building	Rafters (28) No. Pcs.	Rafters (28E) No. Pcs.	Rafters (22) No. Pcs.	Rafters (22E) No. Pcs.	Rafters (C/R) No. Pcs.	Rafters (C/T) No. Pcs.	Rafters (C/S) No. Pcs.	Floor Sections (F/A) No. Pcs.	Floor Sections (F/B) No. Pcs.	Floor Sections (F/C) No. Pcs.	Floor Sections (F/D) No. Pcs.	Floor Sections (F/H) No. Pcs.	Floor Sections (F/G) No. Pcs.	Roof Sections (R/28) No. Pcs.	Roof Sections (R/22) No. Pcs.	Roof Sections (R/C) No. Pcs.	Roof Sections ( ) No. Pcs.
1.	Administration Bldg			66	4				99	3.						136		
2.	Receiving P.			62.	4				18							128		
-	Porch for #2.												24.					
3.	Patients Effects.			32	4.				48	3.						68		
4.	Operating P. #1.	62	4						36	3.	12	1.			120			
5.	Operating P. #2.	70	4						36	3.	12	1.			134			
6.	Laboratory & Dental P.			42.	4.				63	3.						88		
7.	Ear, Nose & Throat P.			42	4.				51	3.						86		
8.	Eye Pavilion.			42	4				51	3.						86		
9.	Kitchen.	76.	4.												108	48		
-	Platform for #9.								8									
10.	Scullery.			24	4.											32		
11.	Mess Hall.			88.	8				132	6.						184		
12.	Laundry.	52	4.												64	44		
13.	Clean Linen Storage	30	4:						45	3.	15	1.			64.			
14.	Boiler House #14.	32	4.												36	30		
15.	" " #15.	48	8												60	44		
16.	" " #16.	28	8												40	24		
17.	Shop Building.			52.	4.											108		
18.	Store House.	232.	16												480			
-	Platform for #18																	
19.	Officers Ward.			58.	4.				87	3.						120		
-	Terrace for #19.								12									
20.	Officers Ward & Mess.			62	4.				93	3						128		
-	Terrace for #20.								12									
21.	Ward Building.			1728	128				2592.	96						3584		
-	Terrace for #21.								384									
22.	Isolation Ward.			186	12				279	9						384		
-	Porch for #22.								272									
23.	Neuro-Psychiatric P. #2			62	4				93	3.						128		
-	Terrace for #23.			2	4				12							8		
24.	Neuro-Psychiatric P. #1.			62	4.				84	3						128		
-	Terrace for #24.								6									
25.	Post Exchange.	36.	4.						54	3	18.	1.			76.			
26.	Comm. Officer & Ch. Surg. Qr.			12.	4.				18	3.						28		
27.	Officers' Quarters.			66	4.				99	3						[illegible]		
28.	Nurses' Quarters.			112	8.				168	6						232		
29.	Nurses' Qrs. & Mess.			56	4				84	3						116.		
30.	Hosp. Corps Kitchen & Mess.			62	4				63	3.						128		
-	Terrace for #30.								6.									
31.	Hospital Corps Barrack.			372	24				558	18						768		
32.	Hospital Corps Lavatory.			24	8.											56		
33.	Garage.	20.	4												44			
34.	Mattress Repair.	20.	4						30	3.	10	1.			44			
35.	Mortuary & Chapel.			28	4.				21	3.						60		
36.	Guard House.			12.	4.				18	3						20		
37.	Electric Power House.	24	8												36.	20		
38.	Latrine.			2.	4.											8		
39.	Shower Building.			26	4				6				24			56		
40.	Animal Building.			6	4.				9.	3.						16		
	4100 Lin. Ft. Enclosed Corridor.					1640	820	3280					1218	426			1640	
	2700 Lin. Ft. Open Corridor.					1080	540	2160					848	232			1080	
	1900 Lin. Ft. Board Walks.																	
	Total.	730	70	3388	270	2,728	1360	5440	5597	198	67	5	2110	658	1308	7258	2,720	
	Order.	750	80	3,450	290	2,750	1,375	5500	5650	210	80	10	2150	710	1,330	7,300	2800	

Number	Building	Side Sections (10/P) No. Pcs.	Side Sections (10/S) No. Pcs.	Side Sections (10/R) No. Pcs.	Side Sections (10/M) No. Pcs.	Side Sections (8/P) No. Pcs.	Side Sections (8/S) No. Pcs.	Side Sections (8/R) No. Pcs.	Side Sections (8/T) No. Pcs.	End Sect[ions] (10/A) No. Pcs.	End Sect[ions] (10/B) No. Pcs.	End Sect[ions] (10/C) No. Pcs.	End Sect[ions] (10/D) No. Pcs.	End Sect[ions] (10/E) No. Pcs.	End Sect[ions] (10/F) No. Pcs.	End Sect[ions] (10/G) No. Pcs.	End Sect[ions] (10/H) No. Pcs.	End Sect[ions] (10/J) No. Pcs.	End Sect[ions] (10/K) No. Pcs.	End Sect[ions] (8/A) No. Pcs.
1.	Administration Bldg					31	34	3												2
2.	Receiving P.					28	32	4												2
-	Porch for #2.																			
3.	Patients Effects.					11	22	1.												2
4.	Operating P. #1.	31	31	2						2	2	2	1	2	2	2		1		
5.	Operating P. #2.	37	33	2						2	2	2	1	2	2	2		1		
6.	Laboratory & Dental P.					28	15	1												2
7.	Ear, Nose & Throat P.					19	25													1
8.	Eye Pavilion.					14	29	1												2
9.	Kitchen.	27	48	3						2		2		2		2	2	2	2	
-	Platform for #9.																			
10.	Scullery.					10	16													
11.	Mess Hall.					44	48													
12.	Laundry.	19	32	3						2		2		2		2	2	2	2	
13.	Clean Linen Storage	9	21	2						2		2		2		2	2	2	2	
14.	Boiler House #14.	13	10	11.						2		2		2		2	2	2	2	
15.	" " #15.	20	16	16						4		4		4		4	4	4	4	
16.	" " #16.	12	10	10						4		4		4		4	4	4	4	
17.	Shop Building.					21	28	5												2
18.	Store House.	88	136	8	4					8		8	8	8		8	8		8	
-	Platform for #18																			
19.	Officers Ward.					32	25	1	2.											1
-	Terrace for #19.																			
20.	Officers Ward & Mess.					31	31	2												2
-	Terrace for #20.																			
21.	Ward Building.					896	704		192											32
-	Terrace for #21.																			
22.	Isolation Ward.					87	66	39												3
-	Porch for #22.																			
23.	Neuro-Psychiatric P. #2					36	26	2												
-	Terrace for #23.					4														
24.	Neuro-Psychiatric P. #1.					34	25	3	2											1
-	Terrace for #24.																			
25.	Post Exchange.	15	19	4.						2		2	1	2		2	2	1	2	
26.	Comm. Officer & Ch. Surg. Qr.					5	8	1												2
27.	Officers' Quarters.					33	35													2
28.	Nurses' Quarters.					74	42													4
29.	Nurses' Qrs. & Mess.					36	21	1												1
30.	Hosp. Corps Kitchen & Mess.					32	32													2
-	Terrace for #30.																			
31.	Hospital Corps Barrack.					204	180													12
32.	Hospital Corps Lavatory.						26	2												
33.	Garage.	2	8		6.					2		2		2		2	2	2	2	
34.	Mattress Repair.	10	10	2.						2	1	2	1	2	1	2	1	1	1	
35.	Mortuary & Chapel.					10	18	2												2
36.	Guard House.					6	8													2
37.	Electric Power House.	4	18	6.						4		4		4		4	4	4	4	
38.	Latrine.					2		2												2
39.	Shower Building.					12	16													2
40.	Animal Building.					4	4													2
	4100 Lin. Ft. Enclosed Corridor.																			
	2700 Lin. Ft. Open Corridor.																			
	1900 Lin. Ft. Board Walks.																			
	Total.	287	392	69	10	1766	1516	70	196	38	5	38	12	38	5	38	33	26	33	85
	Order.	300	400	70	10	1780	1530	70	200	40	5	40	15	40	5	40	35	30	35	90

TYPICAL SCHEDULE OF MATERIALS—OVERSEAS HOSPITAL

EDWARD F. STEVENS AND CHARLES BUTLER, *ARCHITECTS*

L L   W O R K

CONTINUED ON SHEET No 2.

…CTIONS.				END SECTIONS.																					CORRIDOR SECTIONS.						WATER-TABLES-APRONS-FACIA & VERGE-BOARDS											NUMBER.
…	8/S	8/R	8/T	10/A	10/B	10/C	10/D	10/E	10/F	10/G	10/H	10/J	10/K	8/A	8/B	8/C	8/D	8/E	8/F	8/G	8/H	8/J	8/K	8/L	C/P	C/S	C/R	C/M	C/MR	C/ML	W	WR/28	WL/28	WR/22	WL/22			V/28	V/22			
No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	No PCS	APRONS LIN. FT.	FACIAS LIN. FT.	No PCS	No PCS	DOOR SILLS LIN. FT.		
1	34	3												2		2	1	1		2		1	1								24			2	2	420	370		4			1.
28	32	4												2	2	1	2	2						1							22			2	2	400	360		4			2
																																										·
11	22	1.												2	1	1	1	2		1		1		1							12			2	2	240	190		4			3.
				2	2	2	1	2	2	2		1																			22	2	2			420	350	4				4.
				2	2	2	1	2	2	2		1																			24	2	2			460	400	4				5.
28	15	1												2	1	1	1	2		1	1	1									16			2	2	290	250		4			6.
19	25													1	1		1	1	1	1	2	1	1								16			2	2	290	250		4			7.
14	29	1												2		1		2		2	1	2									16			2	2	290	250		4			8.
				2		2		2		2	2	2	2																		26	2	2			490	430	4				9.
																																										-
10	16														2		2		2		2		2								10			2	2	200	150		4			10
14	48														4		4		4		4		4								32			4	4	600	520		8			11
				2		2		2		2	2	2	2																		18	2	2			360	300	4				12
				2		2		2		2	2	2	2																		12	2	2			240	180	4				13.
				2		2		2		2	2	2	2																		12	2	2			260	190	4				14
				4		4		4		4	4	4	4																		18	4	4			400	280	8				15.
				4		4		4		4	4	4	4																		12	4	4			[illegible]	180	8				16
21	28	5												2	2	2	2	2													18			2	2	35[illegible]	300		4			17.
				8		8	8	8		8	8		8																		80	8	8			1560	1320	16				18.
																																										-
32	25	1	2.											1	1		1	1	1	1	2	1	1								20			2	2	380	330		4			19.
																																										·
1	31	2												2	2		2	2			2										22			2	2	400	360		4			20
																																										·
96	704		192											32	32		32		32	32	64	32	64								640			64	64	11,500	9920		128			21.
																																										-
7	66	39												3				3	3	6	6	6	3								66			6	6	1200	1080		12			22
																																										·
	26	2																	2	2	2	2	2.								22			2	2	400	360		[illegible]			23
																			1	1	1	1	1								2			1	1		20		2			-
	25	3	2											1		1		1	1	2	1	2	1								22			2	2	400	360		4			24
																																										-
				2		2	1	2		2	2	1	2																		14	2	2			270	210	4				25
	8	1												2		2		2		2		2									6			2	2	130	80		4			26.
	35													2				2		2	1	2		1							24			2	2	420	380		4			27
	42													4	2		2	4		2	2	2		2							40			4	4	740	640		8			28
	21	1												1	1	1	1	1	1	1		1	1	1							20			2	2	370	320		4			29.
	32													2				2		2	2	2									22			2	2	400	360		4			30
																																										-
	180													12	6		6	12		6	12	6									132			12	12	2800	2160		24			31.
	26	2														4			4	4		4	4								12			4	4	260	160		8			32
				2		2		2		2	2	2	2																		8	2	2			190	120	4				33.
				2	1	2	1	2	1	2	1	1	1																		8	2	2			190	120	4				34
	18	2												2		1		2		2	1	2									10			2	2	220	170		4			35
	8													2		1	1	2		2		1		1							6			2	2	130	80		4			36
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RIALS—OVERSEAS HOSPITAL

RLES BUTLER, *ARCHITECTS*

PLATE 209

BOOK BUILDING, DETROIT, MICH.

LOUIS KAMPER, *ARCHITECT*

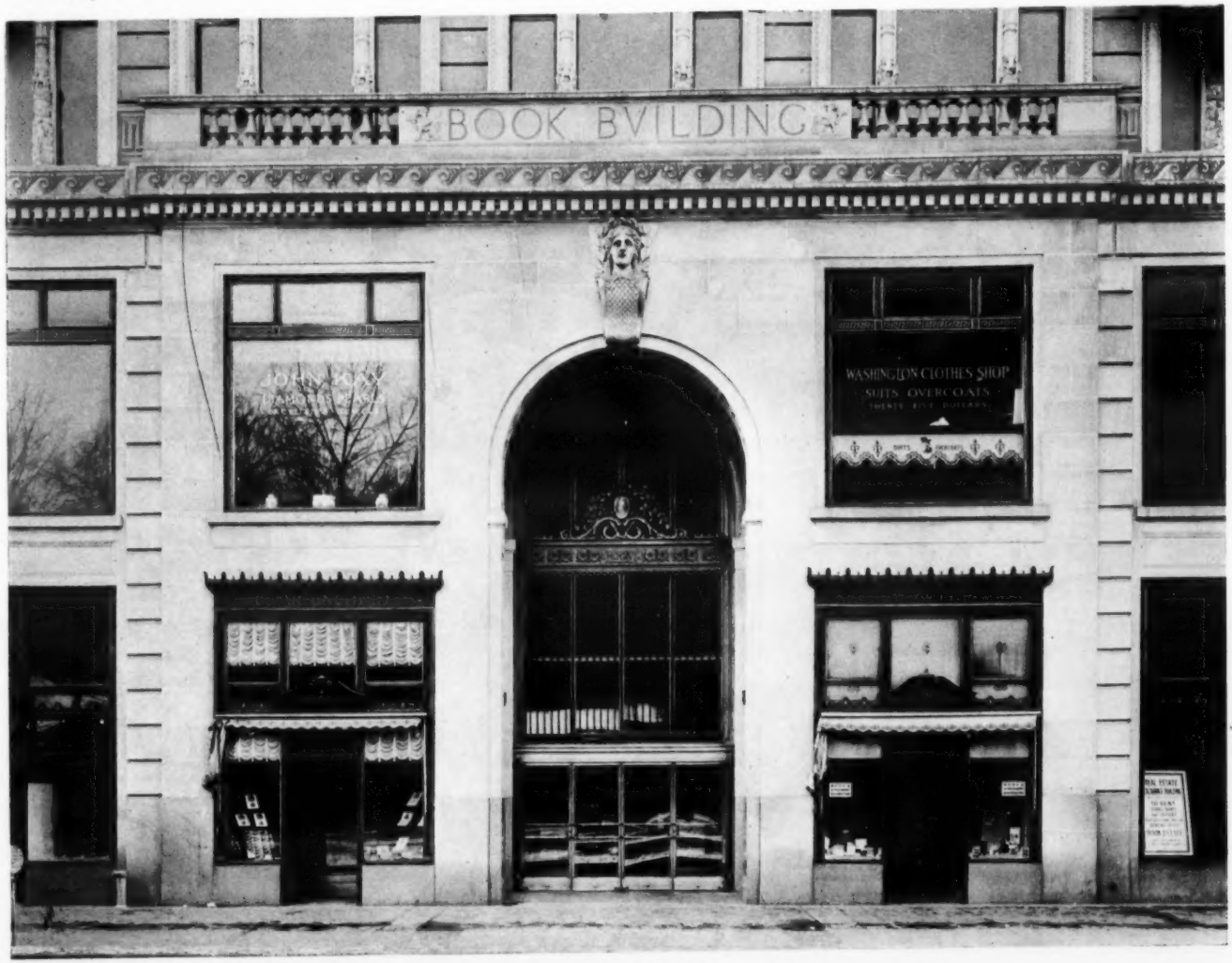
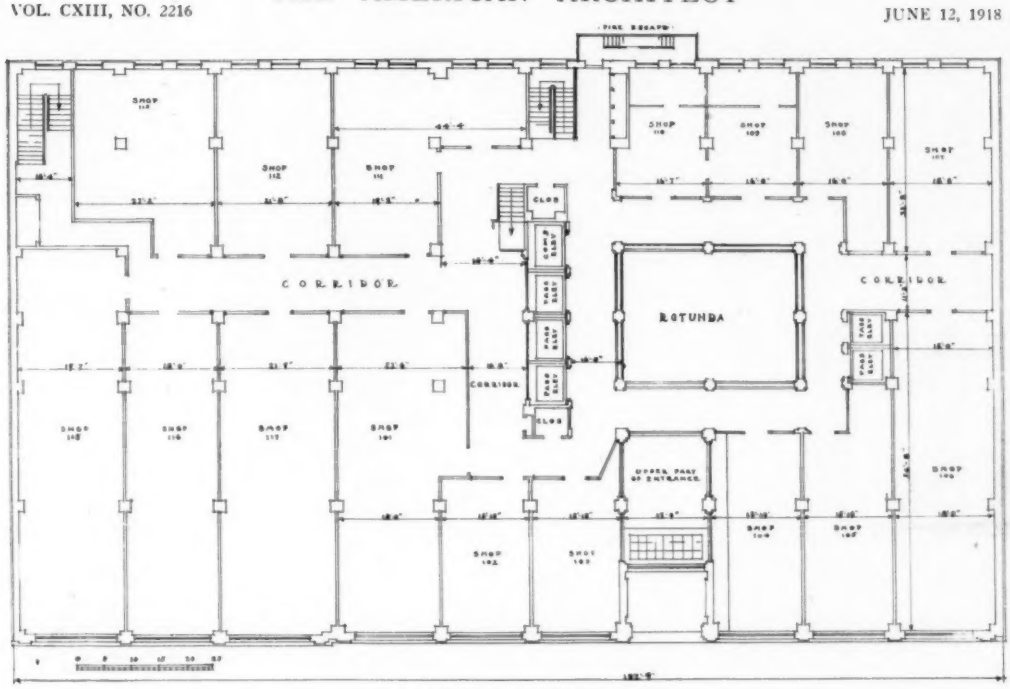


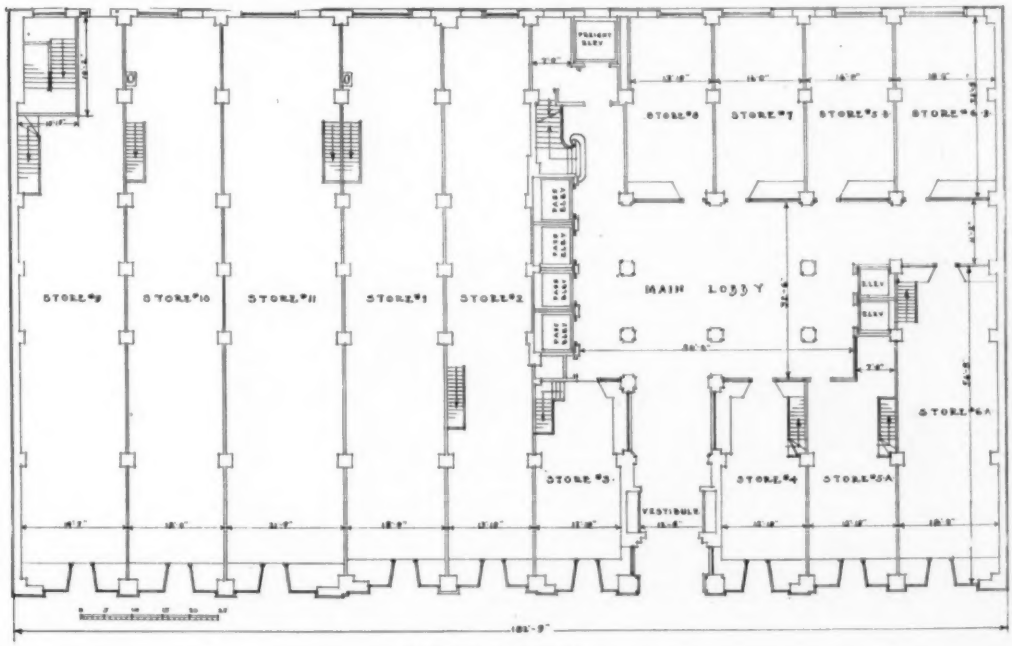
PLATE 210

BOOK BUILDING, DETROIT, MICH.

LOUIS KAMPER, *ARCHITECT*



SECOND FLOOR PLAN



FIRST FLOOR PLAN

PLATE 211

BOOK BUILDING, DETROIT, MICH.

LOUIS KAMPER, *ARCHITECT*

PLATE 212

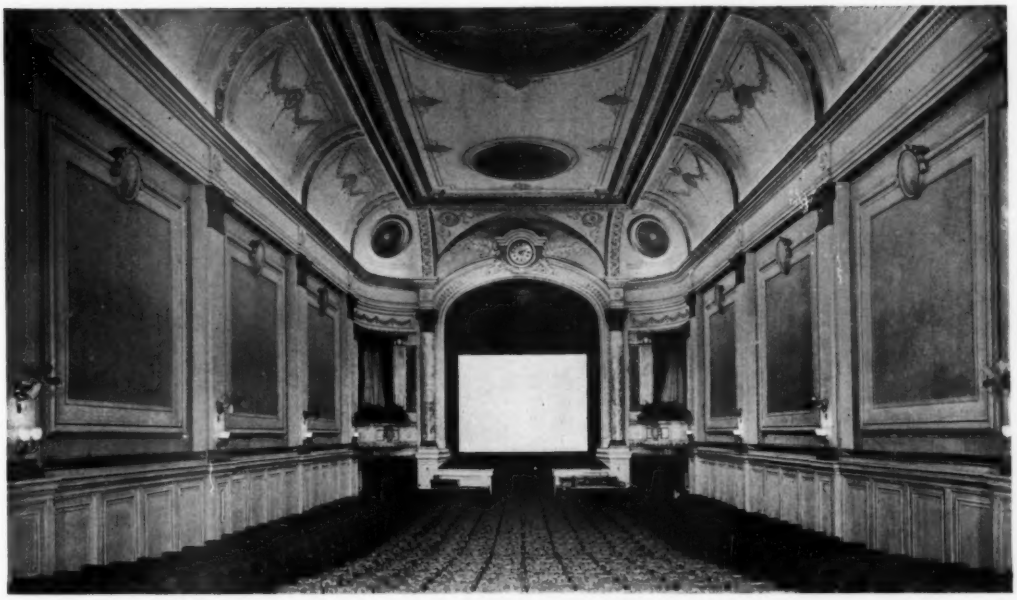
BUILDING OF EAST HARTFORD TRUST CO., EAST HARTFORD, CONN.

WALTER P. CRABTREE, *ARCHITECT*

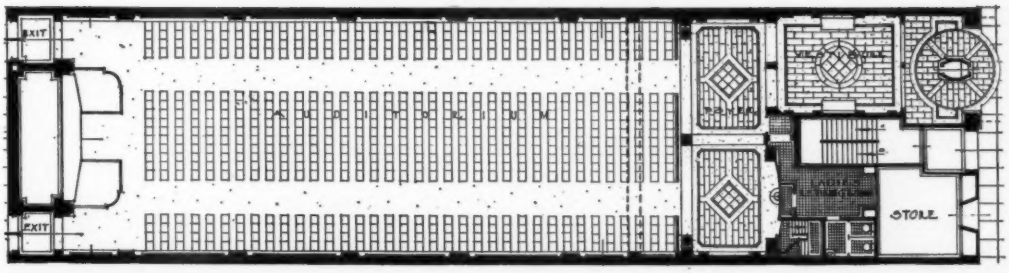
PLATE 213 LOBBY

THE ARCADIA THEATER, PHILADELPHIA, PA.

HENON & BOYLE, *ARCHITECTS*



LOOKING TOWARD SCREEN



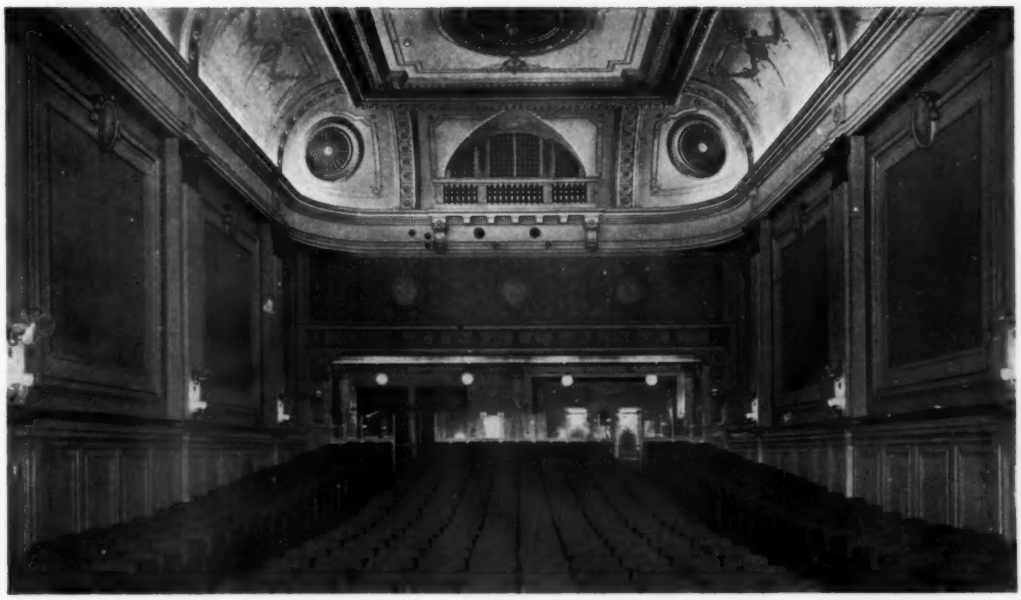


PLATE 214 LOOKING TOWARD ENTRANCE

THE ARCADIA THEATER, PHILADELPHIA, PA.

HENON & BOYLE, *ARCHITECTS*

Cost per cubic foot, 58 8-10 cents.

On that basis house No. 10 with cubic contents of 154,000 feet would cost $90,552.

However, our new client does not want to include the cabinet work in this contract and as we find a number of important variations in the plans we proceed to list them and our paper gradually assumes this form:

Plan No. 8, Total Cost,		$129,161.87
Less cabinet work	$6098.00	
Special marble and tile work	304.50	
Special iron doors	1215.00	
Special heating work	306.00	
Electric fixtures	265.50	
Total net deducted	$8189.00	
General contractor's com. at 5%	409.45	
Total deduction		8,598.45
Revised total cost		$120,563.42

This on the basis of original cubage reduces rate to 54 9-10c

Proceeding,

Plan No. 10, 154,000 cu. ft. at 54 9-10c			$84,546.00
	Add	Deduct	
But No. 10 has:			
2 extra boiler flues	$500		
3 less fireplaces		$105	
1 less flight main stairs		100	
1 less service stairs, 3 flights		200	
300 sq. ft. metal sash, excess over wood	100		
175 sq. ft. double sash	300		
Less plumbing fixtures by 1 master's bath room, 1 service bath room, 1 pantry sink, 3 wash trays		485	
1 less bath room to be tiled		200	
Heating boilers instead of street steam	700		
Totals	Add, $1600	Ded. $1090	
Net amount added			510.00
Total approx. est. cost			$85,056.00

NOTE.—This approximate estimate distinctly omits all lighting fixtures and wall papers, all finished floors and cabinet work together with mantels and finished fireplace work in the following rooms and spaces:.....and includes only plain plaster throughout.

Some such note should be attached to every approximate estimate made by the architect to avoid misunderstanding.

As this subject of estimating is confined to the actual cost of construction no attention should be paid to the architect's fee.

The more carefully such discrepancies are checked up the more accurate will be the figure. Even with these considered there remains the possible percentage of increase in prices of labor and material since house No. 8 was finished. This percentage of increase can be reached approximately by the architect through inquiry among his contractor acquaintances, or by referring to the files of some of the trade papers.

The general principles above outlined will hold good for all types of buildings, but one type cannot be compared to another, nor a Class A building with one in Class B. Nothing has been said about special features, such as pile foundation and *caisson* work, for that would never be the same in any two cases and should properly be referred to an engineer.

When, however, a sketch plan is being figured which contains some special feature of ordinary construction, not present in the building taken as a guide, the item should be taken off in detail as to quantity.

The writer is a strong believer in the value of getting down to details in this kind of work. Consider the material first, and by trades, and then estimate the labor on each section of the work.

In the matter of mechanical equipment the cost of the material delivered at the site will average very close to the cost of the labor needed to erect it.

Nothing that has been written is intended to take from the contractor the privilege of putting his own price on the work; it is only an attempt to show how an architect may come reasonably close to the contractor's price and justify his opinion as expressed to his client.

I have already mentioned the advisability of the plans and specifications being in accord and complete. If any reader has ever worked as an estimator in a contractor's office he will agree with this, first, on the ground that it makes it easier for the estimator, and, second, because there is less opportunity for error. It is very seldom that a set of plans can be issued to contractors and estimates obtained without a half-dozen inquiries on the part of the builders for interpretations of the plans and specifications.

As one means of overcoming this the Quantity Survey Co., Inc., has been formed. This company, to describe its services in brief, as the writer understands them, takes the architect's drawings and specifications, studies them carefully, and consults with the architect to clear up any doubtful points. It then prepares a full detailed list of the quantities of the various materials required. This list is then issued to all the bidders with the plans and specifications, and acts as the basis of the contract price.

This procedure, where it can be followed, would undoubtedly tend to produce more nearly uniform bids; but in the writer's opinion it might have a tendency to cause the failure of the contractors estimating to exercise that knowledge and experience for which they are paid. This compensation is generally included in the estimated profit

added to the net cost of the building as estimated.

However, as a step toward accuracy, it is certainly in the right direction.

It must also be more or less of an open question as to who is to pay this intermediary for its services. The architect says, "Not I. My plans and specifications are made as full and complete as I can prepare them and it is the bidder's responsibility to see that he understands what I mean and to set his own price thereon. The fact of known competition will keep the cost down within a reasonable amount."

The owner says, "Not I. My architect has turned over to the bidders his plans and specifications; let either or both be responsible."

And the contractor says, "I won't. I have been in business a long time and I know, or think I know, how much this job will cost. I can take off my own quantities"—and he puts in his bid accordingly.

There is much truth in each contention.

However, as the owner has to foot the bills there may come a time when he will be willing to pay for this service also, on the grounds,

a. Of gaining a check by an unbiased party of the architect's plans and specifications.

b. Of supplying to the contractor just that detailed information, for lack of which claims for extras often arise, and

c. Eliminating much, if not all, of the uncertainty that causes high bids, and thereby closing the contract on more favorable terms.

There is certainly room for improvement in the system now generally employed in taking bids and some such change as this may prove to be the remedy.

Specification Clauses

By Francis W. Grant

I. Royalties and Patents

LITIGATION over infringement of patent rights menaces every building enterprise. It develops when least expected, and usually in a form that threatens a loss out of all proportion to the importance of the thing fought over. No contract should be entered into for building operations without provision to meet the possible occurrence of this particularly vexatious form of litigation. Following are suggestions of paragraphs intended to cover this subject:

Royalties and Licenses

The contractor shall pay all royalties and license fees incident to the use of patented material and processes in the performance of this contract except such as are of a continuing nature involving periodic payments after occupation of the building. No material or process subject to the payment of continuing royalty shall be used or employed unless the same be specifically named herein.

Patents and Copyrights

Except in the case of materials and processes specifically required by the specifications or drawings, the contractor shall assume entire responsibility for infringement of patent rights or copyrights and shall defend all suits or claims whatsoever instituted for alleged infringement of such rights and shall save the owner harmless from loss on account thereof including attorney's fees and other incident expense.

It is not customary to treat royalties and patents separately, nor is it important that they should be so treated. They are, however, distinctly different matters, and it is thought that their separation tends to greater clarity of expression in the treatment of each, and therefore to improved efficiency.

It will be noted that the above suggested paragraph on royalties makes no exception of materials and processes specifically named in the contract documents. A royalty is distinctly a part of the price of the article used. Whether the contractor did or did not have discretionary powers in the selection of the article, the price of which includes a royalty, no injustice is done him in requiring that he pay such royalty since he can readily meet the contingency in preparing his tender.

One of the most inequitable and unreasonable provisions in architectural specifications, according to present-day practice of practically the entire profession, is to impose on the contractor the entire burden of defending all actions for infringement of patents incident to the carrying out of a building contract, regardless of his responsibility for such infringements.

No contractor should be made liable for infringement of patent rights unless given perfect freedom in selecting materials and processes so as to avoid such consequences. If some infringing article be specified, surely the person so specifying is the guilty

(Continued on page 803)

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The Peril of Procrastination

IN an editorial analyzing certain peculiarities of British character, the editor of the *Architects' and Builders' Journal* states that most Englishmen fail to prepare in advance for certain activities because of a belief that these can be successfully undertaken whenever they may choose to attempt them. This suggests the reply of the Englishman when an American asked him if he could play the piano. He said he didn't know—he had never tried.

At no time has procrastination been more surely "the thief of time" than now, both in Europe and in this country. The man who from day to day puts off doing some essential thing because he believes that at any time he may set about it he can successfully complete it, finds that when necessity compels action his complacency has led him to a most disastrous condition.

Putting off until to-morrow that which should be done to-day is—and Doctor Franklin is the authority for it—a dangerous thing. Many a man who has stood idly watching the procession has later discovered that some nimble-fingered person has relieved him of his purse. All eyes are turned toward the progress of this war. It is, of course, an all-absorbing topic, the one thing of general interest. But shrewd men who are watching that grim procession are using the knowledge gained by such observations to teach them the meaning of it all and are so acting that when their time comes they will not be unprepared.

Except in this war game, the whole world has slowed up. Like an immense body of water held in check by a dam, there is no movement, but a placidity that conceals the enormous power to be liberated when the dam "goes out." Every branch of our former commercial activity may be likened to this body of water. When peace is declared there will be an onrush for markets, for opportunities.

Failing to be ready for this because you feel sure of your ability to calculate accurately the time when peace will come, and believing that when this has been determined to your satisfaction you will get busy, is just one kind of a fool's paradise.

If the Kaiser ever has a Boswell, and the chances are he will have many among his own people, they will fulsomely tell the world how he safeguarded them to a great degree by years of careful preparation.

We may detest those characteristics which the War Lord is trying to impress upon the world, and rightfully, but to fail to learn the lesson of foresightedness, for the reason that its example is set by an enemy, is the height and depth of folly.

Architects have been urged to do all in their power to induce their clients to permit them to plan now. It is now urged upon that large body of men who have in the past been identified with the great industries that combine to form the building trades also to plan now and to get to work on everything that will enable them to meet the demands that will certainly be made on every producer of any one of the thousand items going into building construction.

Don't wait for the Government to direct attention through consular reports to the needs of different countries for the things you make. Our Government is now completely occupied in the business of war. It will, no doubt, take up and take care of such things later, but just now it cannot so thoroughly do so.

Let us be our own consular agents. Let us endeavor to anticipate by shrewd judgment just what will probably happen.

Shall Architects Advertise?

NOW that the American Institute of Architects has removed the ban on advertising, the question is squarely up to the individual architect as to whether or not he will advertise, and if so, how. It may be well to consider what will be the best form and method of advertising by architects.

The primary object of advertising is, of course, to increase business; hence, in entering upon any

advertising campaign careful consideration must be given to the plan to make reasonably certain that it will accomplish its purpose. Will any of the usual forms, such as published cards or announcements bring profitable results? It is believed that they will not, and that some new and more practical method must be found.

The demand for the architect's services differs materially from that in other professional and commercial enterprises. This demand arises not, as a rule, from any sudden impulse or necessity, but from a gradual growth of an idea brought into existence by the increasing exigencies of a business or from social requirements that demand larger and better living facilities.

These causes are of slow development and afford opportunity for deliberation prior to definite action. Based on a period of preliminary consideration, is it not reasonable to infer that the client will review all phases of the question, including the forces that must be employed and the ways and means of carrying it out? Undoubtedly, first of all would be the selection of an architect competent to put into concrete and workable shape the more or less indefinite ideas of the promoters of the project, and is it not equally reasonable to assume that, having reached that stage, he would not be likely to turn to advertisements in his search for such a man? Is it not more likely that by inquiry among those who had already successfully carried through similar projects he would endeavor to find out who, in their judgment, would be best qualified to serve him? The usual advertisement would not furnish him with any more complete information on such points than would the more convenient city directory or telephone book.

The architect must therefore develop a method of bringing himself to the attention of the public in a manner that will accomplish that purpose and at the same time conform to the canons of good taste.

Several methods might be followed and valuably developed, the simplest being the placing of his name, business and location on every work with which he may be connected during construction. This would attract the attention of the public to his work in a most logical and straightforward manner.

A second method lies in a more active participation in the public affairs of the community in which the architect lives. This would serve to make him a better citizen and enlarge his circle of acquaintances. Architects know the pressure friends can and do exert in influencing architectural work.

There is in this permission to advertise a very strong note of encouragement in that it manifests a breaking away from the ultra conservative attitude of conventionalism that has in later years been detrimental to the progress of architecture in this country. It promises other changes later of a more far-reaching effect, which will put architects and architecture on the map as a component part of the real business life of the country and give them the "place in the sun" to which they are justly entitled.

*THE Architect of to-morrow will find his truest inspirations in the mediæval attitude rather than that of the Renaissance; that whether we admit it or not, whether we like it or not, whether we are chosen or not, the architect of to-morrow must be not first an artist, but first an organizer, and an administrator. * * * * That the architecture of after the war will be something real and something earnest, not obscured but thoroughly concrete and that the architect will then be the one who can lead in just such lines is something which I firmly believe and to which all the signs of the times seem to point.* — *C. H. Blackall.*

Specification Clauses

(*Continued from page* 800)

one and should be the one to defend actions for relief and pay the damages, if any accrue. At least that burden should not fall upon the contractor, who was not consulted at the time the specifications were written naming the infringing article.

In the majority of instances of alleged infringement, however, the contractor alone is responsible, and a clause properly guarding against such a contingency should be provided. The offending article may be one of several that comply with the specification of functions it shall perform, or it may be an unauthorized and undetected substitution. Infringement of patent may occur, too, in the contractor's operating equipment.

At law, the person in whose possession the infringing article is found, as well as the person putting it there, is subject to prosecution, hence the necessity for inclusion in all building contracts of a clause to protect the owner.

It is important that the contractor's surety be holden for damages due to infringements, chargeable to the contractor. To accomplish this, however, it is not necessary so to provide in the paragraph covering patents. The bond, if properly drawn, will make the specifications a part thereof by reference and thus fully accomplish the purpose.

Following are a few examples of paragraphs on "patents" that have been used in practice:

"The Department will recognize no demand brought on account of infringement of patent, but will hold the contractors and their bondsmen strictly responsible for any delay or cost resulting from their failure to fully protect the Government against any patent rights."—*Supervising Architect, U. S. Treasury Department.*

"All royalties for patents or for infringements thereof that may be involved in the erection of this work, or in the use thereof, shall be included in the contract, and the general contractor shall satisfy any and all demands that may be made at any time for such and be liable for any and all damages for infringement thereof."—*Specifications for a State building in Illinois.*

"All royalties for patents or any improvements thereof that may be involved in the material or apparatus furnished, or in the use thereof, shall be sustained by the contractor, who shall satisfy all demands that may be made at any time for such; and the contractor shall be liable for any damage resulting through suits, royalties or claims of any kind whatsoever, and that any loss or damage to the county through such suits or claims, will be made good by the contractor."—*Specifications for a Court House in Indiana.*

"The contractor shall forever protect and defend the city of ———— in the full and free use and enjoyment of any and all rights to any patent invention, machine or device which may be applied as a part of the work, either in its construction or use after completion, against the demands of all persons whomsoever."—*Specifications for a City Hall in a prominent western city.*

"The contractor shall pay all royalties and license fees and shall defend all suits or claims whatsoever for infringement of any patent rights and shall save the owner harmless on account thereof."—*Standard Documents, American Institute of Architects, Second Edition,* 1915.

The Committee on Contracts and Specifications, authors of the above clause, have conceded the writer's contention that the arrangement contemplated was inequitable and have recommended to the Executive Committee of the Institute the addition of the sentence "except when the article used has been specified without option." When so amended the clause will be considerably improved, but it will then be subject to the criticism that it predicates the use of the words "or equal" elsewhere in the specifications, a term no longer sanctioned in good practice.

Statutory provisions frequently prohibit the specific naming of material or processes protected by patent or copyright in contracts for public work, such prohibition being intended to maintain free competition. This prohibition extends, in many jurisdictions, to named brands of material and all proprietory articles, even though not patented. A clause protecting the owner against the consequences of patent infringement is particularly important in contracts which grant the contractor the degree of latitude in the selection of material that such statutory prohibition necessarily involves.

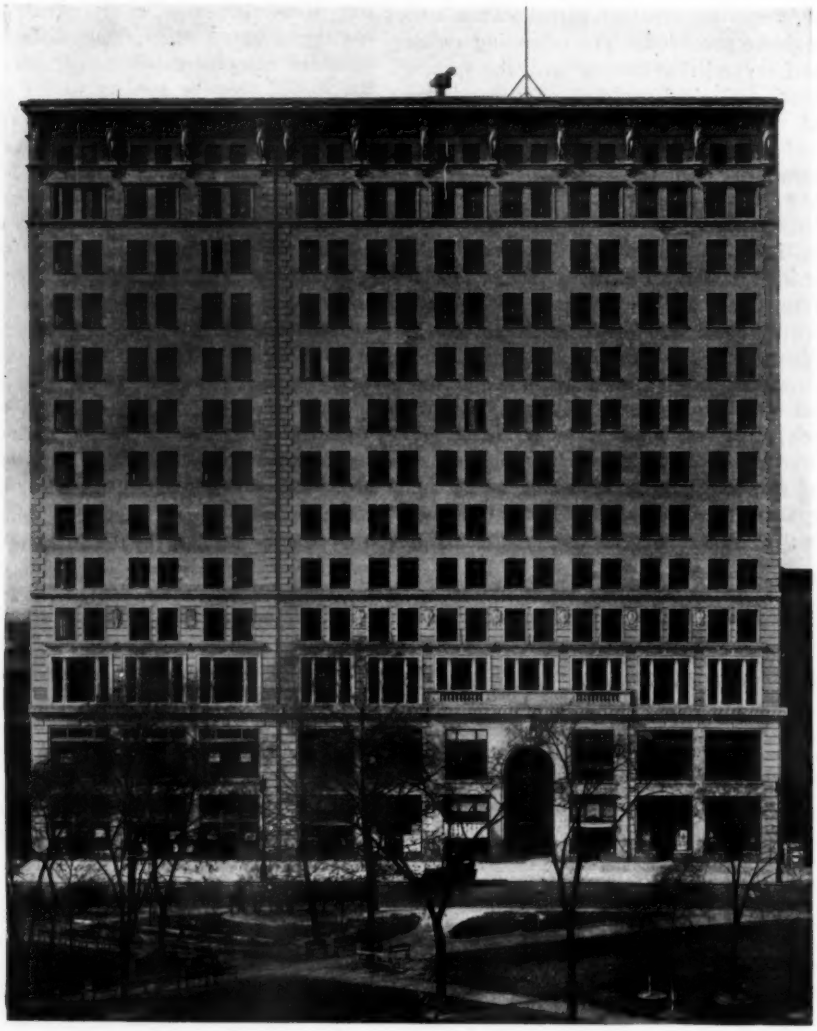
Provisions of law forbidding the specifying of just what is wanted on the ground that the manufacturer of what is not wanted is thereby barred are vexations to the architect and sometimes the cause of increased expense and diminished efficiency. A study of the law having direct application to the case is recommended in each instance before writing the specifications. In all private work, and to as great an extent as the law will allow in public work, specific naming of what is wanted is recommended.

Federal government officials are required, by Section 3709 of the Revised Statutes, to secure competitive bids through advertisement, but a ruling of the Comptroller of the Treasury (2 Comp. Dec. 632) expressly provides that the purchase of patented or copyrighted articles shall not be subject to such provision, i.e., may be purchased as needed without the taking of competitive bids.

The Charter of New York City provides that "patented articles shall not be advertised for, contracted for, or purchased except under such circumstances that there can be a fair and reasonable opportunity for competition."

Practicing under restrictions such as imposed by the New York charter, the architect has but three alternative courses open to him: (a) that of naming

what he really wants, followed by the mischievous words "or equal"; (b) that of naming what he really wants, together with the names of one or more alternate materials or processes, and (c) that of describing in full the physical properties or functions of what is wanted without naming it. This leaves the architect in an unfortunate position at best, but the writer favors the last of these alternative courses when practicable as being the least objectionable. It must not be resorted to as a mere subterfuge, however, for as such it becomes an infraction of the spirit of the law and is likely to void its purpose by ruling of the courts to that effect.



BOOK BUILDING, DETROIT, MICH.
LOUIS KAMPER, *ARCHITECT*
(For additional illustrations see plate section)

Regular Meeting, Southern California Chapter A. I. A.

The regular meeting of the Southern California Chapter, A. I. A., was held May 14.

As guests of the Chapter were present, W. Ross Campbell, R. C. Willis, T. R. Merchant, members of the Los Angeles Realty Board.

In compliment to the guests of the evening, the regular business was set aside to give them an opportunity to speak. By way of introducing the subject to be discussed, the Secretary gave a report of a meeting of the Realty Board held on April 19, attended by J. E. Allison, A. R. Walker and H. F. Withey, representing the Chapter. At this meeting was discussed the professional ethics of both architects and realty brokers, the principal point being the dividing of commissions on the part of either the architect or broker, and whether this was right or just.

Following this report, Mr. Campbell was introduced and spoke at length on the matter of commissions and other subjects of interest to both organizations. Mr. Willis was next called upon and talked along the same lines, urging co-operation.

The discussion which followed was participated in by several members of the Chapter, and in conclusion it was unanimously decided that the division of commissions is in direct violation of the spirit of the Institute's Code of Ethics, and the practice as it may prevail is condemned.

Under "Committee Reports," for the committee appointed at the last meeting to canvass the membership for Liberty Bonds, Mr. Martin reported, as follows:

Chapter subscribers	45
Out-of-town members, unsolicited	32
Unable to subscribe	5
In Government service	3
Total membership	85

Amount of subscription, $28,000; average of each subscriber, $622.22.

Amount subscribed by architects not affiliated with the Chapter, 24 in number; total amount, $2,350; average for each subscriber, $97.

The Secretary announced that since the last meeting the Vice-President, Mr. Patterson, appointed a committee of two, A. R. Walker and H. F. Withey, to co-operate with the committee from the Architects and Engineers' Society in drafting a building ordinance for the cities of Hemet and San Jacinto—cities which recently suffered considerable damage by earthquake. Mr. Walker reported that members of the Joint Committee had visited Hemet and San Jacinto and surveyed the conditions, after which the full committee worked upon the drafting of a building ordinance which in their judgment would give construction that would withstand earthquake shocks, as far as it is possible to do so. Mr. Walker stated further that the committee spent a large amount of time on this gratuitous service, all of which was given in the name of the Southern California Chapter, and the officials of the two cities had personally expressed to the committee their most hearty appreciation of the service rendered by the Chapter.

Under "Communications" the following letters were read:

From William Stanley Parker, Secretary of the Institute, advising the Chapter of the formation of an organization of the Professsional Classes War Relief of America, which organization is receiving the co-operation of the Institute and is represented on its Council. Mr. Parker urged that this Chapter co-operate with the officers of the society for the benefit of those who may properly receive its assistance. This letter was accompanied by a circular letter outlining the principles of the organization and signed by Carrington Phillips, Secretary. Members were advised to communicate to the Chapter Secretary for any war relief under their knowledge necessary for professional men within the Chapter's jurisdiction.

High Prices for Antique Sculptures

Recently there has been exhibited in New York and sold at auction a remarkable collection of Italian antiques. This collection was made by Stefano Bardini, and included a number of marble sculptures and terra cotta and colored stucco bas reliefs by great artists. The prices paid in many instances made a new record in this line. A fifteenth century glassed terra cotta bas relief by Andrea Della Robbia brought $11,600, and a colored stucco bas relief by Antonio Rossellino sold for $7,600. Other reliefs in terra cotta and colored stucco by such masters of the Renaissance as the Della Robbias, Donatello, Sperandio, and the like, brought prices ranging from $2,100 to $6,900. A pair of eighteenth century marble flower holders sold for $5,900, and a fifteenth century Florentine marble bas relief by Bernardo Rossellino for $6,300. A Parian marble torso of a youthful athlete by Polykleitos of Sicyon, a Greek sculptor of the fifth century B. C., sold for $5,400. The sale again emphasized the fact that New York is at present the foremost art market in the world.

Paint Affects Heat Radiation

This past winter, states *Hardware Trade,* has brought to the serious attention of the people of the country the fact that in times past vast quantities of coal have been wasted, so far as practical results in the form of heat where heat is wanted, are concerned.

Predictions made by the War Industries Board regarding the probable coal production and the probable coal consumption during the next year are such as to cause the thinking person to take even greater notice of the possibilities inherent in the fuel conservation movement.

Roughly speaking, the War Industries Board considers the coal production for 1918 will be little if any larger than during the past year. On the other hand, the consumption required for the carrying on of our industries, both those connected intimately and those somewhat divorced from the urgent requirements of our war program, added to the home consumption, bids fair to be greater than was the case during the year just closed. There is ample food for thought in these prognostications.

The house owner wants to conserve fuel. Two reasons prompt this desire. Patriotism is one of them. A wish to make his finances go as far as possible is another. Hence anything which will aid him in this will doubtless be given his consideration.

The following statement from Prof. E. S. Keene, of the North Dakota Agricultural College, bears directly upon this matter.

"Bronze paint reduces the heating effects of a radiator about one-fourth as compared to lead paints, Japan or enamel.

"In tests at the University of Michigan it was found that, in comparing the heating effects of radiators not painted and those painted with bronze, aluminum, lead paint, Japan and enamel, the radiators not painted and those painted with lead paint, Japan and enamel had about the same heating effect, but the radiators covered with the bronze and aluminum paints had about 25 per cent less heating effect; that is, the aluminum and bronze paint reduced the amount of heat that the radiator could give off.

"It was also found that it is the last coat of paint that increases the radiation so that if bronzed paint is put on over the other paint the heating effect is reduced one-fourth. While if bronze paint is covered with the other paint, then the heating effect of the radiator is brought up to normal.

"If a radiator covered with bronze paint is not heating a room sufficiently, covering with lead paint, Japan or enamel will increase its heating effect one-fourth to one-third, or will be equivalent to increasing the heating surface one-third to one-fourth, or it will make three radiators give off about as much heat as four radiators covered with bronze or aluminum."

German Airmen Have Underground Hangars

The German aviators are making use of the Teutonic program of subterranean shelters and are building for themselves elaborate hangars and shelters underground. It appears that they are excavating large caves below the surface, which are covered with a heavy layer of sandbags and the original sod. The roof is supported by pillars, so arranged as to give minimum interference with the airplanes. From the entrance of the underground hangar there extends to the surface an inclined runway of concrete, which can be used in starting a flight. Needless to say, all of this work is camouflaged, and decoy aerodromes are even erected at nearby points, in order to draw off enemy attacks from the real objective.

Novel Plan to Promote Patriotic Fund

Smith, Hinchman & Grylls, architects, Detroit, Mich., have devised a novel plan to encourage their employees to subscribe to patriotic funds.

They have arranged to permit the donors in their employ to earn the amounts of their subscriptions by overtime work throughout the year.

Death of Prominent Landscape Architect

Ernest W. Bowditch, a landscape architect, died at his home in Milton, Mass., on May 27. He was 69 years old.

Mr. Bowditch had been prominently identified with his art for many years, and was among that small but distinguished group of men who have by their efforts and ability elevated landscape architecture to its present high plane.

Gregory Vigeant Dead

Gregory Vigeant, one of Chicago's earliest and best known architects, died after a long illness at the age of sixty-five. His chief work was done in the designing of churches. He is survived by his widow, three sons and a daughter. The two older sons are members of the architectural firm of Labbenbaum, Marx & Vigeant.

Department of Architectural Engineering

The Relative Effectiveness of Various Types of Roof Construction in Preventing Condensation on the Under Surface

EXPERIMENTS to determine the relative effectiveness of various types of modern roof construction in preventing the formation of condensation upon their under surface have been made in the testing laboratory of F. P. Sheldon & Son, architects and engineers, of Providence, R. I., conducted by Mr. W. S. Brown, Mem. Am. Soc. M. E., under the direction of Mr. Arthur N. Sheldon, Mem. Am. Soc. M. E. The results of these investigations were presented before the 102nd meeting of the National Association of Cotton Manufacturers held at Boston, April 5, 1917. Since the presentation of these data the results of further experiments on roof constructions numbered 13, 14 and 15 have been added under date of Aug. 31, 1917.

The matter of condensation on the under surface of roofs is one of great importance to textile manufacturers, as there is involved the damage to the product and machinery by dripping water, and, in the case of wood construction, the deterioration of the building itself. The subject is also one of interest to the owner of heated buildings used for almost any purpose, and the facts established by these tests will materially aid in the selection of the type of construction to be used. The matter of decay in wooden buildings subjected to constant high relative humidity has attracted much attention during the past few years, and considerably as a result of the reports and suggestions of Mr. Fred J. Hoxie, Mem. Am. Soc. M. E., and also engineer and special inspector for the Associated Factory Mutual Fire Insurance Companies.

The apparatus used consisted of a heavily insulated box with outside dimensions of 4 ft. 9½ in. x 4 ft. 6½ in. x 1 ft. 8 in. deep, with one face constructed to receive the roof specimen, the exposed area of which was 3 ft. 0 in. x 4 ft. 2½ in. in each case. For observing condensation on the underside of the sample roof a window 10 in. x 12 in. was provided in the opposite face of the box, and in order to prevent condensation on the glass itself (which would make accurate observations impossible) provision was made for inserting several panes of glass with ½ in. air spaces separating them. In the case of roof number 12 six panes were found necessary together with a cork board slide covering the window. The inside surface of each sample tested was painted white in conformity with the usual mill ceilings.

A steam jet supplied the necessary humidity to the interior of the box, and the relative humidity was measured by a hygrometer hung entirely within the box. This hygrometer was previously calibrated in position by means of an electro-psychrometer.

The heat was supplied by an electrical heater consisting of six sets of nickel-steel resistance wires controlled by an external switchboard. The sets were arranged for control in three groups of two each, each group having different capacity to dissipate electrical energy. The switching arrangement was so designed that any of the coils could be connected in multiple, and by means of triple-pole switches any two sets forming one group could be connected in series; a total capacity of 3 kw. being obtainable in successive steps of ⅛ kw. each.

The air temperatures inside the box were observed by means of nine accurate chemical thermometers so placed as to obtain a fair average. A wall thermometer for measuring room temperature was hung back of the fan described below. The room temperature was kept constant by means of a thermostatically controlled steam radiator.

A 12-in. fan was located externally and used to

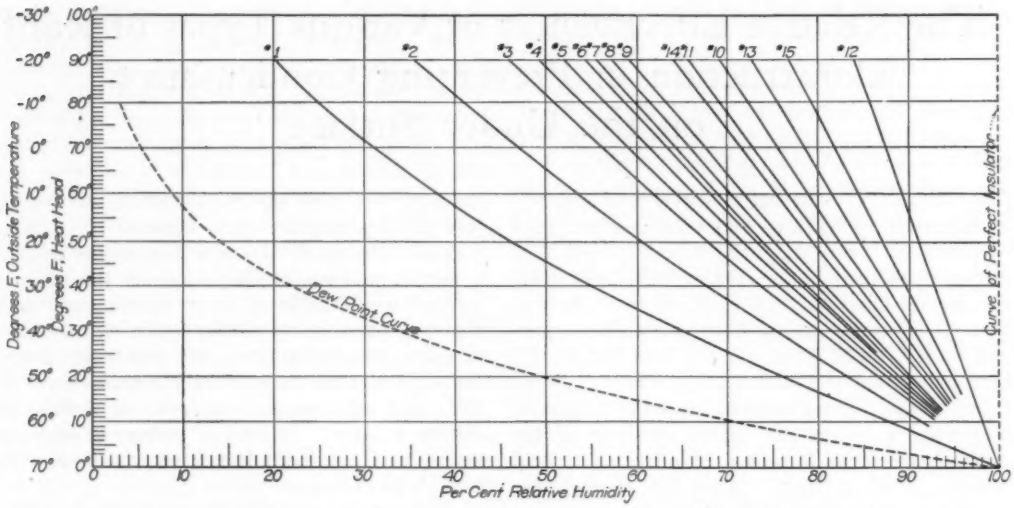
provide a positive circulation of air over the outside surface of the sample roof and thereby to maintain constant conditions in this respect throughout the entire series of tests. The fan directed the air against the roof surface at an angle of 30 deg., and with a velocity of approximately seven miles per hour.

Each sample of roof was tested under three different conditions of heat-head (temperature difference between outside and inside air) to obtain results corresponding to outside temperatures of about 20 deg., 0 deg., and minus 20 deg., Fahr., for a given inside temperature of 70 deg., Fahr., in each case. All of the tests were started after readings of the various thermometers indicated that thermal conditions had become constant. Steam was then very slowly admitted to the box, resulting in an increase of the relative humidity as noted by the rise in the wet bulb. Compensation for the heat added by the admission of steam to the box was made by adjusting the amount of heat supplied through the electric heater, so that the dry-bulb temperature during any test remained practically constant.

Formation of condensation on the under side of the roof was noted, which occurred when the dew point of the air within the box increased and became equal to or higher than the temperature of the surface in question.

These tests were made on concrete (1:2:4 mix), gypsum composition containing wood shavings used as a binder and having steel reinforcement and planks. Some of these roofs were insulated in various ways, and all, except one, covered with a 5-ply composition roof. In the diagram a curve was platted on the three points obtained, as noted previously, the relative humidities being used as abscissæ and heat-heads or temperature differences as ordinates. Since these tests are all based on an interior temperature of 70 deg., Fahr., the corresponding outside temperatures are also, for convenience, shown as ordinates.

Each full line curve represents the particular type of construction noted in the key, and from



GRAPHS SHOWING THE RELATIVE HUMIDITY WHICH MAY BE CARRIED UNDER VARIOUS TYPES OF ROOFS WITHOUT CONDENSATION UPON THEIR UNDER SURFACE.*

KEY:—

Roof number 1. 4" concrete slab, bare. 1:2:4.
Roof number 2. 4" concrete slab plus 5 ply roof.
Roof number 3. 1¾" t & g spruce plank plus 5 ply roof.
Roof number 4. 4" concrete slab plus ¾" spruce plank plus 5 ply roof.
Roof number 5. 4" concrete slab plus "Keystone" hair insulator plus 5 ply roof.
Roof number 6. 4" concrete slab plus 2" hollow gypsum furring plus 5 ply roof.
Roof number 7. 4" concrete slab plus two thicknesses ¾" spruce plus 5 ply roof.
Roof number 8. 2¾" t & g spruce plank plus 5 ply roof.
Roof number 9. 4" concrete slab plus ¾" air space plus ¾" spruce plus 5 ply roof.

KEY:—

Roof number 10. 4" concrete slab plus 1" corkboard plus 5 ply roof.
Roof number 11. 3¾" spruce plank splined plus 5 ply roof.
Roof number 12. 4" concrete slab plus two thicknesses 1" corkboard plus 5 ply roof.
Roof number 13. 4" "Gypsum composition" (wood compound) plus 5 ply roof.
Roof number 14. 4" concrete slab plus one thickness 1" felted flax fibre plus 5 ply roof.
Roof number 15. 4" concrete slab plus two thicknesses 1" felted flax fibre plus 5 ply roof.

*Note:—All curves are based upon 70 degrees Fahr. dry bulb temperature. For any other appreciably different dry bulb temperature, a correction should be made to the relative humidity found by these curves.

it may be read directly the relative humidities at which, for any given temperature, these tests show that condensation will occur.

For instance, given an inside temperature of 70 deg. and an outside temperature of 0 deg., curve number 8 shows that condensation on the under side of a 2⅜ in. plank roof begins at 66 per cent relative humidity.

It will also be noted that all curves are prolonged through a common origin, which is a theoretical point based on 0 deg. heat-head. Under these conditions the temperature of the air on both sides of the roof is the same and condensation will not occur until 100 per cent relative humidity is reached.

Starting from this point, two interesting theoretical curves are drawn, as indicated by the dotted lines. They constitute the limiting curves between which all materials whatsoever, from the most perfect conductor of heat to the most perfect insulator, must fall. That curve, which is a vertical line at the extreme right, is the line of the perfect insulator. It is purely theoretical and illustrates that if it were possible to obtain such an insulator, 100 per cent relative humidity could be carried with any temperature difference, because there would be no flow of heat and consequently no temperature gradient within the material. That is, the surfaces would be of exactly the same temperature as the air with which they are in contact.

The second curve at the extreme left is designated the "dew point curve," and represents the depression of the dew point (based on a dry bulb temperature of 70 deg., Fahr.), for the various relative humidities from 3 to 100 per cent. This curve is also purely theoretical and illustrates that the poorest insulator will carry somewhat greater relative humidities than those indicated.

It should be noted that all these curves have reference to the particular relative humidity at which condensation will take place on the *under side* of the roof. With reference to wood roofs, there is another important consideration which must be taken into account; namely, the cracks between the planks afford a more or less direct channel by which the moist air in the room below may reach the under side of the roofing paper. Since the standard 5 or 6-ply composition roof is a poor insulator of heat, the temperature of its under surface is consequently but slightly warmer than that of its top surface. This results in a chilling of the air which comes in contact with it and the formation of condensation if the cooling is carried on beyond the dew point.

In buildings where artificial humidification is resorted to, or where the humidity is naturally high, the result is that the first ply of roofing paper on the average roof of this type in this climate is *wet* during the greater part of the heating season. In a new building moisture may not become evident until some time after erection, due to the hygroscopic property of the roof plank; the wood itself absorbing the condensation if the deposition of the latter is not too rapid. On a roof having wide cracks, condensation is certain to come sooner or later if the warm, humid air of the room comes in contact with the roofing paper, and for this reason the top surface of the plank may be seeped with moisture, regardless of whether or not any condensation is present on the under surface. This condition was established in laboratory experiments and has been found in buildings by those who have removed old roofs.

Again, if the cracks between the planks are so wide as to allow a moderately free circulation of air, condensation often accumulates so rapidly as to run down the edges of the plank to the room below, manifesting itself in a line of drops at the cracks between the plank.

If the temperature of the under side of the roof plank coincides with or is lower than the dew point corresponding to the particular humidity and temperature existing, there will be condensation upon this surface and throughout the thickness of the roof, that is, in the cracks between the plank up to the under side of the roofing paper.

On the other hand, if the temperature of the under side of the roof plank is above the dew point, no condensation will be deposited here, but it may occur from the under side of the roofing paper down to a point somewhere within the interior of the roof, depending upon the heat gradient and the relative humidity. Without doubt the presence of this moisture, due to the second cause, that is, within the roof, is a most active agency in providing the proper conditions for the development and rapid growth of fungi and its attendant decay throughout the roof. In short, the prevention of condensation on the under side of roof plank, while eliminating a nuisance, may not appreciably lessen the possibilities in the roof for decay.

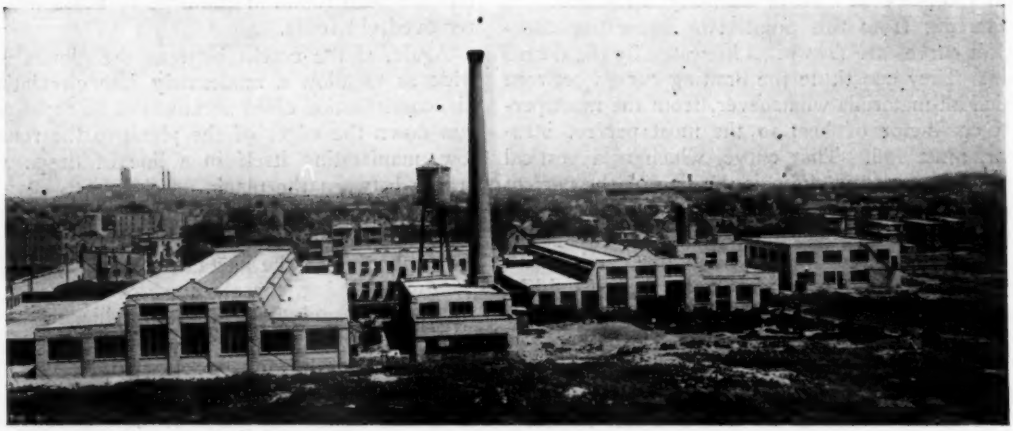
Really, then, in its last analysis, the successful solution of the problem of the design of wood roofs seems to resolve itself into two requirements. The roof should be made thick enough, according to the accompanying curves, to prevent the occurrence of condensation upon its under surface, and it should be protected against decay by proper preservative treatment, or by the use of a variety or grade of wood of inherently strong rot-resisting qualities.

The conditions just described occur in buildings where the occupancy requires warmth and high relative humidity, such as in textile mills, conditioning rooms, tobacco factories, bleacheries and dyehouses.

In ordinary storage and manufacturing buildings a sufficient relative humidity to cause any decay in the roof plank does not generally exist. And while such conditions may, owing to weather conditions, occasionally occur, their duration is so short that the damage done should be negligible.

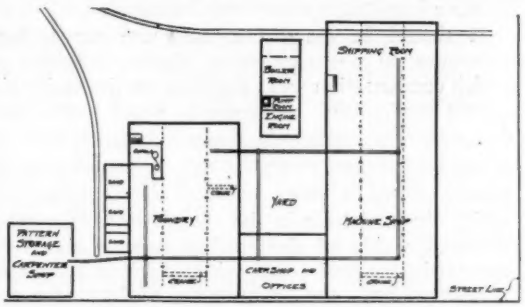
W. A. Jones Foundry & Machine Co.

DAVIDSON & WEISS, *Architects*



IN the design and construction of the new plant of the W. A. Jones Foundry & Machine Co., Chicago, two ideas were foremost in the minds of the designers, these ideas not being new, but of the kind invariably interesting in their evolution. It was sought to arrange every building and department in a manner that would insure the continuous progression of material from raw to finished products; in other words, to have all material move steadily forward from the receiving platform or foundry supply house, always under roof and invariably by mechanical means, until placed in a freight car or vehicle for shipment. Provision for the future extension of the plant was also kept in mind. The general desire, in conjunction with the ideas to which reference is made, was to provide good lighting and ventilation, and a general layout that would make for maximum efficiency and the comfort of employees. The company manufactures elevating, conveying and handling equipment, power transmitting machinery and spur gear speed reducers.

To facilitate handling of the product in all stages of manufacture, every department, except that in which patterns are made, is traversed by an industrial railway and an electric monorail trolley hoist which augment the service rendered by overhead traveling cranes. The foundry and machine shop are equipped with 10-ton traveling cranes, and the



BLOCK PLAN—W. A. JONES FOUNDRY & MACHINE COMPANY

capacity of the trolley crane is 2 tons. The handling of materials by manual labor is therefore reduced to the minimum, and the work greatly expedited.

The trolley and the industrial tracks extend around the four sides of the foundry floor. Near the left center is a turntable enabling the cars to

run at right angles to the main track and transport heavy cores from the core ovens. The supply of iron for filling the smaller molds is contained, in the usual manner, in large ladles mounted on cars from which the smaller ones, used in pouring, are filled, while in the case of a large mold the overhead crane handles a ladle of sufficient size. Both foundry and machine shop are of steel frame construction and have continuous monitor sash controlled from the floor. The side windows have triple sash which are

The pattern shop occupies the second floor of a two-story building, 77 x 93 ft., the ground floor being devoted to pattern storage, for which there is the usual rack equipment. Adjoining the foundry is a room for the storage of sand, coke and other materials unloaded from cars which approach the building on a spur of the Chicago Belt Line Railway. Coke for consumption in the core ovens is shoveled directly from the piles into convenient pits adjacent to the fire doors of the ovens. Coke and

MACHINE SHOP, W. A. JONES FOUNDRY & MACHINE COMPANY

counterbalanced, and so constructed that two-thirds of their area can be opened.

The office of the foundry superintendent, located in a square balcony in one corner of the foundry, has continuous sash, affording a clear view of every part of the floor, while outside light pours in on two sides; has facilities for washing, etc., and is as comfortable as that of any other executive. The foundry is 130 x 200 ft. in plan. A two-story building of mill construction, the first floor of which is devoted to cleaning and grinding castings, is 80 x 100 ft. Castings leaving the foundry find this room in their path on their way to the machine shop.

iron for the cupola is carried to the charging floor in cars which before being run on the electric elevator are weighed, the tracks passing over a scale. The storage and melting compartments are inclosed by thick brick walls.

The charging floor, reached by an iron stairway, is entirely of steel plates supported by heavy steel beams and capable of supporting all that can be placed on it.

The machine shop, 130 x 320 ft., is planned to permit of its extension to 600 ft. in length. Through one end of it passes another spur of the belt line railroad, the arrangement enabling the

traveling crane to assist in loading without regard to weather conditions. Large doors give access to trucks, when delivery is to be made in that manner. The shop floor is of factory maple, with a sub-floor of concrete.

On the second floor of a building adjoining both the foundry and machine shop are locker rooms and bathing and washing facilities for the employees, separate rooms containing shower baths and white enamelware wash bowls being provided for the machinists and molders. Each has its own entrance. Toilets and drinking fountains are located conveniently to the working floors.

The attention given to preventing and fighting fire is worthy of note. While the buildings have the protection afforded by the fire department of Chicago, and all are equipped with sprinklers and automatic fire doors, the company has its own department composed of employees, each of whom has his appointed place or duty should fire occur. A signal system is there to notify the power-house employees when an alarm is given, and cause a 1000-gal. per minute underwriters' fire pump to be set in motion. Also available is the water from a 60,000-gal. gravity tank. Scattered about the grounds are small houses about 8 ft. square in which fire hose is laid on shelves, already connected with the water mains and ready for action. These small houses also contain axes and crowbars. Each unit of the plant is separated from the adjoining one by automatic fire doors. Adjoining the drafting room is a large fireproof vault for the storage of plans and records, and there is a similar vault for the storage of office records. As a result of these precautions against fire, and the equipment for fire fighting, the insurance rate of the plant is low.

The power house is equipped with automatic smokeless furnaces and an automatic ash removal system. For convenience in coal storage, the boiler room is depressed below the engine room floor. Recording meters cover all requirements.

The entire plant is heated by exhaust steam, and lighted by nitrogen incandescent lamps having reflectors. It was designed by Davidson & Weiss, architects, and erected under the supervision of Patterson & Davidson, engineers, Chicago.

The W. A. Jones Foundry & Machine Co. was founded in 1890, its first home being in an alley between Clinton and Canal Streets, Chicago. Subsequently it occupied two other locations. Its new plant covers approximately four acres, and the company owns altogether 26 acres, part of which is used as a ball ground for the employees.

The Engineering Council Secures Positions for Engineers in Government Service

THE American engineering service committee of the Engineering Council has been of great aid to the Government in supplying engineers for war work. During the last few months the committee has furnished Federal departments and bureaus with several thousand names of engineers from which selections were made to fill positions in the uniformed and civilian service of the army and navy and other branches of the Government's war activities, as well as for indirect service for manufacturers and contractors engaged upon Government war work. In carrying out this work the committee has assembled at its offices, Room 901, 29 West Thirty-ninth Street, New York City, extensive lists and much detailed information concerning engineers in all branches of the profession throughout the country. In order to maintain the lists in the condition most useful to the Government and to the Engineering Council, the committee wishes to secure information concerning each engineer who has gone into any kind of Government service, direct or indirect, so that a record may be made on his card in the committee's room. The committee requests engineers to send their names at once, with their present addresses and occupations in the Government service, as well as a brief statement of whether or not they are available for other service.

A Correction

In the article, "Economical Proportions of Concrete Slabs and Simple Concrete Beams," appearing in THE AMERICAN ARCHITECT of June 5, page 779, the symbol ∞ was omitted from the equation

$$\frac{M}{T} \infty \frac{(3k-k^2)\ (1-k)}{2n\ (1-k)\ (Rs+c+1)+Rk^2}$$

Industrial Information

"Eye Comfort"

PUBLISHED TO AID ADVOCATES OF GOOD LIGHTING

Eye Comfort is the house organ of the National X-Ray Reflector Company, 31 West Forty-sixth Street, New York City, and 235 West Jackson Boulevard, Chicago. It is published monthly in the cause of good lighting, and within its covers may be found a great deal of interesting information about indirect lighting and the products of the National X-Ray Reflector Company. In the April issue of this publication there is described a new Curtis portable lamp, equipped with the Curtis adapter, which contains the company's X-ray mirror reflector, and makes possible a mellow, glareless light. This adapter, it is stated, can be fitted to almost any portable lamp.

Three new designs in Curtis portable lamps are illustrated in this number, one an adaptation from the Renaissance, in gold polychrome, and the other two graceful and simple designs in mahogany.

An interesting photograph, showing the possibilities of flood lighting as a measure of protection in war times, is presented in this booklet, together with an untouched photograph showing the power and extent of usefulness of one No. 51 X-ray projector.

New Gravity Roller Hinge

A hinge for swinging doors, and adjustable to single and double-acting doors is manufactured by the R. F. Carpenter Manufacturing Company, 978 East Sixty-fourth Street, Cleveland, Ohio. This hinge is operated on the principle of replacing spring action by gravity action, the spring being entirely dispensed with. The requirements which a hinge of this sort should meet are set forth in the company's booklet, which states:

"A really satisfactory hinge for toilet-room and other swing doors must possess certain essential qualities. It has to be adjustable to single, double-acting and in-swinging doors. It has to insure the doors' staying in a given position and closing in a true line if they are double doors. In order to prove trouble-proof and virtually wear-proof it has to be exceedingly simple in design. These essentials, without exception, have been embodied in Carpenter's gravity roller hinge—a truly remarkable hinge."

This hinge consists of five parts, and has no pins or superfluous parts to get out of order. The door closes from its own weight by the force of gravity, a roller on an incline in the lower hinge causing this action. It is simple in design and operation, is said to be noiseless and warranted not to allow a door to sag.

A hinge of this sort fills a real need for a springless type of hinge to be used on automatic swing doors. It is worthy the consideration of architects, who are invited to make further inquiry into the matter.

General Electric Company's Bulletin No. 47070

Standard unit direct current switchboard panels for general power and lighting service are taken up in the recent Bulletin No. 47070 of the General Electric Company, Schenectady, New York. Great care is used in making up these bulletins to make the information as accurate as possible, and to make the material definite and accessible. Ample diagrams and tables are presented in addition to the text matter, which is in itself very full and explicit. In an introductory paragraph the company states that if further detailed information is desired the assistance of the nearest office of the General Electric Company may be had upon request.

Molby Down Draft Boilers

The true measure of heating success and the factors which make it possible are discussed in a preliminary foreword to the catalog of the Molby Boiler Company, Inc., 101 Park Avenue, New York City. The part played by the boiler, the piping, the radiation, the chimney and the other factors in a

successful heating system are discussed, particularly in their relation to the boiler, which is the product of this company. It is stated that the Molby magazine feed down draft boiler is built to take advantage of the true principles of combustion, making possible economy of operation, a smokeless combustion and a thorough consumption of the fuel. This boiler is built in three sizes, entirely of cast iron, adaptable for use with almost any grade of fuel and having a large water surface, resulting in a high degree of heating efficiency.

Detailed information of a technical character is presented in this booklet, accompanied by sectional and other drawings of the company's product.

Burrowes Rustless Screens

The E. T. Burrowes Company, Portland, Maine, in its catalog on the Burrowes Rustless Screen, No. 590, gives an interesting resumé of the rise of the window screen and the activities of the Burrowes Company in this direction. The first Burrowes screen was made forty years ago, at a time when, it is stated, "a piece of pink mosquito netting tacked over the kitchen window was a mark of progress." At the present time this company has screens for every purpose, and is equipped to make installations in any type of building.

Among the varieties of screens manufactured by this company are: Half length spring sliding screens; twin sliding screens; drop sliding screens; horizontal sliding screens, for use in wide casements; full length screens, which have infinite possibilities as to method of installation; irregular shapes; pivoted window sash screens; screen doors, and screening for verandahs, sleeping porches and the like. In the catalog under discussion these types are illustrated fully, together with Burrowes screen hardware and all-metal screens.

Painting Catechism for Farmers

The Farmers' Paint Book issued by Harrison's, Inc., of Philadelphia, Pa., is a book full of useful information regarding paints and woods. It is, in fact, a catechism of paints, covering the field with a thoroughness and simplicity which is indeed commendable. Some of the topics discussed, after a general consideration of what constitutes good paint, are: How to Measure Surfaces; General Information; How to Paint Exterior Woodwork; Exteriors; How to Paint Interiors; Suggestions for Interior Finishes; General Paint Hints and Helps; Table of Covering Capacity; Dont's for Home Painters; and Home Painter's Reference.

In covering these many topics a fund of useful and valuable information is presented, most of which does not pertain exclusively to the farmer's realm of activities, but which should prove of value to a great many other "home painters" as well.

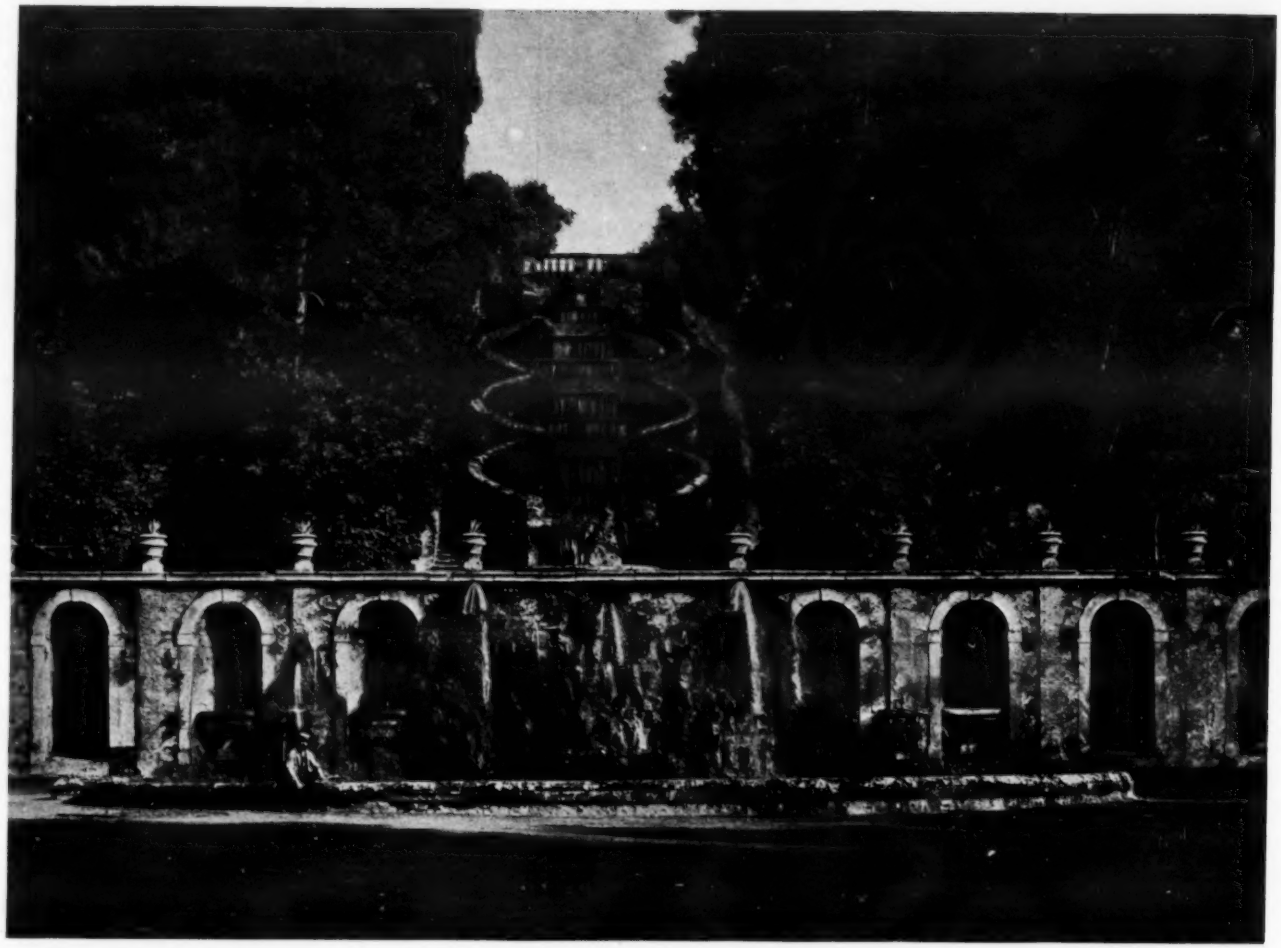
"Sirocco Service"

In the April issue of *"Sirocco" Service*, the house organ of the American Blower Company, Detroit, Michigan, two important buildings recently erected in Detroit, in which "Sirocco" products were employed, are described. One is The Detroit News Building, of which Albert Kahn was architect, and the other is the Detroit Recreation Building, Smith, Hinchman & Grylls, Architects,—a building thoroughly unique in its purpose. Both of these buildings are of the sort in which any company should be proud to install its products, and to judge from this issue of *"Sirocco" Service* the American Blower Company has made a thorough job of it. In the case of the Detroit News Building it is stated that a total of 90,000 cu. ft. of air per minute is supplied to the building by the Sirocco equipment. There is also a description of a large paper plant in this issue, covering the manufacturing processes of the plant, the properties of the buildings, and the type of ventilating and heating system installed.

At the end of this booklet there is a list of the books and bulletins dealing with American Blower Company products which are available upon request. They cover such subjects as heating, ventilating and air conditioning; mine ventilation; mechanical draft and drying; engines and traps; disc ventilators; exhaust fans and blowers, as well as more general discussions of Sirocco products.

"Why Is a Rivet?"

In this day of shipbuilding and of riveting contests and the like, the amusing folder, published by the Riverside Boiler Works, Inc., Cambridgeport, Mass., is of more than ordinary interest. In this sketch, by C. R. Sessions, which is a reprint from *Marine Engineering*, the trials of a young naval draftsman are narrated. In his conferences with older men in the plant and with the head draftsman, detailed in a breezy, readable way, much practical information about rivets is to be found. The two main topics discussed are the Sizes and Spacing of Rivets, and Types of Rivets. Even to the lay reader this information is interesting, and particularly so presented in this pleasant, sugar-coated way. Heavy technicalities are avoided and the whole is very simple and comprehensible.



THE CASCADE, VILLA TORLONIA, FRASCATI, ITALY