

The Army and a City

Gordon Heelis. Derby. 1956

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Gordon Heelis. DERBY. September, 1956.

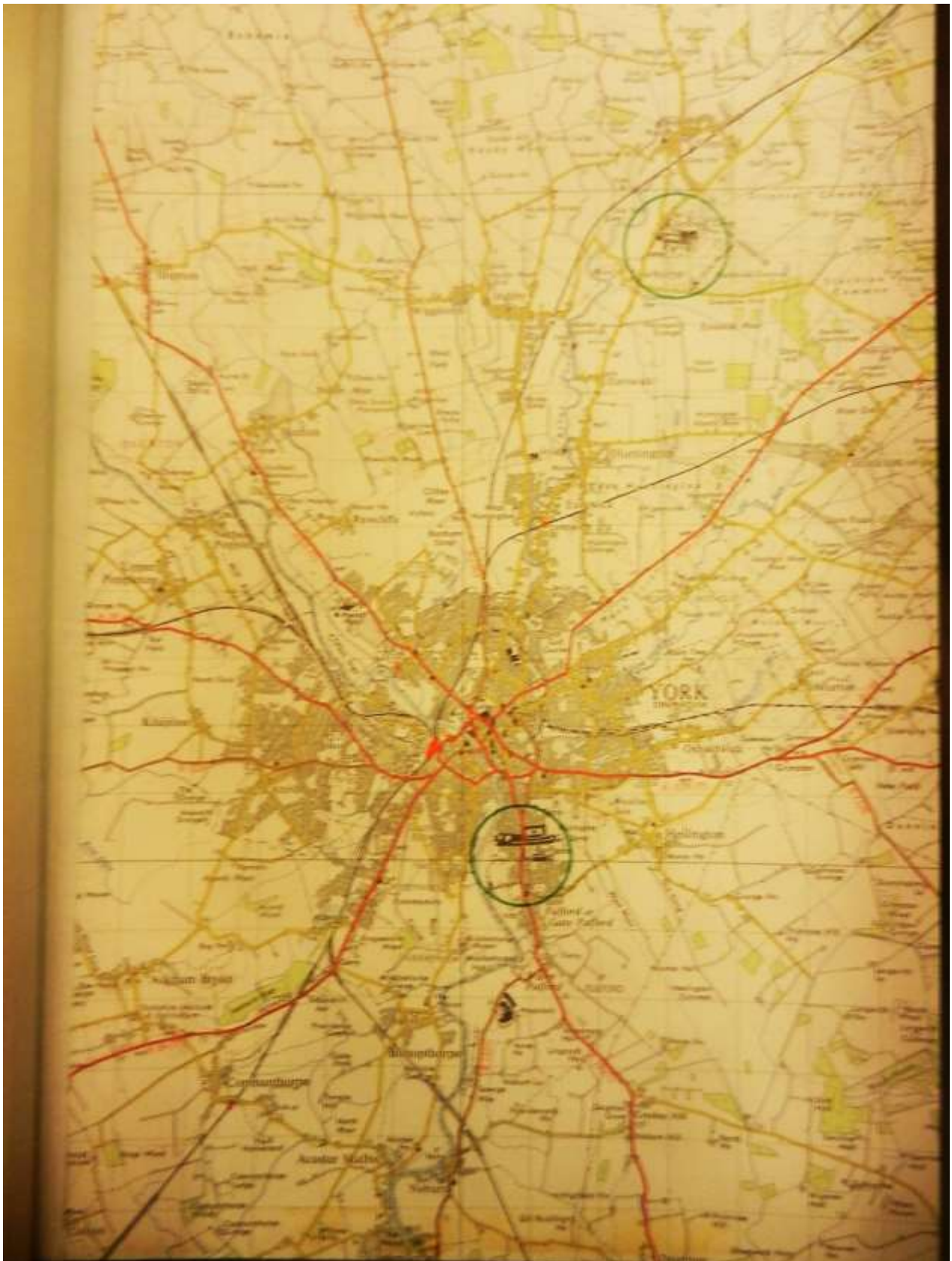
A Thesis showing the development of Military building work from the year 1792 to the present day as exemplified in York, the Headquarters City of Northern Command.

LIST OF CONTENTS.

PAGE NUMBER.

Introduction	1.
The Barrack Office Establishment	2.
York Cavalry Barracks	3.
The 1855 Report	5.
The 1861 Report	11.
York 1860	15.
The Cardwell Reforms	16.
The York Infantry Barracks	17.
Northern Command	19.
The Queen Elizabeth Barracks	22.
1936 - 1956	23.
Married Quarters	24.
Married Officers Quarters	29.
Summary	31.
Appendices	

Photographs and drawings
by the Author.



INTRODUCTION

The origin of the present day British Army dates from the time of the Restoration when a military force was raised for private royal service defending the personal possessions of the Crown, such as Bombay and Tangier where the Foot Guards won their first battle honour. The country generally regarded this armed force with suspicion and to remain in existence the Standing Army had to receive Parliamentary approval annually. In time of war this force was increased by means of volunteers, the local squire or leading citizen being authorised by Royal Consent to raise a regiment.

As late as the eighteenth century this system of military service still existed but many volunteer regiments had been incorporated into the Regular Army, and each had received a County number as well as the title of its Commanding Officer. Volunteers had been supplemented by Yeomanry, Fencibles and Militia, the latter being a compulsory service with each county having its quota of men to supply. The method of selection was by drawing lots though substitutes were allowed.

Each regiment was an independent unit held to the whole Army by a loose code of conduct. Officers' ranks from the Command to the Ensign were purchased and the men were enticed into the service by means of a large bounty. The terms of service, method of fighting, equipment and uniform were all left to the choice of the Commanding Officer. Discipline was strict, often to the point of extreme cruelty, the lash and triangle being ever present on some parade grounds.

With such conditions of service it is no little wonder that each regiment had a large proportion of very doubtful characters among its ranks, many of whom had accepted the magistrates offer of Army Service in preference to a short term in prison. During war-time the standard of recruit would rise as patriotism within the country rose. At the cessation of hostilities many volunteer and militia forces would be disbanded but not necessarily all.

Thus the Army grew in a haphazard way from a small private force into a national one which was drawn from every county in the Kingdom. These troops were quartered, where possible, in castles belonging to the Crown, but generally they were housed in inns and taverns on a scheme of billeting which was neither satisfactory to military efficiency nor to the landlords of establishments where troops might be stationed. Any attempt at changing this system was regarded with utter horror by the majority of parliament, who only saw the military as agents of the Ministers of the Crown. When Mr. Pitt had attempted earlier in his career to put a barrack building scheme to Parliament it had been utterly defeated. "Isolation of the Soldier" was viewed with suspicion and so in 1792 when there were fears of war on the continent Pitt launched upon an ambitious barrack building programme without receiving the necessary parliamentary approval.

THE BARRACK OFFICE ESTABLISHMENT

In January 1793 a Lt. Gen. De Lancey, received his letter of service appointing him to the post of Barrack Master General for the Army. The establishment he directed was called the Barrack Office and its purpose was to provide accommodation for a rapidly expanding Army which by the February of that year found itself at war with the Army of Revolutionary France. As well as building barracks the Barrack Office maintained the buildings and provided the equipment and amenities necessary for the purpose of housing a regiment. On taking up his duties Lt. Gen. De Lancey took over 30 existing barracks and castles where troops were housed. Among his staff were two Architects, James Johnson and John Sanders, who were appointed at a salary of 10/- per day and 2½% commission on all building work.

James Johnson's early life is obscure, his date of birth unknown, but in 1794, he was appointed Surveyor to the Mint. In the same year he took up the duties of Barrack Architect and maintained this position until 1805 when he resigned owing to ill health. He died two years later in 1807.

John Sanders was born in 1768 and in 1784 became Sir. John Soane's first pupil, later that year he was admitted to the Royal Academy and gained a Gold Medal in 1786. In 1790 he opened his own private practice, but early in 1794* he took up the appointment as Barrack Architect with Mr. Johnson. On the latter's retirement he became the senior Architect until 1822 when the office was closed. He died in 1826.

Henry Helmsley, was born in 1764, and in 1805, on James Johnson's retirement was appointed Architect, to the Barrack Office, filling John Sander's vacancy. He was a pupil of Henry Holland, and at the age of 23 attended the Royal Academy, gaining a Silver Medal in 1788. He also exhibited at the Royal Academy from 1785 to 1822. He died in 1825.o.

These are the only Architects known to have carried out work, designing barracks for the housing of troops, under the direction of the Barrack Master General.

The district for the barracks was selected by the Commander in Chief who informed the Barrack Master General, the final choice of the site being left to the latter. The purchase or rental of land was a very difficult affair. As mentioned earlier, there was a strong public dislike of a show of force and owners of land took advantage of this and the need for speedy erection to force up prices; as much as 500 guineas an acre being charged. Eventually in 1803, the "Defence Act" was passed which allowed for compulsory purchase of land for defence purposes, the Barrack department being able to acquire land under this Act.

In 1804 various questions concerning the Barrack Office Establishment were asked in the House of Commons and in 1805

* This date is obtained from the 1806 Enquiry.

a Military Enquiry was held into the Office of the Barrack Master General. The members of this enquiry invited John Nash to assist them. He was asked to value a Barracks on the Isle of Wight and price it against the builders accounts. At the same time James Johnson and John Sanders among others were subject to a close examination. It appeared that both the Commander in Chief's instructions to build and the Secretary at War's financial sanction had been verbal in nearly every case. In twelve years from 1792 to 1804 the Barrack Office had designed and supervised the erection of 141 barracks of which 84 were of brick or stone and the rest timber. Procedure of building work was by drawings and specifications with payment on a measure and value basis, a profit of 15% being allowed. Selection of the builder was left to the Barrack Master General. In some cases a group of local tradesmen were employed to carry out the work on a type of direct labour scheme.

Mr. Nash's valuation showed some discrepancies with the builders accounts sufficient to suggest negligence on the part of the Architects and Surveyors of the Barrack Office, but one must look at the amount of work done by these two men before condemning them. Particularly when it is noted that outstanding uncertified accounts at the time of the enquiry totalled as much as £3,000,000 and that two builders alone had had their accounts settled verging on one million pounds.

The committee condemned the department for not settling the accounts quickly, having no annual audit and not keeping a closer check on the quantity and quality of materials used. They also noted that James Johnson and John Sanders were employed as Surveyors as well as Architects and expressed dislike of the pay plus commission method of remuneration.

The whole of the Barrack Establishment was heavily censured particularly when embezzlement was detected in another department. The department carried on very much against public opinion. The building of barracks ceased for a time and attempts to pass a barrack bill through Parliament only met with fiercest opposition. "The Times" of 4th May 1812, declared:-

"We shall speak our minds as fully on this occasion as we hear our country men to do elsewhere Four hundred pounds for the accommodation of a single dragoon and his horse! Thirty acres of land for a thousand of them! One hundred and seventy thousand pounds for the building of lodgings for four hundred and fifty men! What an active war-fare is some great commander carrying on against the resources of this country!"

The whole establishment was closed in 1822 and the Board of Ordnance again resumed control of building work, the designers of barracks falling into the ranks of official "Anonymous Architects."

YORK CAVALRY BARRACKS.

Contributors to the weekly newspaper York Herald would read

in their edition of Saturday 7th September 1793, that:-

"A gentleman on behalf of government purchased on Tuesday last a quantity of ground in Fulford Field near this City on which barracks are immediately to be built. The idea of having them on the Manor Shore is totally abandoned".

This was probably Lt. Gen. De Lancey B.M.G., settling final details for the acquisition of the land.

Just over two years later on Saturday 3rd October 1795, subscribers to the same newspaper would read that:-

"On Tuesday three troops of the Ancient British Fencibles (Sir. Watkin William Winn's) marched into the barracks near this City. They are the first occupiers of these newly erected buildings".^x

These barracks accommodated four troops of Officers and Men at 58 per troop complete. The land covered 19 acres of which 7 acres were used as Barrack Nursery. In 1794 and the two following years there was a drastic failure of the country's crops resulting in a famine. The Board of Agriculture encouraged the digging of allotments in parks and other public places, so it is quite probable that an area of the barrack ground originally selected for horse exercises was in time of need converted into allotments.

The barrack land is roughly rectangular in shape and the main buildings form three sides of a square facing a green at the bottom end of the rectangle. In the north east corner stood the hospital which according to the 1861 report, had the appearance of a georgian country house. See fig. 4

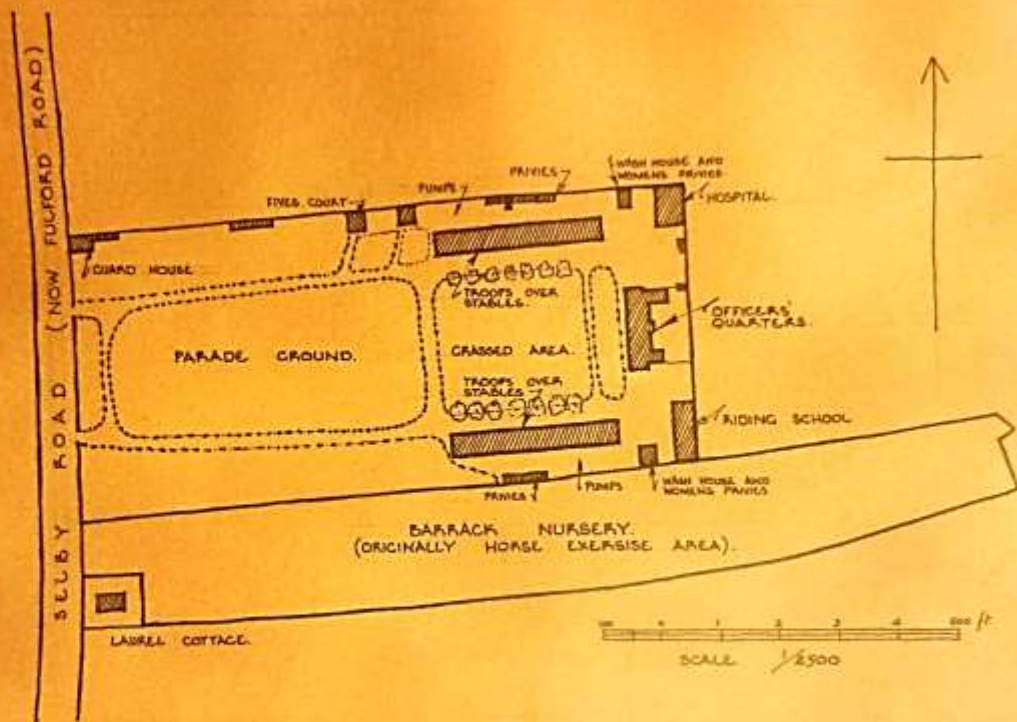
The Officer's block is built symmetrically of pleasant good quality hand made red bricks roofed over with blue slates. An imposingly sculptured artificial "Coade"^a stone Royal Coat of Arms dated 1796, and maintained in a beautifully painted condition fills the tympanum over the main entrance, and faces west up the tethering green and the parade ground to the main gates.

Field Officers, of whom there were two, appear to have occupied a double room and kitchen each. Other Officers, probably had a room each and had use of the Mess Room and Ante Room. The rest of the building contained kitchen and servants quarters. See fig. 1

The two troop and stable blocks faced inwards on to the tethering green. In each block on the ground floor were two kitchens, two cleaning rooms, Officers horse stables, and troop horse stables. Access by stairway to the first floor was from the cleaning room where seven troop rooms and five sergeants rooms were approached from each side of a central corridor. This first floor corridor had two more stairways to the roof space which was designed as a hay store. The brickwork of these two blocks was of poorer quality hand made bricks also with a roof of blue slates. The floor between stables and men's quarters was constructed of timber

^x See Appendix. Note discrepancy in dates.

^a See 'Architectural Review' Nov. 1954.



YORK CAVALRY BARRACKS
 AREA: 12 ACRES

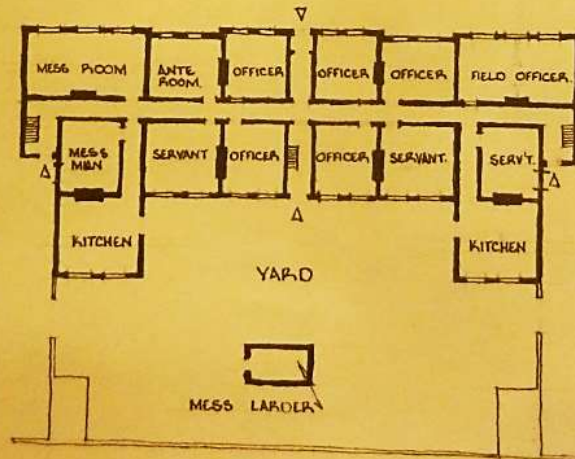
BUILT 1795.
 ACCOMMODATION 232 OFFICERS AND MEN.



COAT OF ARMS 'COADE. LONDON 1796'.



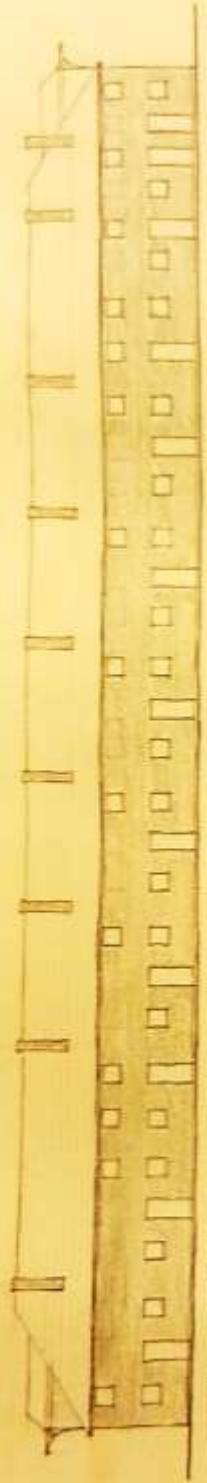
MAIN ENTRANCE.



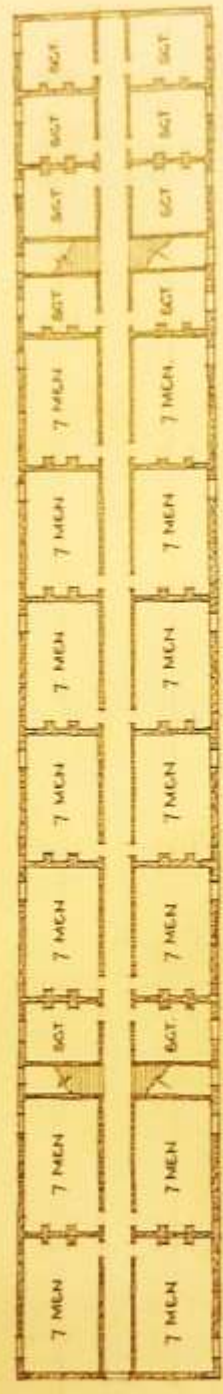
GROUND FLOOR PLAN SCALE $\frac{1}{500}$.
OFFICERS MESS, CAVALRY, BARRACKS, YORK. 1795.

TOTAL ACCOMMODATION 16 OFFICERS AND 2 FIELD OFFICERS.
(two floors) FIELD OFFICER 540 s.ft. OFFICERS 270s.ft.
(SUGGESTED)

FIGURE 1

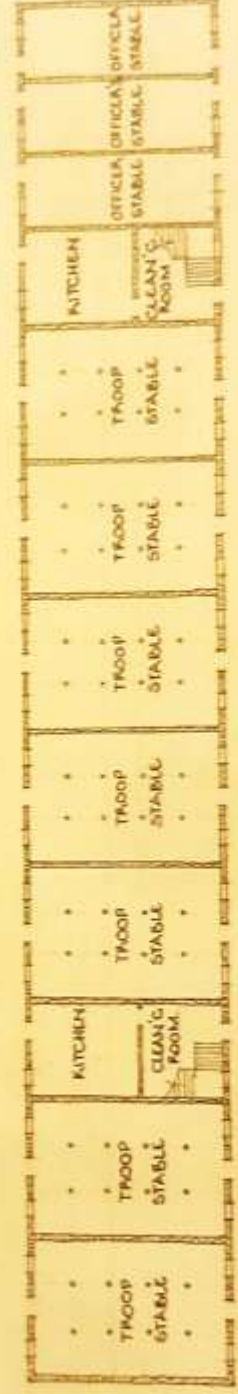


FRONT ELEVATION.



FIRST FLOOR PLAN

623 cu ft per man.



GROUND FLOOR PLAN.

TROOP AND STABLE BARRACK BLOCK CAVALRY BARRACKS YORK. BUILT 1793.
 SCALE : 32 feet to 1 inch.

FIGURE 2.

supported on cast iron columns. There were main beams, cross beams, and second cross beams supporting joists and timber boarded floor as well as timber boarded ceiling. See fig. 2. & 6.

Privies and other ancillary buildings were placed at the rear of the respective blocks. Water was from pumps positioned at the back of the troop and stable blocks. The main drains constructed of brick took surface water and stable liquid to a ditch on the site boundary close to the hospital.

No original drawings are available for these buildings but calculating on the accommodation schedule as shown in the appendix:-

4 troops @ 58 Officers and Men per troop
= 232 persons.

There are

38 rooms for troopers @ 7 per room	=	196
20 rooms for sergeants @ 1 per room	=	20
34 rooms for Officers and Staff		
Housing 16 Officers	=	16
		232

With a room height of 10'- 0" we find each man had

623 cubic feet.

NOTE:

No allowance has been made for women in the barrack rooms.

From these calculations it would appear that James Johnson and John Sanders allowed 600 cubic feet per man, when designing the York Cavalry Barracks.

There was no general contractor employed on these works. According to a list issued by the Barrack Master General to the Court of Enquiry on the 12th November 1865, no fewer than fourteen different names are mentioned as builders to these barracks. Their accounts, it seems, were settled before the end of 1797.*

By 1852 complaints from the Surveyor General of Hospitals that the offensive smell was "considered prejudicial to the comfort of the sick", prompted the main drain to be lengthened with stone-ware pipes and discharged into another ditch which after a circuitous two mile route reached the river Ouse. In 1853 a water main was installed and the two kitchens in each wing were converted with the aid of 10- $\frac{3}{4}$ " taps into ablution rooms. A 3" gas main was laid in 1854.

It is worthy of note that there are shown on the 1853 site plan separate women's wash houses and women's privies indicating the acceptance of women in barracks. Apart from this no other special provision was made for them.

THE 1855 REPORT.

The Crimean War was fought by a British Army which had seen

*See Appendix for names.

little active service outside India for forty years. The first detachments for the Black Sea sailed for Malta in February 1854.

New correspondents of the press sailed with this expedition. Modern journalism had recently been developed and photography was capable of showing conditions of Army service abroad to the public at home.

The conditions of the soldier seemed to have deteriorated from the 1800 standard. The Duke of Wellington had abolished the rule under which two soldiers shared a bed, the regulation space between beds being twelve inches. In fact due to overcrowding the troops had to sleep with two beds pushed up to each other. The volume per man in many barracks was as low as 400 cubic feet. By a general order issued on 3rd May 1845 a maximum space of from 450 to 500 cubic feet per man was directed to be provided in all new barracks on home stations. In York the 1853 site plan shows the following scale of accommodation:-

2	Field Officers.
16	Officers.
276	H.C.O's and Privates.
266	Horses.
24	Hospital Patients.

522'-9" Cubic per man.^x

A convict of these times was allowed 1,000 cubic feet.

One of the newspaper correspondents in the Crimea was W. H. Russell, War Correspondent for "The Times", and it was due to his descriptive powers, and the medium of the press that had by now reached quite a high circulation that public opinion was roused. In October 1854, Miss. Florence Nightingale was sent to Scutari to report on the conditions of the hospitals to Sydney Herbert who was then Secretary of State at War.

Early in 1855, Lord Panmure the Secretary of State for War and the Colonies convened a select committee to report on "Barrack accommodation for the Army". This Committee examined many military personnel on the subject from colonels to sergeants. They were asked questions relating to most aspects of life in the Army, and a report was published in July the same year.

The Committee recommended building separate dining rooms for the men, increasing the space allowed per man to 528 cubic feet, building married quarters, and the transferring of canteens from private administration to military ownership. They also suggested each cook-house should have an oven installed since boiling of food was the only method of cooking, in use in the Army at that time. A schedule of accommodation was drawn up for an Infantry regiment of 1,000 men and a Cavalry regiment of equivalent strength, together with a suggestion that an Architectural competition be held for each type of barracks. This was accordingly done, the winners being a Mr. Wyatt for the Knightsbridge barracks and a Mr. Morgan for the Chelsea Barracks. However, neither of these schemes was considered satisfactory by the military authorities apparently because of cost.

^xNote. lbs inches.

The following is the schedule of accommodation required which, compared with the early Barrack Office designs, is particularly ambitious.

Schedule of Accommodation

One Infantry Regiment, 1,000 men

Extract

The scale of accommodation would be as described underneath the rooms to be of about the area afforded by 16 feet square and 11 feet high, except the Commanding Officers sitting rooms which should be of larger dimensions.

Married Officers

Commanding Officer

Two Sitting Rooms
Two Bedrooms
Dressing Closet
Kitchen, Store Closet
Water Closet
Two Servants' Rooms (One Small)

Two Majors, Paymaster Surgeon

One Sitting Room
The rest as Commanding Officer except only
One Servants' Room each.

Three Captains Adjutant

Quarter Master and Two Subalterns (each)

One Sitting Room
One Bedroom
Dressing Closet
Kitchen, Store Closet
Water Closet

Unmarried Officers

Seven Captains

One Sitting Room
One Bedroom
Kitchen
Store Closet between two

Eighteen Subalterns.

Two Assistant Surgeons and Band Master

One Room, with Dressing Closet
Kitchen between two.
One Store Closet every four quarters.

Also in Officers Block

Messroom 45' x 25'

Readingroom 30' x 20'
Ante-room 20' x 16'
Mess Waiter's Room.
Pantry, Plate Closet.
Two rooms for Mess Man.
Mess Waiter's Sleeping Room
Messman's Store Kitchen,
Scullery, Larder, Beer and Wine Cellar.

Also

10 Stalls for horses
2 loose boxes

Sergeant Major
Quarter Master Sergeant

One room 14' x 12'
One room 12' x 10'
Kitchen and Water Closet.

Paymaster Sergeant School Master Sergeant
Hospital Sergeant Drum Major
Orderly Room Clerk Armourer Sergeant

One room 14' x 12'
Kitchen 12' x 10'
and Water Closet.

Ten Pay Sergeants

One room each 14' x 12'
One Store each 10' x 10'

Each Pay Sergeant to be quartered adjacent to his Company.

Sergeants' Mess

One room suitable to dine 50 men
Kitchen and Pantry
Beer Cellar.

Privates

12 or 24 men per room
Preference 12 with the remainder
24 men and Sergeant = One Squad.
no mixing squads in accommodation.
100 men per company.

Space per man 7'-0" x 4'-0" x 12'-9" high rooms
with 8'-0" between bed ends.
One fireplace to every 12 men.

Sanitary Accommodation

10 basins with running water per 100 men
2 or 3 showers - per 100 men

Married Quarters

One room per family 14' x 12'

TOTAL 60 Quarters

Washhouse				
Drying Room				
Library	-	-	25	x 20
Reading Room	-	-	40	x 20
Chapel School	-	-	120	x 40
School Room	-	-	30	x 18
Orderly Room	-	-	24	x 18
Orderly Room	-	-	18	x 10
Court Martial Room	-	-	18	x 18
Band Practice Room	-	-	30	x 20
Guard Room	-	-	24	x 18
Cells	3	No	9'	x 5' plus privies and urinals.
Bakery	-	-	40	x 24
Master Tailor	-	-	30	x 16
Shoemaker	-	-	20	x 16
Armourer	-	-	16	x 14
Carpenter and Blacksmith.				

Basket Court
Ball Court
Gymnasium.
Quoit and Skittles
Cricket Ground

Privies 6 to every 100. exclusive H.C.O's.

Parade Ground 250 yds x 100 yds.
Allow for covered drill ground in bad weather.

Powder Magazine 16' x 6'

Prison

20 Cells
with staff sergeants quarters attached.

Barack Master

As Sergeant Major
also 8 rooms 30' x 20'
One Fire Engine House
Coal Store 60' x 30'

Quarter-Masters Stores

Bread Store 40 x 20 plus office
Meat Store 18 x 16

Hay and Straw Barn	40' x 40'	All else as for Infantry.
Granary	25' x 25'	
Riding School	120' x 60'	
Vets Surgery	16' x 16'	

THE 1861 REPORT

By October 1857, Lord Panmure had convened another committee, this time with more definite instructions. The following is an extract:-

- (1) You are to proceed immediately to examine and enquire into the sanitary condition of all barracks and military hospitals in the United Kingdom, as regards position, neighbourhood, construction, drainage, water supply ...
.....
- (5) You are further instructed to allot the existing accommodation not less than 600 c.ft, for every man while at least three feet shall intervene between every two beds
- (13) You shall further see that the works directed or recommended by you are completed to your satisfaction and you shall report on the same forth-with to this department.

October, 1857.

Signed
PANMURE.
(Secretary of State for War)

This committee published its report ready for presentation to the Houses of Commons in February-August session of 1861.

It was a very thorough and comprehensive document and really marked the end of overcrowding in barrack rooms. It also influenced the designs of barrack blocks for the next 100 years.

It was pointed out that the annual peace time death rate of the Army in the United Kingdom was 17.5 per 1,000 men against civilian death rate of 9.2 per 1,000. Of these Army deaths seven in every nine were due to zymotic (fevers, cholera, diarrhoea), chest and tubercular diseases such as consumption. This must have greatly impaired the efficiency of the Regular Army in war time.

The annual death rate was found to be as low as 4.7 per thousand for country camps such as Aldershot and Shorncliffe. These factors led the committee to examine causes of this high death rate in barracks. They were found to be, lack of ventilation, and, overcrowding with its resultant reduction in cube feet per man. The density of many town barracks was very many times heavier than that of the heavily populated industrial areas as is shown in the following table:-

<u>TOWN</u>	<u>DENSITY</u> <u>PER SQ. MILE</u>	<u>DISTRICT OF</u> <u>LONDON</u>	<u>DENSITY</u> <u>PER SQ. MILE</u>
Leeds	87,256		
Metropolis	50,000	St. James Westminster	144,000
Birmingham	40,000	Holborn	148,700
Manchester (township)	100,000	St. Luke	151,104
Liverpool (Parish)	138,224	Strand	161,556
		East London	175,816

<u>BARRACKS</u>	<u>DENSITY</u> <u>PER SQ. MILE</u>	<u>BARRACKS</u>	<u>DENSITY</u> <u>PER SQ. MILE</u>
Hyde Park Cavalry Barracks.	114,560	Clarence Barracks Portsmouth	330,000
Wellington Barracks	326,000	Castle Barracks Galway	80,000
Royal Barracks Dublin.	88,000	Shamble Barracks Galway	352,000

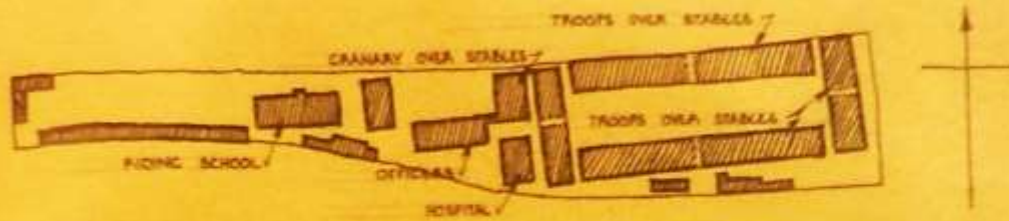
York Cavalry Barracks had a density of 25.7 per sq. mile. At this time the town houses still clustered round the white stone City walls and though not a camp the barracks was classified as a country station.

The members of this committee visited many barracks to investigate living conditions generally and they found:-

"The parade and exercising grounds of cavalry barracks have generally been clean but as soon as we have approached the blocks where the horses were stabled we have frequently found the surface badly paved with rough cobble stones both within and without the stables, the gutters imperfectly laid, foul water lying in holes on the surface and the stable floor often plastered over with horse dung and urine and smelling most offensively. In the great majority of cavalry stables there are no litter sheds and the horse litter is piled on the pavement against the walls directly under the men's room windows which are generally placed over stables, so that whenever the windows are opened the smell enters the rooms. On wet days the litter from want of proper sheds is left in the stables where it cannot be properly aired and where it adds to the ammoniacal fumes pervading the place".

"Cavalry barracks present some remarkable errors in construction and internal arrangement.

"The common custom in these barracks is to build the mens rooms over the stables, and to place the blocks of building as close as possible to the boundary wall. In the narrow lane left between the barracks and the boundary wall are placed not only latrines and ash pits but litter heaps, dung pits, ablution houses, cook houses etc., as often happens the pavement is in a bad state this narrow lane resembles nothing so much as one of the filthiest and most neglected alleys in the filthiest part of our towns. There is nothing in the internal arrangement of cavalry

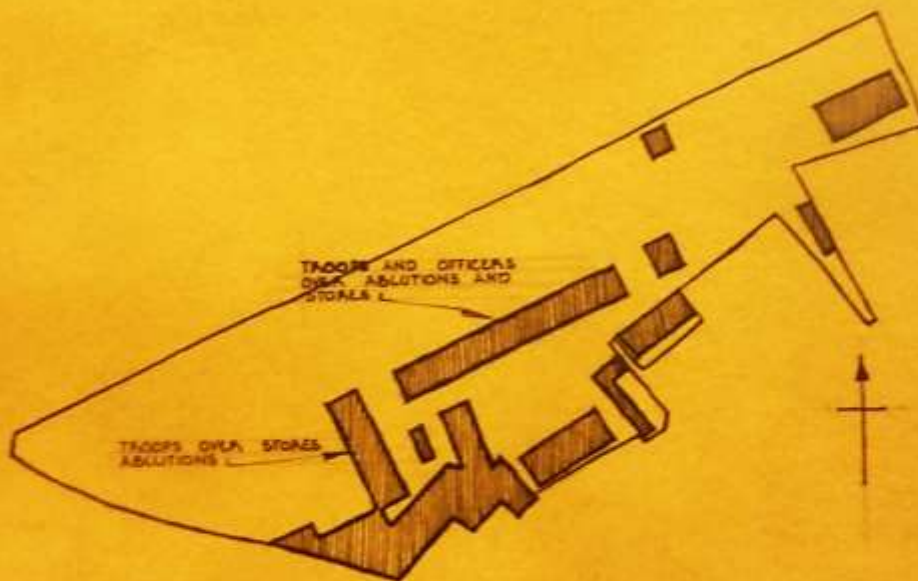


HYDE PARK CAVALRY BARRACKS.



AREA: 2 ACRES 2 RODS 35 PERCHES. ACCOMMODATES 536 NON
AND MEN. ONE OF THE WORST BARRACKS IN THE KINGDOM.
DEFECTS OF STRUCTURE ADMIT OF NO IMPROVEMENT.

EXTRACT FROM 1861 REPORT.



WELLINGTON BARRACKS.



AREA 7 ACRES 3 RODS 3 PERCHES. ACCOMMODATES 1530 NON
AND MEN. A DENSITY OF 326,000 PERSONS PER SQ MILE. NEARLY
DOUBLE THAT OF EAST LONDON, ONE OF THE MOST DENSELY
POPULATED DISTRICTS OF ENGLAND.

EXTRACT FROM 1861 REPORT.

barracks to redeem this error in plan. On account of the depth of the stables from front to back it has been the custom to carry a long dark unventilated corridor or passage along the whole length of the block giving entrance out of it to the rooms right and left. The rooms have consequently windows only on one side. The windows are almost always deficient in number and so placed as to leave half of the room in darkness, while the room doors have been placed close to the fire instead of being at the opposite end of the room".

A glance at the plan of troop and stable block in the York Cavalry Barracks will show that they were constructed in this way, though access was internal from the cleaning room. The 1855 committee found no fault with the troops being housed over stables and soldiers themselves were of the opinion that they should be close to their mounts.

"In all barracks the present contract system for removing refuse is objectionable because it provides for collecting and retaining the refuse within the barrack boundary, and close to the men's rooms until a sufficient quantity has been accumulated to meet the contractors convenience".

"There is another class of cases, chiefly in Cavalry and Artillery barracks, where rooms over the stables have been made originally much too low for health. In some such cases the side walls of the rooms are only a foot or two in height, and the men's sleeping accommodation has been obtained by appropriating the angular space under the roof. Such rooms are generally dark, close, liable to considerable variations in temperature besides having an appearance of great discomfort.

"When we began our inspection there were rooms of this kind at Woolwich, Island Bridge Old Barrack, the attics in Exeter, Brighton and York Cavalry Barracks and at the Royal Cavalry Barracks Dublin etc., The rooms at Woolwich were on the eve of being raised, and similar improvements had been contemplated in the other Barracks".

This must have alluded to the Hay loft which existed in the roof space of both troop and stable blocks at York.

The following are extracts from tables at the rear of the Report, and show the details of relative cubic feet per man for York.

TABLE "A"

Extract from
1861 Report

Number of Men and Cubic Feet Per Man

Name	350	400	450	500	550
	to	to	to	to	to
	400	450	500	550	600
	c.ft	c.ft	c.ft	c.ft	c.ft
<u>YORK</u>	30	-	30	40	208
	men		men	men	men

TABLE "B"

Extract from
1861 Report

<u>Name</u>	<u>No of Rooms</u>	<u>Present Reg.No. of Men</u>	<u>No Men @ 600.c.ft</u>	<u>Deficiency in Accommodation</u>
YORK	29	308	303	5

TOTALS
Barracks

162	5,339	75,801	53,806	21,995
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TABLE "C"

Extract from
1861 Report

<u>Barracks</u>	<u>No of Men at present</u>	<u>Cubic ft per man</u>	<u>Rooms</u>	<u>Position of Barracks and structure of rooms</u>
YORK	308	590	29	Country Rooms over stables Open out of inner corridors.



ATTIC OF 1795 TROOP &
STABLE BLOCK.
AN UNSUITABLE BARRACK
ROOM. SEE FIG. 2.



BARRACK BLOCK 1862.
A SATISFACTORY 'BARRACK
BLOCK' SEE FIG. 3

It is notable that calculating at 600 c.ft. per man there was a 32% deficiency of accommodation in the whole country.

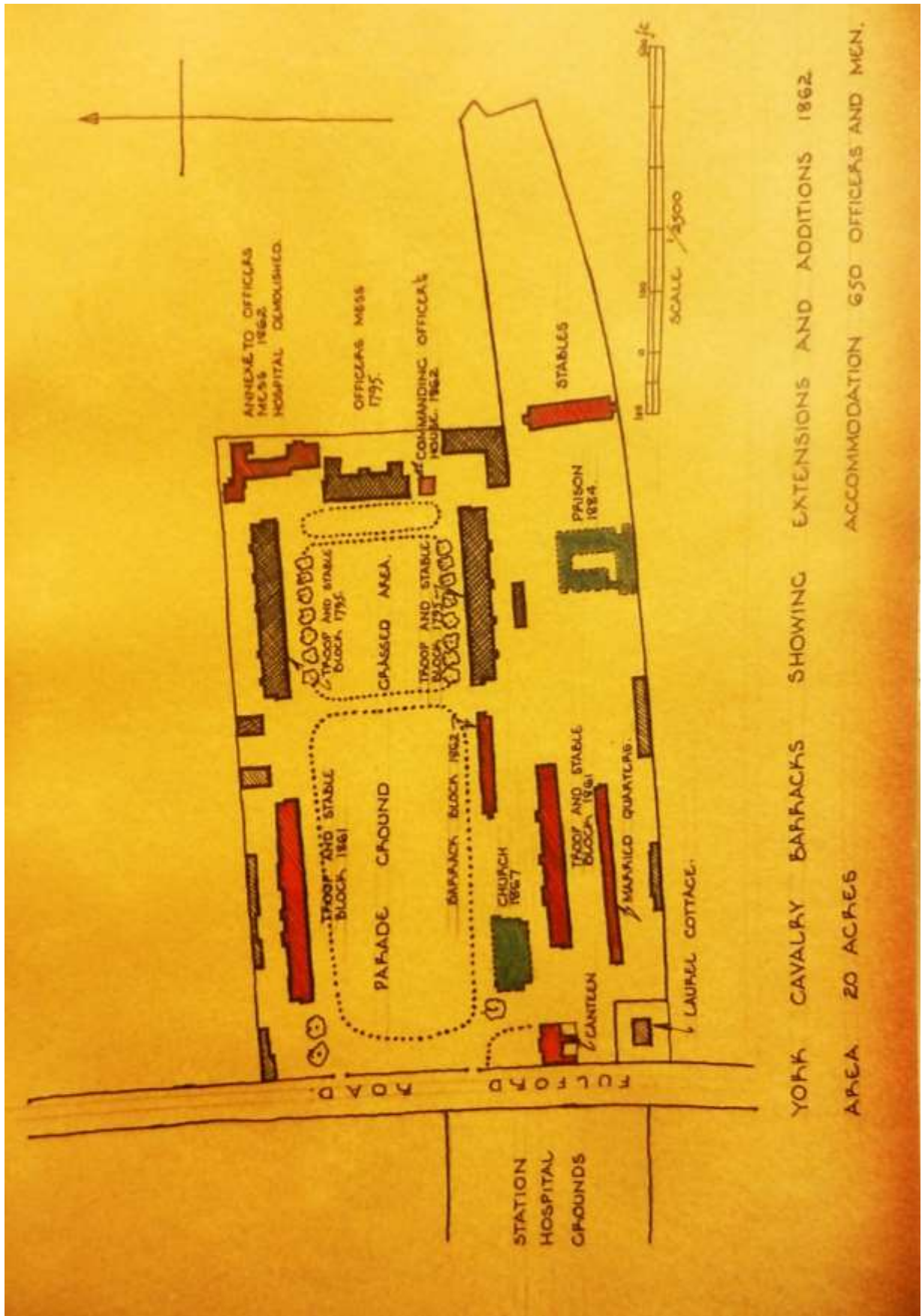
Another objectionable and most unhygienic system in barracks at this time was the urine tub. This tub made of timber and measuring apparently 1'- 6" - 2'- 0" across was placed in the middle of all barrack rooms at night. It does not need much imagination to conjure up a picture of such rooms with small windows closed, beds jammed up tight to each other and many men using the tub in a drunk or half drunken state. For Drink and the Army up to the latter half of the 19th Century were synonyms. Many different ideas were tried to overcome this objectionable system, every man at one time being issued with his own chamber pot. The problem was eventually solved by having a urinal, consisting of a bowl with standing water continually charged from below and continually discharged from above at the overflow. This unit was built across the corner of many barrack rooms. In the case of York Cavalry Barracks the night urinal as it came to be called was built out on stilts above the stables at the rear of the blocks. See fig. 6.

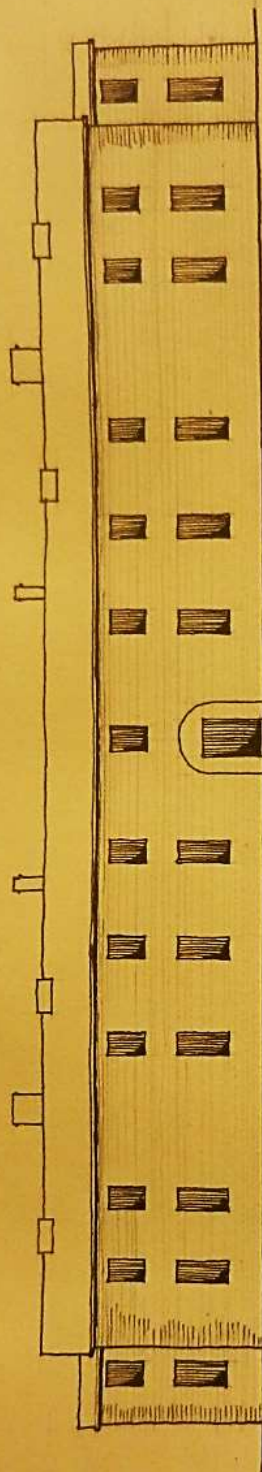
YORK 1860

The year 1860 marks a great amount of building activity in the Cavalry Barracks. Two troop and stable blocks were built on either side of and facing the parade ground. Each accommodated horses on the ground floor and on the first floor 136 men in 8 rooms and 4 E.C.O.'s each with his own room. Also on this floor were store rooms and an ablution room with 26 wash basins. From the rear of each barrack room projected a night urinal. Access was by means of a concrete verandah supported on cast iron columns with an external flight of concrete steps at either end. The floor between the stables and the barrack rooms was concrete reinforced with steel joists (Messrs. Fox and Barretts patent) supported on cast iron columns and brick piers with arches. The space per man is 767 cubic feet but this high figure is obtained by including the roof space in the barrack rooms. See figs. 6. & 7.

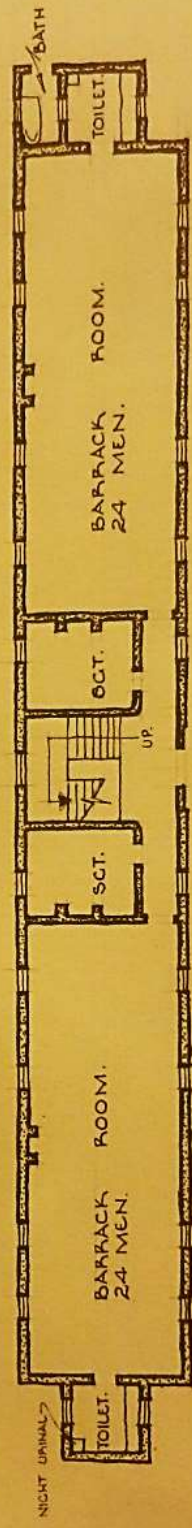
Appendix E of the 1861 Report (which see) listed alterations to be carried out at every barracks in the Kingdom. The suggestions for York's 1795 troop and stable blocks were an increase in window area and altering positions of the doors to the barrack rooms, together with the hint that the roof be raised to give more space in the attic hay loft which had now become a barrack room. The latter recommendation was not carried out but, the central corridor was completely eliminated except for access to the sergeants room. An external verandah of slate slabs supported on cast iron columns with cast iron balustrade and handrail was built. Night urinals were also built out from the rear of each new barrack room thus all four troop and stable blocks were now of similar design and appearance.

In 1854 a new station hospital had been built across the road from the barracks and in 1862 the old hospital was demolished. On the site was erected an extension to the Officer's Mess. Its accommodation included a new Mess room and Ante room together with Band Alcove, Billiard room and Card room.





MAIN ELEVATION.



GROUND FLOOR PLAN

600 CU. FT. PER MAN
 COST £3500



BARRACK BLOCK CAVALRY BARRACKS. YORK.

BUILT FEB 1861.

FIGURE 3.

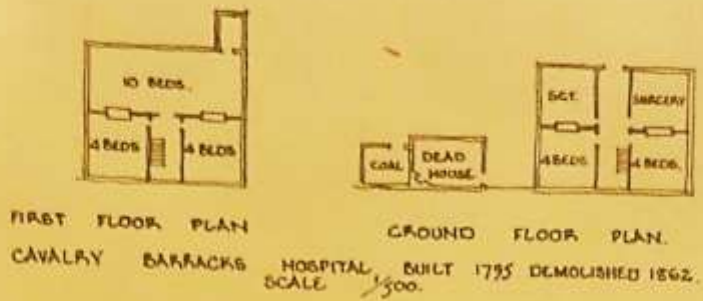
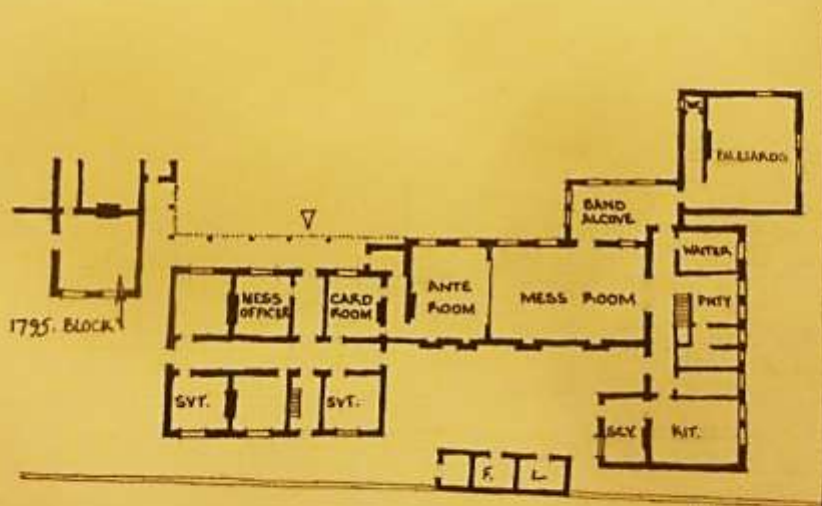


FIGURE 4.



FRONT ELEVATION.



GROUND FLOOR PLAN

SCALE: $\frac{1}{500}$.

OFFICERS MESS EXTENSION CAVALRY BARRACKS
BUILT 1862. (on old hospital site).

FIGURE 5.



VIEW FROM PARADE GROUND.



REAR VIEW, SHOWING NIGHT URINALS.



INTERIOR OF STABLES SHOWING FILLER JOIST FLOOR.

TROOP AND STABLE BLOCK CAVALRY BARRACKS YORK 1860.



VIEW FROM TETHERING GREEN BALCONY ADDED 1862.



INTERIOR OF STABLES SHOWING TIMBER FLOOR.

TROOP AND STABLE BLOCK CAVALRY BARRACKS YORK 1795.

FIGURE 6

This new wing was connected to the existing Officer's block by a glass topped verandah supported on cast iron columns. See fig. 5.

In 1862 a new barrack block was built which showed a change in basic design; this housed men only, the horses being under separate cover and away from the men. The block was two storeys high having four barrack rooms, each housing 24 men and having an ablution room with three basins and a night urinal built onto the short end wall. The sergeant's room was adjacent to each barrack room and the main central staircase. A bath-house having one bath and approached from the open air was built on the ground floor. The construction was of 14" brick work and a roof of blue slates. This design was illustrated in the 1861 report as a suitable barrack block for two reasons, first, the horses and men were separated, secondly, the barrack rooms had adequate cross ventilation. See fig. 3.

Married quarters were also built during the year 1862. The Commanding Officer's two storey and semi basement house was erected adjacent to the Officer's Mess. The married soldiers were also provided with quarters (46 in number) behind one of the troop and stable blocks on the grounds of the Barrack Nursery, which was never used as originally intended.

The garrison church was erected in 1867 and at that time completed the visual enclosure of the parade ground and tethering green.

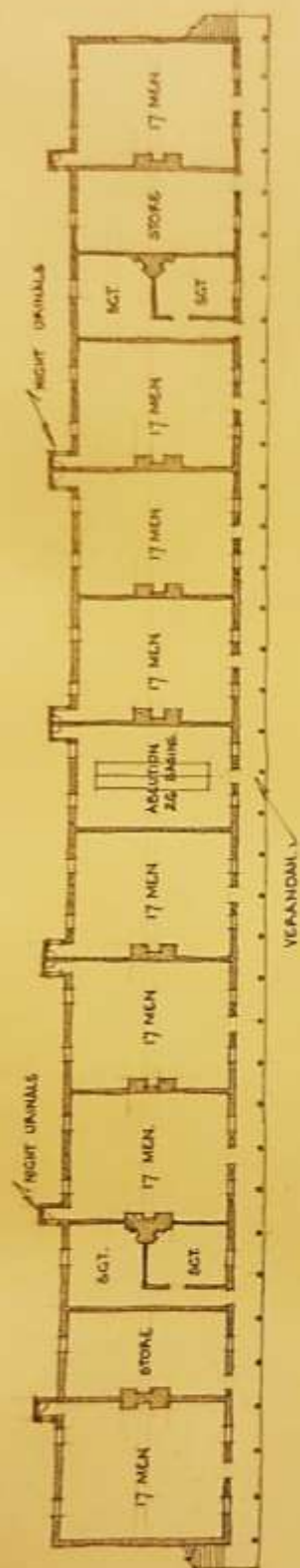
In 1864 a prison was built adjacent to the boundary wall on the south which fell into disuse about 1900 when prisoners were housed in the prison in the City Centre which had been acquired by the War Office for this purpose. Later this prison was closed and prisoners transferred to Wakefield.

THE CARDWELL REFORMS

The 1861 report and the action subsequently taken upon it marks the beginning of more congenial living conditions for the Army. At the beginning of the Crimean War in 1854 there were seven different Government departments who among other duties were responsible for managing Army affairs. They were all independent authorities who communicated with one another by post. By 1868 when Mr. Cardwell was appointed Secretary of State of War there were only two departments. They were Mr. Cardwell's department, responsible for supply and finance, and the Horse Guards who exercised active command over the Army both at home and abroad.

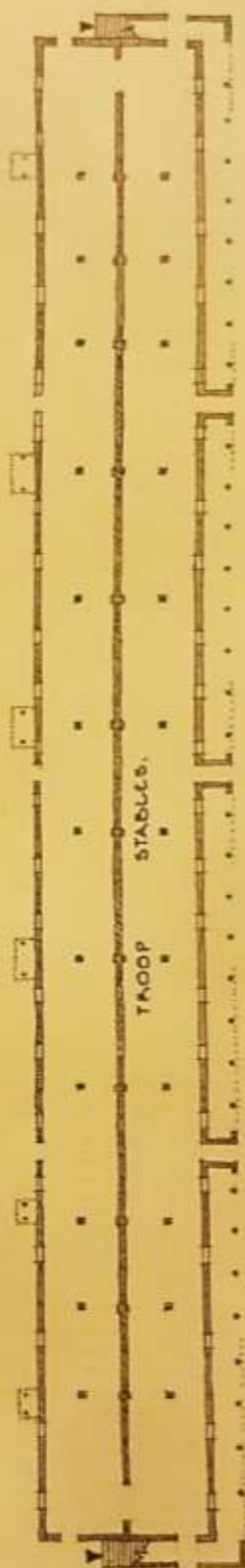
Cardwell's main ambition was to model the administrative side of the Army on that of the navy whose reform strangely enough had been carried out by Pepys at a time when the Regular Army was being formed under Charles II.

The main points of Cardwell's reforms which affected the building of barracks were as follows:-



FIRST FLOOR PLAN.

767 CU. FT. MAN



GROUND FLOOR PLAN.

104 HORSES.



TROOP AND STABLE BARRACK BLOCKS YORK CAVALRY BARRACKS

BUILT 1860.

FIGURE 7.

- (1) Self governing colonies raised their own forces and British Army troops were brought home. (Many regiments had served abroad for indefinite periods, and to be posted abroad was tantamount to deportation).
- (2) Short Service enlistment, six years with the colours, six with reserve.
- (3) Bounty pay abolished, normal pay increased.
- (4) Men of bad character discharged. (Previous to this time men were frequently allowed to join the Army instead of serving a prison sentence).
- (5) The War Office and Horse Guards unified under one administrative.
- (6) A reduction of the Army regular forces. At the same time number of battalions increased and number of men per battalion reduced, these formed cadre for immediate expansion in time of war.
- (7) Abolition of purchase of commissions.

Flogging had been completely abolished in 1867 except in time of war.

These reforms meant an increase in the standard of recruit that was attracted to serve with the colours. Another administrative change was the introduction of the double battalion of regular troops coupled with the one reserve, one militia and a depot. Existing regiments which up to that time had been numbered were grouped into two units and acquired a county title to assist in recruiting and siting of the depot. With the double battalion system there was a battalion at one home station and one on a colonial station the two moving approximately every 3 to 4 years.

THE YORK INFANTRY BARRACKS.

Some time before the year 1876 a site of approximately 35 acres adjacent and to the south of the Cavalry Barracks was acquired by the War Department. By the middle of 1877 a Barracks had been erected for the 14th Regimental District which housed a total of 1350 Officers and Men. The battalion stationed in the area occupied the south side, the depot of the West Yorkshire Regiment (14th Foot) the north side. Apart from sharing the parade ground and weapon training area the two regiments operated as two distinct units.

The site of this new barracks was roughly rectangular in shape and was separated from the Cavalry Barracks by a public right of way, approximately 10 feet wide.

A glance at the 1855 brief to Architects and this site plan will show that the committee, though ambitious and apparently

extravagant at that time, had not laboured in vain.

The layout followed to some extent that of the Cavalry Barracks. Buildings were grouped on either side of a spacious central area, which was divided into three parts. First, the lawns in front of both Officers' blocks, then the parade ground between barrack blocks and finally a weapon training green and sports ground with married quarters on either side. The whole site was enclosed by a brick wall some eight or nine feet in height. The Battalion and Depot as they were known each had its own main entrance gate with guard room, detention rooms and orderly rooms at the side.

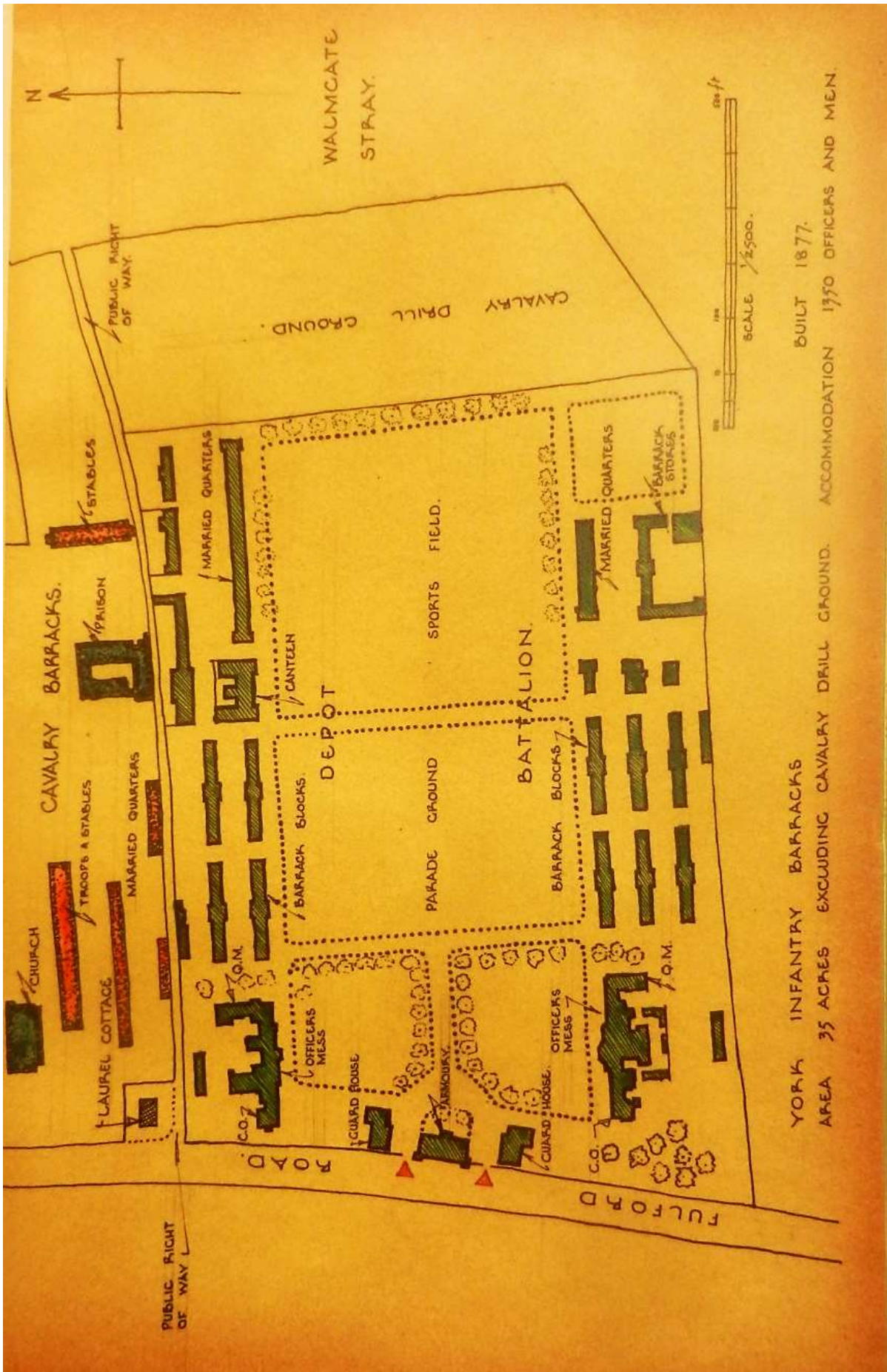
Between both sets of gates stood a three storey armoury with 2'- 6" red brick walls of engineering quality and having a blue brick band at approximately five feet vertical intervals. The windows were fitted with steel bars and shutters, the doors were steel plated. The roof was finished with a parapet of castellated brickwork, and the whole had a slight resemblance to a medieval castle.

The Officers' Mess for each regiment comprised Mess - room, Ante room, Billiard room and accommodation for single Officers. Also under the same roof, but each with separate entrance were married quarters for the C. O., and the Quarter-master. There were also Servants rooms, Kitchen and Water Closets. Stables, Hay Store and Saddle room were in the outbuildings, the whole screened from the rest of the barracks. Field Officers occupied two rooms and a Kitchen each, while other single Officers each had one room with bed recess. The construction of these blocks was in red machine-made facing bricks, the roof was of blue slates. See figs. 26. & 27.

The Barrack blocks were also similar in design, each was two storeys in height and maybe described as butterfly on plan, having two large rooms on each floor, holding between 24 and 30 men on either side of ablution rooms, night urinals, Sergeants' room and stairway. Construction was of 16" cavity walls, the inner skin being 9" the outer being of 4 1/2" red engineering bricks, and blue brick horizontal bands used at sill and window head heights as decoration. Floors were of timber, stairs and ablution rooms of concrete, and the roof was of blue slates. The space allowed was 600 cubic feet per man. See fig. 8.

The married quarters stood between the clothes drying yard and the sports ground, the entrance to each block was from the yard, while the rear elevation overlooked the sportsfield. This unfortunate siting became more apparent when internal water closets were added to this elevation in 1906. On the Battalion side there were 30 quarters and on the Depot side 60 quarters, both built in three storey blocks. Neither seemed to provide the 6% accommodation for families who would be "On the Strength".

Other accommodation provided for the soldiers' comfort was the canteen or recreation centre. It consisted on the south side of the Billiard room, Ante room, Dining room, Kitchen and small Bar. On the Depot side it accommodated Corporals'





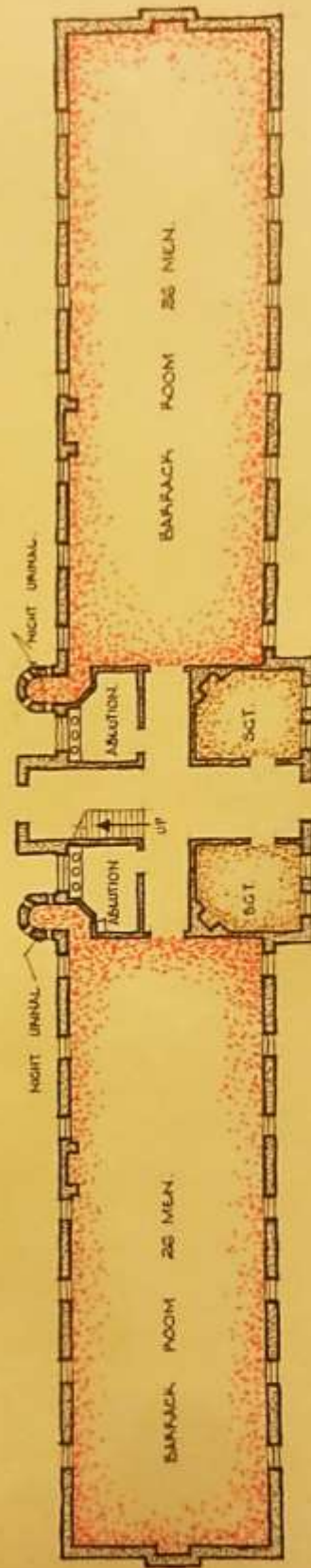
MAIN ELEVATION.



NIGHT URINALS.



GROUPING OF BLOCKS.



GROUND FLOOR PLAN

SCALE 16 FT. TO 1 INCH.

1" = 16'

70' / 6"

600 CU. FT. PER MAN.

BARRACK BLOCK INFANTRY

BARRACKS YORK.

BUILT. DECEMBER. 1876

FIGURE B.

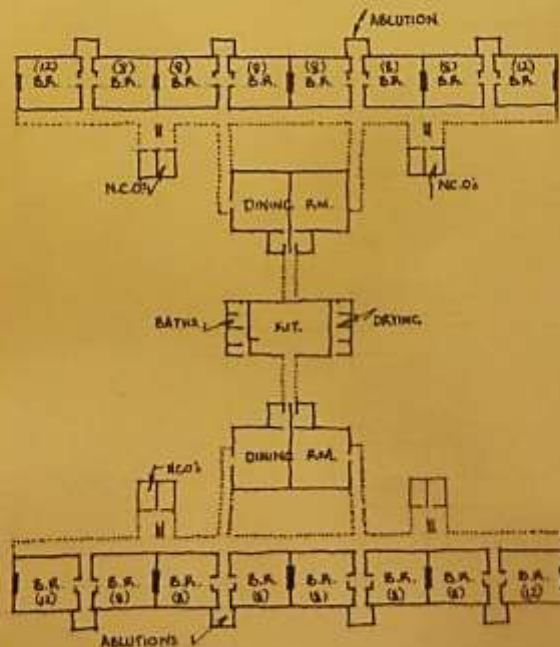
room, Billiard room, Ante room, Dining room, Restaurant and Bar, all on the ground floor. On the first floor was a small hall with a stage and a library.

The Ordnance Survey of York for 1888 - 1892 shows that at the rear of the Infantry Barracks 8 acres had been purchased and converted into a Cavalry Drill Field, thus replacing the area known as the Barrack Nursery.

NORTHERN COMMAND.

While the Infantry Barracks was under construction a decision was being made to move the Head-Quarters of Northern Command from Manchester to York. This move was authorized by General Order Number 57 of 1878 and in that year a new Head-Quarter Office Block was built in Fishergate, about halfway along the main road between the Barracks and the City Centre. It is a two storey block described by Rev. Caesar Crane as of Elizabeth style. The facings are a pleasant hand-made red brick with stone dressings to the windows and a centrally positioned stone main entrance. There is a clock tower on the main facade giving an asymmetrical skyline.

The General Officer Commanding-in-Chief was provided with a residence in the pleasant area of Bootham. This was purchased by the War Department and was vacated in 1936 and a new residence acquired at Claxton Hall some eight miles to the north of the City.



GROUND FLOOR PLAN. 152 MEN & NCOs.
 VERANDAH TYPE BARRACK BLOCK. BUILT ABOUT 1900.
 (AFTER LLOYD SPENCER R.I.B.A.)

FIGURE 9.



YORK. PART PLAN SIX INCHES TO ONE MILE. 1950.
SHOWING THE BARRACKS & NORTHERN COMMAND H.Q. HATCHED GREEN.

With the move of the Head-Quarters to York, the authorities came to require more and more buildings in the City for non-Military purposes. Instead, however, of designing special administrative buildings, property adjacent to the Head-Quarters was acquired, first Fishergate House for the Ordnance Survey and then smaller properties for other corps as they increased in number. At the time of writing many acquired buildings are in use, - R.E.M.E., Workshops, R.A.P.C., Offices, R.A.M.C., Offices, and various District Offices of the Royal Engineers. One change from this was the R.A.O.C., who in 1890 built workshops adjacent to the hospital and close to the River Ouse. When this river was deepened by the building of locks at Naburn a loading wharf with crane was built on the riverside, having a small railway track to the Ordnance store. It was intended to bring stores direct from Woolwich Arsenal by water, but this practice has now been discontinued.

The Soldiers Institute was founded in 1887 to improve the moral and religious well-being of the troops. It was officially opened by the Archbishop of York (Dr. Thompson) on August 25th 1887, and has done valuable work ever since.

From 1890 onwards experiments were made in providing more congenial barracks for the soldier. Whilst trying to maintain the higher standards of sanitation the General Officer of Fortifications tried housing under one roof all the sleeping, eating and ablution rooms. Experiments were also made with individual cubicles for each man, but, this is said to have failed because of immorality. By about 1900 a type of barracks two storeys high with verandah access and combining these requirements was being built. The plan was "H" shaped the vertical legs housing the men and ablution rooms while Dining rooms, Kitchen and Bath houses occupied the "Cross Bar". See fig. 9.

During World War I hutted camps sprang up all over the country. York had its share and some of these are still in use at Strencall. At the end of the war prices were very high and money was scarce. The Government apparently had high hopes in the League of Nations, and advanced money for Army buildings gradually. But, the Authorities still made attempts at improving the living standards of the soldier, and they can be listed as follows :-

- (1) Dining rooms were built beside existing cookhouses. Thus abolishing the age old practice of dining in barrack rooms.

- (2) Gas lighting was replaced by electric lighting.
- (3) Washbasins and Water Closets previously at a distance were included within the barrack block or in an annexe.
- (4) In 1921 the War Office accepted the responsibility of providing recreation grounds as part of their Works programme. These had previously been provided out of individual regimental funds.
- (5) One bedroom type "A" married quarters ceased to be built.
- (6) Communal Water Closets to Married Quarters disappeared in favour of separate ones to each quarter.
- (7) In 1922 the War Office decided to provide quarters for married officers up to one third of the Regimental Establishment. Previous to this date quarters had been provided only for the Commanding Officer and the Quartermaster.

These improvements were however carried out at the expense of the main fabric, for lack of money produced a system of building known as "Light Construction". This was a light steel frame filled in with 4½" brick panels strengthened at the corners by brick piers and the whole rendered externally with rough cast. The building was roofed in with asbestos-cement slates and though this construction was found weather proof it lacked adequate heat insulation.

In 1924 a barrack block of this construction was built for the R.A.M.C., in the hospital grounds. The plan is cruciform in shape and has its toilets approached internally from the barrack room corridors. See fig. 10. On the ground floor built as a separate wing is the cookhouse and dining room.

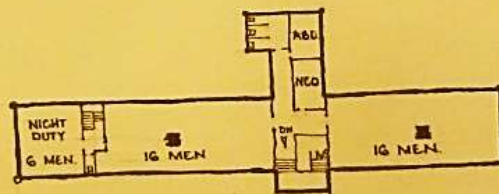
Though "Light Construction" was considered satisfactory for "hardy young soldiers" it was not used for married quarters though asbestos cement tiles were used with 11" brick cavity walls.

By 1933 a publication appeared titled "Handbook of Design and Construction" which marked a change for the better in Army building work. The Government began to advance more money, and, such things as wash basins in single officers' bedrooms and garages for Group IV quarters were provided.

1936 saw the introduction of the "Sandhurst" block which was a further attempt at creating a complete unit of sleeping, eating and washing rooms. See fig. 11. It was also at this period that central heating was introduced into new and existing barrack blocks.



'LIGHT CONSTRUCTION'.
BARRACK BLOCK.

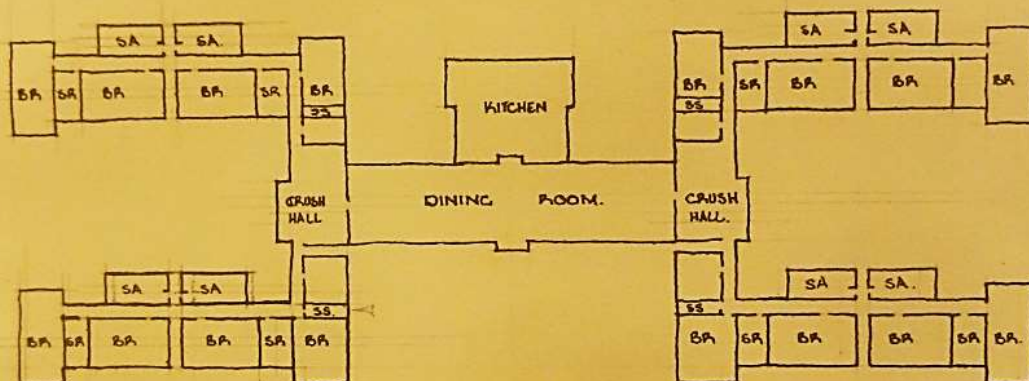


FIRST FLOOR PLAN.

R.A.M.C. BARRACK BLOCK MILITARY HOSPITAL. YORK.
BUILT 1924 600 cuft per man.

AN EXAMPLE OF 'LIGHT CONSTRUCTION'.

FIGURE 10.



GROUND FLOOR PLAN 'SANDHURST' BARRACK BLOCK
 BUILT FROM 1936 ONWARDS.

BR BARRACK ROOM (12 MEN)

SR SITTING ROOM.

* SS. SUITCASE STORE.

SA SANITARY ANNEXE.

AFTER LLOYD SPENCER.

FIGURE 11.

THE QUEEN ELIZABETH BARRACKS, STRENSALL.

In 1859 the Yorkshire Rifle Association used open land at the village of Strensall, some 5 miles north of the City. The Army Authorities acquired for military purposes some 1600 acres of this land at a cost of £16,000. There was a shortage of water on the site and so in 1879 trial boring to a depth of 300 feet took place at Towthorpe but with unsatisfactory results. By 1883 the 3rd Battalion West Yorkshire Regiment was encamped on the site, and unsatisfactory results were still obtained when boring was again resumed near Strensall, even though a depth of 1180 feet had been reached. It was therefore decided to leave the boring for 3 or 4 years and, then to continue to the full agreed depth of 1500 feet. In 1892 the idea of wells supplying water for the camp was abandoned, and by 1901 a piped water supply had been laid from York.

The site is again roughly rectangular in shape and like the rest of the surrounding countryside very flat, there being no more than five feet of fall across the whole camp.

Huts were first erected in 1887 and the first large camp formed in 1888. Press reports state that as many as 10,000 men have been in camp here at one time.

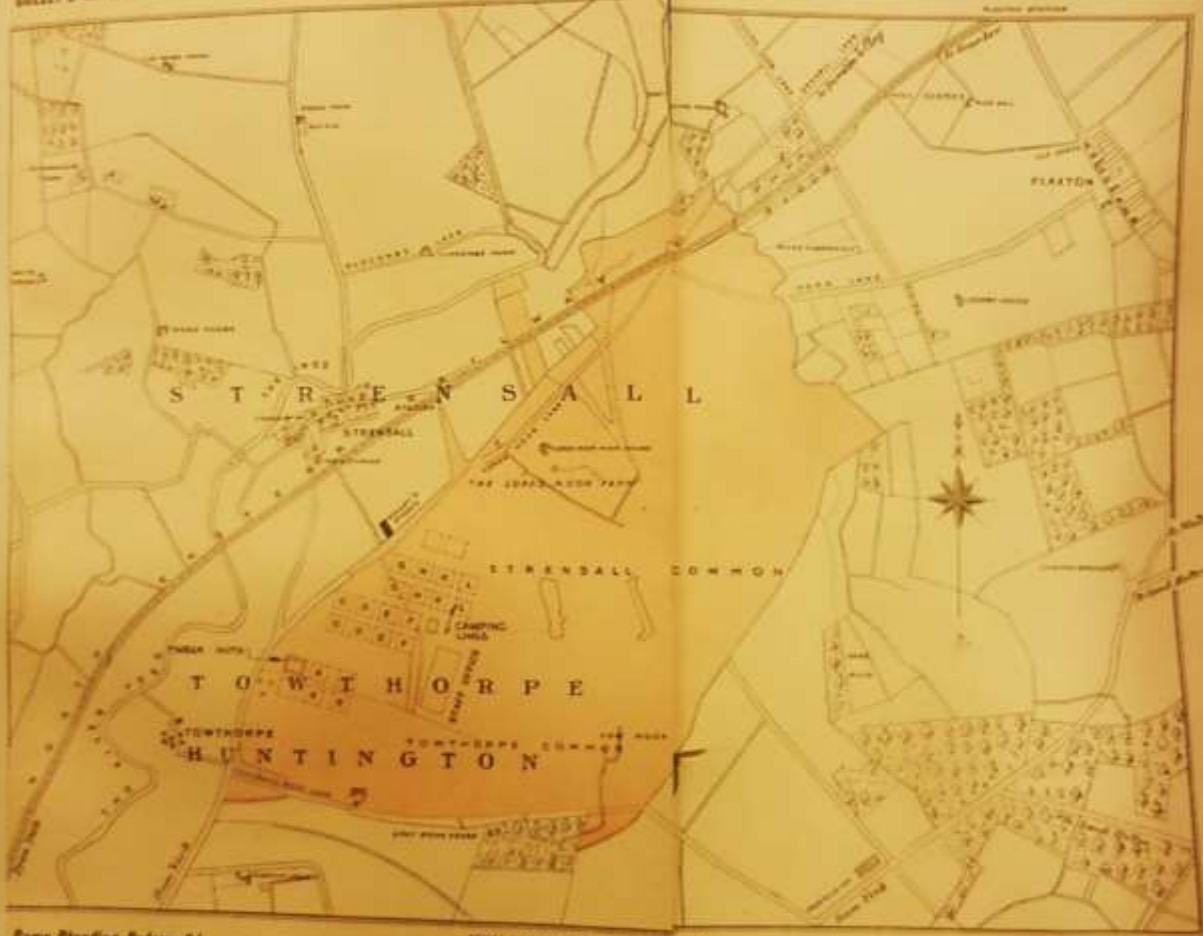
This barracks differs from the two at York because it originated as a hutted camp. It is not enclosed at all and is well wooded in parts. The approach to the Guard room is along a pleasant, tree lined avenue with the cricket ground on the right, and the museum and N.A.F.I., on the left. The parade ground, which in York dominates by the barren area of tarmac the landscape of the barracks, is not immediately apparent here, but is tucked discreetly away from the visitors first glance.

Many of the barrack buildings are actually part of the hutted camp, which has grown with each war, the Boer War, World War I, and World War II. The 1888 Officers' quarters are still in use though not for their original purpose. The main buildings cluster round the forked junction on the main York-Strensall road. The rest of the site is used as Rifle ranges and exercise area.

In 1911 a medical centre was erected of a semi-permanent construction, with brick base and light steel frame filled in externally with rough-cast panels and plaster internally. The roof is of asbestos cement tiles. This building seems to be a forerunner of the "Light Barrack Construction".

Between 1913 and 1915 Forty married soldiers quarters were built in four blocks close to the main York road. Many temporary hutments were built during the war but nothing of a permanent nature.

Between 1923 and 1925 a detached Group III Quarter was built for the Commanding Officer. Six other married Officers' quarters, one pair of semi detached Group IV and two pairs of semi detached Group V, were also provided.

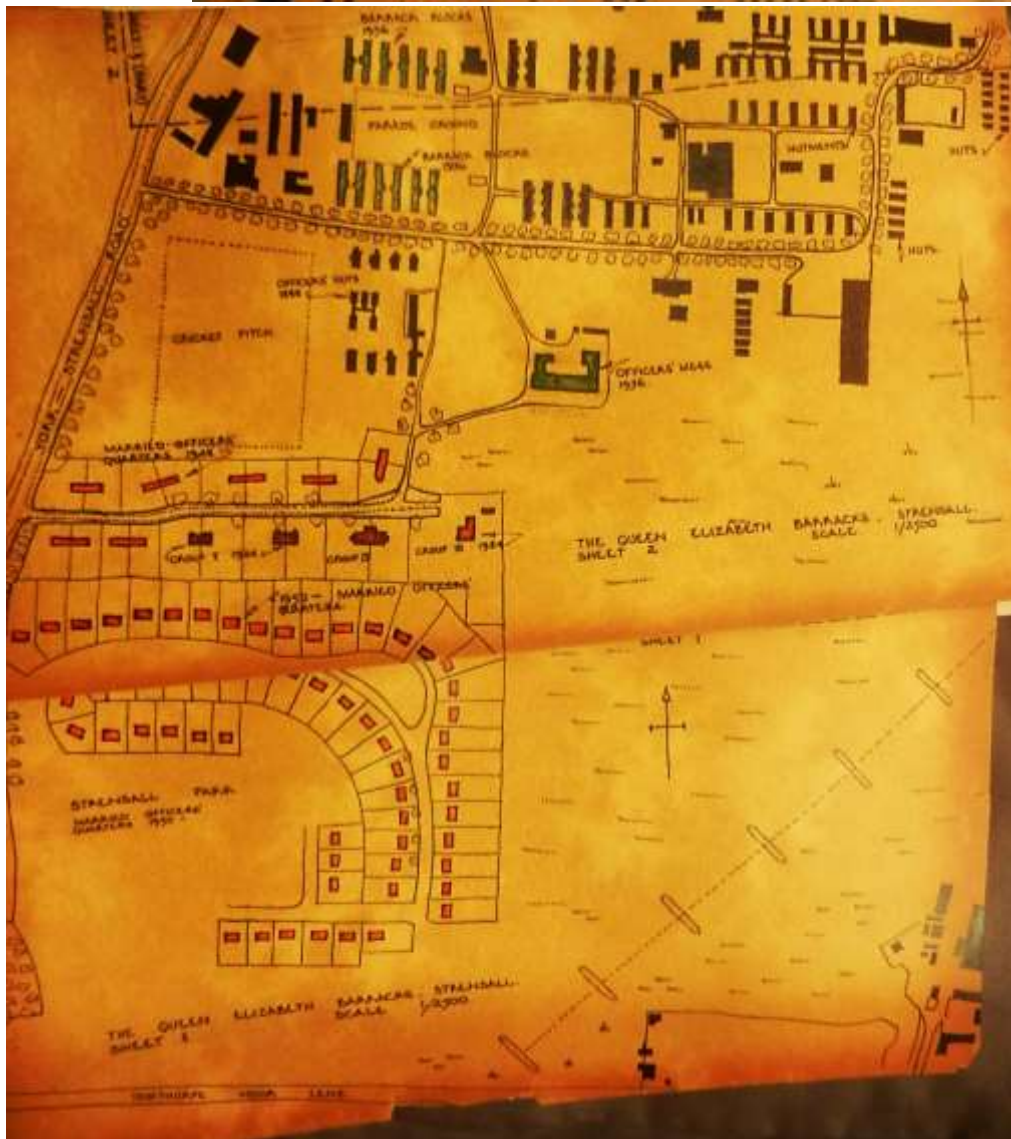


Camp Standing Orders, 5d.

GOVERNMENT LAND SOLDIER RED

STRENSALL CAMP.

DATE ABOUT 1888.

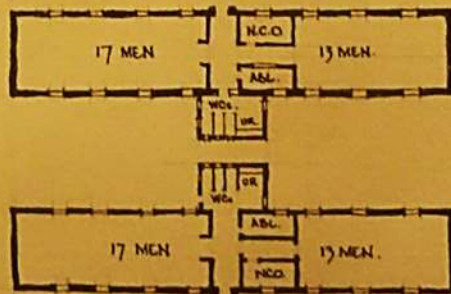




VIEW ACROSS PARADE GROUND.



VIEW SHOWING MAIN ENTRANCE.



GROUND FLOOR PLAN SCALE $\frac{1}{500}$.

BARRACK BLOCK STRENSALL BUILT 1938
 ERECTED ON SITE OF 1880 HUTTED CAMP.
 600 cu. ft. per man.

FIGURE 12.



OFFICERS' HUTMENT 1888.



GROUP V OFFICERS' QUARTERS 1924.



VIEW FROM MAIN ENTRANCE.



'NISSEN' TYPE HUTS.



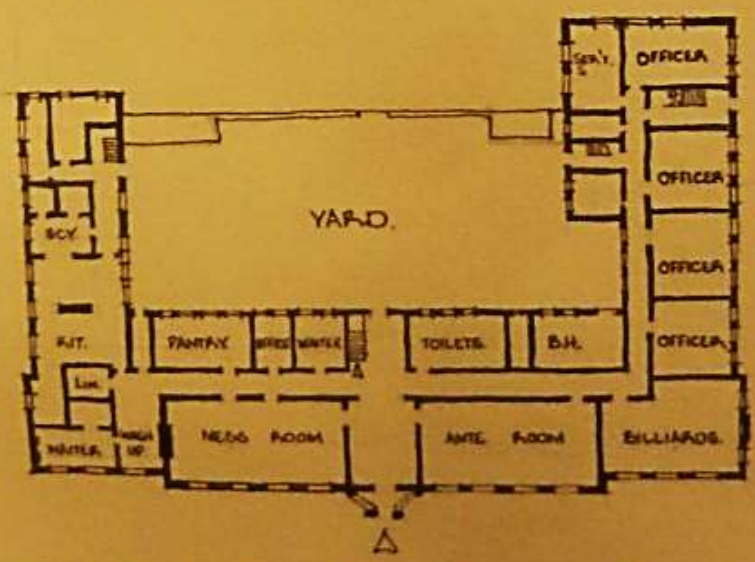
GROUP V OFFICERS' QUARTERS 1955.

STRENSALL. GENERAL VIEWS. 1956.

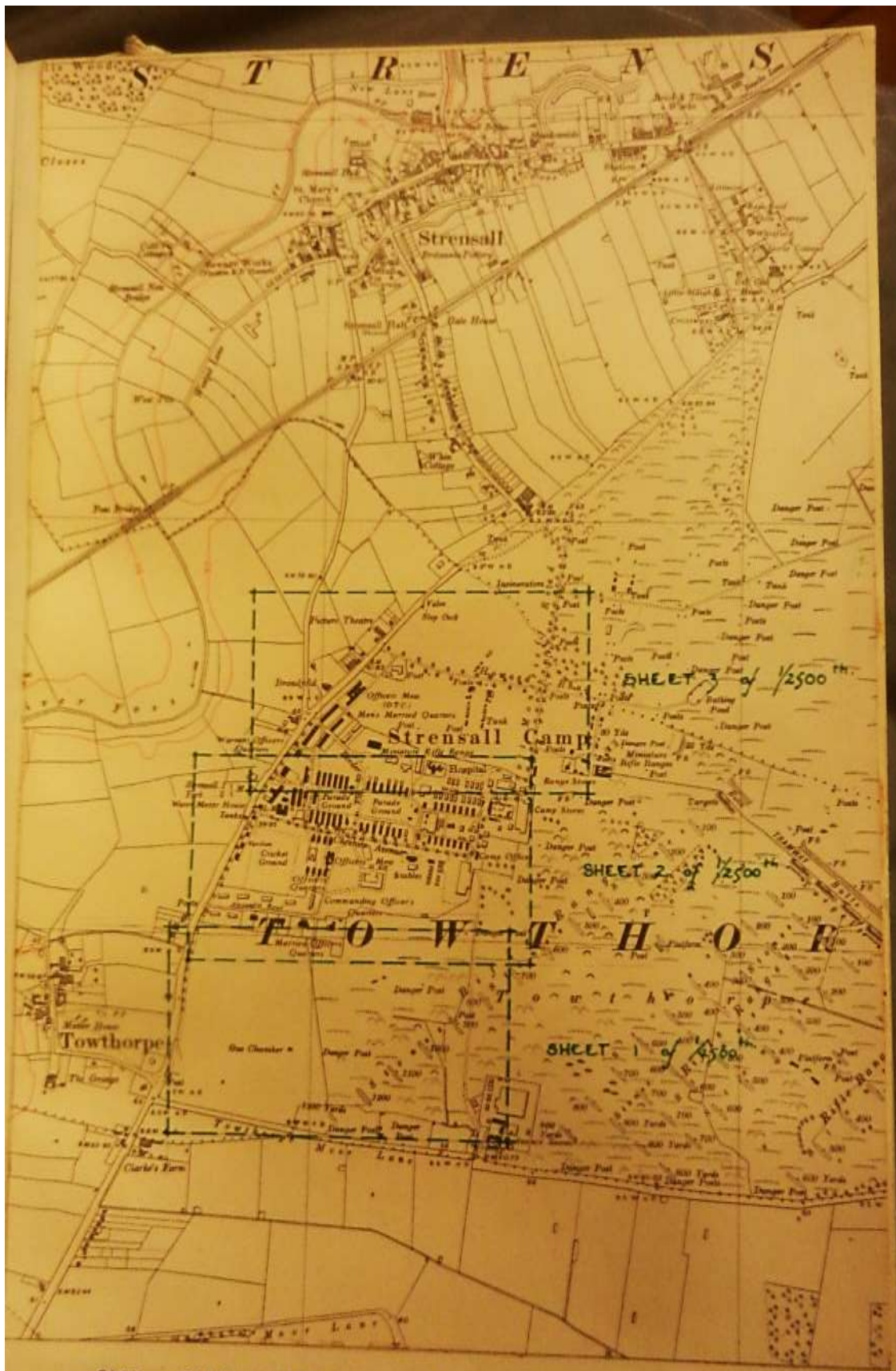
FIGURE 13.



FRONT ELEVATION.



GROUND FLOOR PLAN SCALE 1/500.
 OFFICERS' MESS STRENSALL built 1938.
 FIELD OFFICER (first floor) 320 ft.s. SINGLE OFFICER 306 ft.s.



PART PLAN STRENSALL CAMP SIX INCHES TO THE MILE
 WITH KEY TO 1/2500th MAPS.

1950.

In 1936 just before the outbreak of the last war, the huts round the parade ground were converted into permanent structures. Each hutment site was used for building two single storey barrack rooms joined together by N.C.O.'s room and ablution room. A sanitary annexe was added to the plan, each unit housed 30 men at the standard space of 600 cubic feet per man plus the N.C.O.'s room. Construction was of 11" cavity facing brickwork plastered internally with a slate roof laid on battens, felt and 1" boarding, all supported by a timber king post roof truss. The floor finish was 1" Jarrah on fillets with a concrete sandwich sub-floor. Windows were of timber sliding sashes, and heating was by means of a solid fuel stove in the centre of each room. See fig. 12.

"Light Construction" was certainly not used on these blocks.

In 1936 a fine brick and stone Neo-Georgian designed Officers' block was carried out to replace or supplement the Officers' timber hutments. This Officers' block had accommodation for a single Field Officer, who was provided with two rooms. Other Officers (28 in number) had a single room each with the use of the Mess room, Ante room, and Billiard room. See fig. 14.

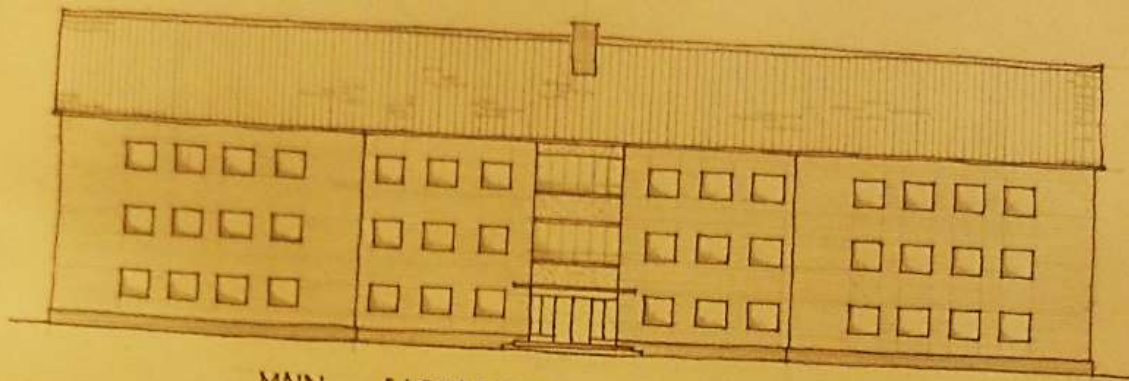
The men's Dining rooms and the N.A.A.F.I., were also built at this time.

1939 TO 1956.

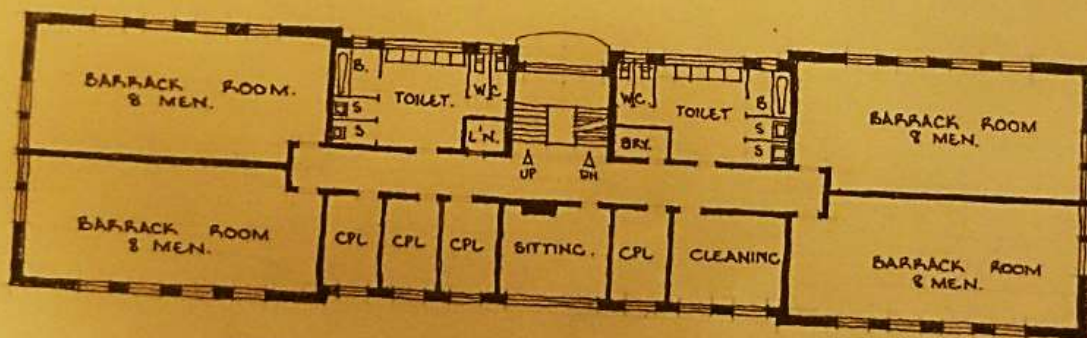
During the 1939 - 1945 War temporary hutments were again built at both Strensall and York, these were constructed of corrugated iron with double pitched roofs, though many odd huts of the "Nissen" variety were also erected.

After the War prices had again risen sharply and materials were in short supply. The United Nations had taken the place of the League of Nations, but the Government's policy this time was to maintain a well-housed Army. The amenities of Barracks buildings were again improved but not, as previously at the expense of the fabric.

Present day barrack blocks are designed three storeys high with 32 men per floor and eight per room at 600 cubic feet per man, plus four corporals each with his own room. Sanitary accommodation is adjacent to barrack rooms, with W.C.'s, showers, baths and wash basins. In addition each floor has its own sitting room. These blocks are built of good quality materials, and reflect the standard of recruit the Army hope to attract into the modern service. See fig. 15.



MAIN ELEVATION.



TYPICAL FLOOR PLAN.

STANDARD TYPE BARRACK BLOCK BUILT 1953.
 SCALE $\frac{1}{250}$.
 CUBE PER MAN 600 cu.ft. AREA PER MAN 70 s.ft.

FIGURE 15.

MARRIED QUARTERS.

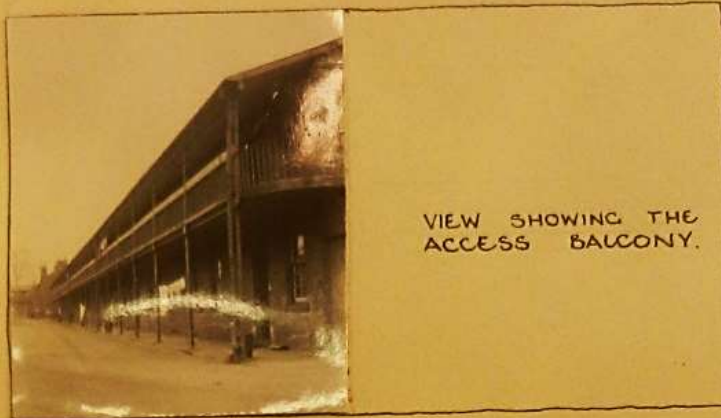
From the Restoration to the outbreak of the Napoleonic Wars soldiers' wives as a rule followed the Regiment. They acted unofficially as Cooks and Nurses, and in return were allowed to live with the troops. Where the married man lived seemed to depend on the Commanding Officer and existing surrounding circumstances. When the Regiment moved overseas in peacetime the women and children were automatically allowed to go with them.

When proceeding on active service the Regiment could by regulation only take six women. If more than this number existed which was invariably the case, lots had to be drawn for the lucky women.

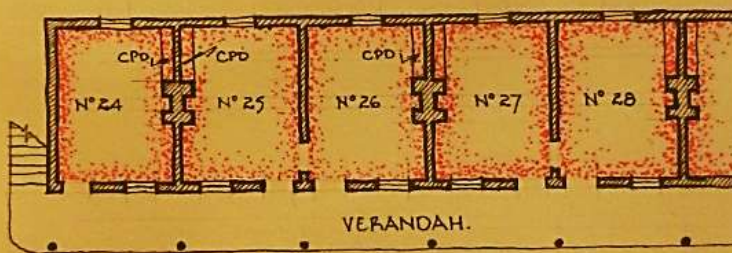
By 1793 when Lt. Gen. De Lancey's Barrack Office Establishment was created the women were an accepted part of Army life. This number of women (six) per company now seems to refer to those fortunate wives who would be allowed to live in barracks. No special provision was made for them, apart from the building of separate washhouses and privies. The 1853 site plan of York Cavalry Barracks shows these toilet arrangements as existing at that time.

In 1855 the "Official Committee on Barrack Accommodation for the Army" reported that:-

"With regard to the admission into barracks of private soldiers' wives, the present practice is to admit them to live in barracks with their husbands, in the proportion of six to 100 men. No separate accommodation has been ever prepared for their reception, and the evidence is, that they are provided for in different ways in different Regiments; in some they are lodged in the rooms with the unmarried men, with no means of separation from them except a curtain suspended round the bed; in other Regiments the married people are placed in barrack rooms apart from the unmarried men, but with several couples in the same room. Both these modes appear to your Committee highly objectionable; they can see no course open except that either excluding married women from barracks altogether, or providing them, if admitted, with accommodation which would be considered decent, in such circumstances, beyond the walls of a barrack. On the assumption that the first alternative will not be adopted by the authorities of the Army, your Committee recommend that, to the number permitted by the regulations, every married couple should be provided with a separate room, that their quarters should be in a part of the barrack distinct and separate from the quarters of the unmarried men, and that no other women beyond the number provided with such quarters should be allowed to live in the barrack on any pretence. It may be observed, that though the recommendation here made will increase the expense of the original building, the Government will thereby save the lodging money now allowed to married soldiers, which your

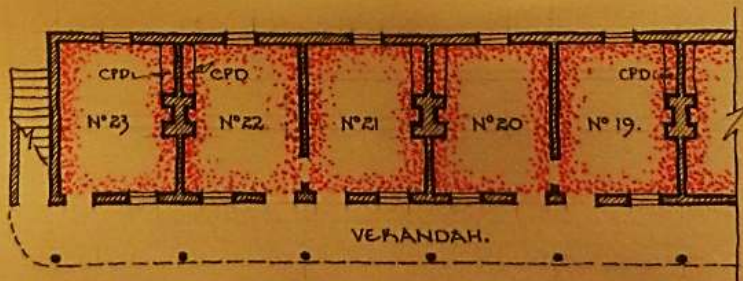


VIEW SHOWING THE
ACCESS BALCONY.



FIRST FLOOR PLAN
192 SQ. FT. PER ROOM.

2064 cu. ft. per room.
including roof space.



GROUND FLOOR PLAN
192 SQ. FT. PER ROOM.

1858 cu ft per room.

SCALE 1/16 ft - 1 inch.

MARRIED QUARTERS YORK CAVALRY BARRACKS.
BUILT 1861 (NOTE: ONE ROOM PER FAMILY).

FIGURE 16.

Committee are informed amounts this year to £8,000, in the United Kingdom alone"

A further glance at the 1855 schedule of accommodation for a Regiment will show they briefed the Architects to provide for 60 married quarters per 1,000 men each having one room 14'- 0" x 12'- 0".

In 1852 the Guards' Officers raised among themselves £9,000 for the purpose of building married quarters. This is described in the 1861 report so:-

"There is a block of married quarters belonging to the Guards in Vauxhall Road, London, which is constructed on a principle differing in some respects from any of the others. It is intended for 56 families, and was built by subscription from the Officers' of the Guards, by Mr. Darbyshire a London Architect. It was hoped that the rent of the rooms would pay interest, on the money invested but the building has recently been purchased by the Government. The building consists of four storeys and a basement. Entrance to the different flights of rooms is obtained by a central passage going right through the middle of the block and by a stone stair carried up with the back line of the building. A passage branches off from the stair right and left on each landing. The rooms open back and front from this inner passage and at the dead ends of it are the water closets lighted and ventilated from the outside. Ventilation is secured for all these inner passages by leaving the staircase open to the outer air from top to bottom. The quarters are in two or three rooms according to the rent which varied from 3 shillings to 4 shillings a week"

This block was bought out by the Government for £8,000 who felt that it was prejudicial to Army discipline if a superior officer was also a landlord.

By August 1860, a block of married quarters in the York Cavalry Barracks had been started and these were completed in March, 1861 at about the time the 1861 Report was being published. These quarters (46 in number) were two storey in height and in one block, having external verandah access with stone stairs at either end. They conformed to the 1855 recommendations, each quarter was 16'- 0" x 12'- 0" with a fire-place and a cupboard, giving 192 sq. ft. per family. Cooking was done on the range and water obtained from a communal tap. The construction of this block was of 14" brick similar in quality to the 1860 troop and stable blocks, and had a blue slate roof hipped both ends. Internal walls were 9" thick, floors were timber joists and boards. The verandah was of concrete supported on cast iron columns and having a cast iron balustrade. See fig. 16.

The 1861 Report also mentions the use of a corner of the barrack room for the married soldier.

"The present regulation number of married soldiers is 6% of the strength A soldier's pay in itself is inadequate to hire lodgings Commanding Officer's are nearly always ready to mitigate this great evil if there are any spare barrack rooms at their disposal. In the Royal Barracks, Dublin, we found 87 women and 109 children in barrack rooms..... at Birr Barracks, which are very much overcrowded there are seven rooms with regulation space for 119 men occupied by 21 men, 21 women and 33 children..... There are many barracks where even this merest apology (the screen curtain hung over a cord) does not exist... At Chatham Barracks at the time of our enquiry there was a married N.C.O., or soldier in every barrack room among the men; and not unfrequently girls from 14 to 16 years of age were thus accommodated!"

"The best married quarters we have seen are those at Preston, intended to accommodate about 80 families. They consist of a row of two storey houses of stone, like the side of a street. Each house is completely cut off by a division wall from the adjoining houses on either side and there is a good stone staircase and passage running through, and through each house dividing it into two halves right and left. Each half contains four living rooms, two on the ground floor, and two above. Each room accommodates a married soldier's family. There are eight families to each. The rooms receive fresh air from the passage by a perforated zinc vent over the door, and there is an air shaft in the chimney stack to receive foul air. The rooms are of good size and height, (14'- 0" x 12'- 0" wide), and much superior to those usually occupied by the same class of people in civil life. Behind the terrace is an excellent gravelled back yard, a laundry and latrines against the boundary wall".

This committee obviously were of the opinion that one room per family was quite an adequate form of accommodation. Judging by the Barrack Room Corner standards most certainly it was an improvement.

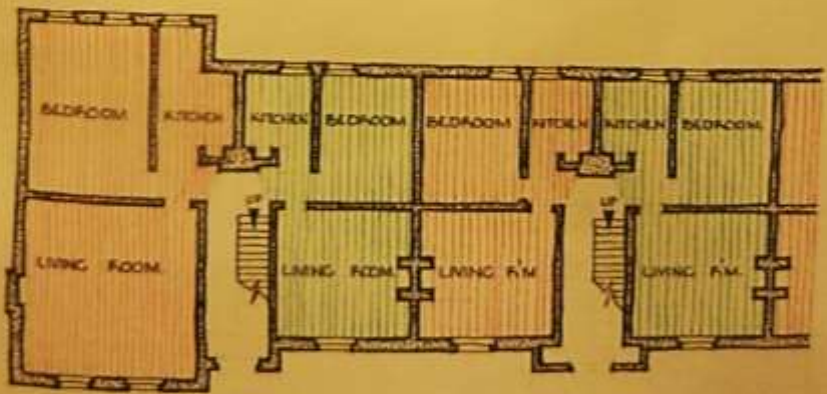
The War Department seems to have decided on its own to improve standards of the married soldiers' quarters at this time, for in the 1877 Infantry Barracks Scheme married quarters were provided in the form of three storey terraced flats. Each flat contained scullery, living room, and bedroom with a total floor area of 685 sq. ft., The water closets were communal and outside. Construction was of 16" cavity brickwork, 9" inner leaf, with engineering quality machine-made facings, having blue brick bands at window cill and head level. Floors between flats were of timber and stairs were built of concrete. The roofs were covered in blue slates. See Fig. 17.

Between 1892 and 1895 three blocks of flats were built at York, two in the Cavalry Barracks and one on the lane leading to the Ordnance Depot. These three blocks contained four flats each, whose accommodation was scullery, living room and bedroom.



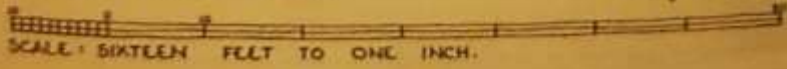
VIEW OF MAIN
ENTRANCE FACING
BOUNDARY WALL.

VIEW OF REAR
ELEVATION FROM
SPORTS FIELD
(W.C.'s ADDED 1908).



TYPICAL FLOOR PLAN.

685 ft. per flat.



THREE STOREY FLATS INFANTRY BARRACKS YORK 1877.

FIGURE 17.

Access was by one central front door and stairs to the first floor flats were internal. Construction was of 11" cavity brick walls with red machine-made facings. The roof was of blue slates and the floors throughout were of timber boards on joists. The total floor area of each flat was 400 sq. ft.

See fig. 18.

In 1895 a pair of semi-detached houses was built in the Infantry Barracks to house two Warrant Officers' families. Each had a living room, kitchen, and scullery on the ground floor, with water closet and coal-house off an open yard, and while one had three bedrooms the other had two. This arrangement was obtained by using one scullery as a division between the two yards. See fig. 19. The two-bedroom type had a floor area of 520 sq. ft., the three-bedroom type a floor area of 1,000 sq. ft., construction was of the usual machine-made red bricks with horizontal bands of blue brick. These houses were occupied by the Regimental Sergeant Majors, and represented a big step forward in the living standards of the married soldier. Their siting was better than the earlier 1877 flats the entrance and living room windows faced onto the playing fields instead of the boundary wall.

It was during 1895 that married quarters were divided into three groups, type "A" one-bedroom, type "B" two-bedrooms, and type "C" three-bedrooms. It should be noted that these Warrant Officers' Quarters were built so.

Another block of flats and maisonettes was built in 1903, on the Ordnance Depot Lane. On the ground floor were type "A" flats, with living room, bedroom, scullery and internal W.C., which was approached from the scullery via a vented lobby. The floor area of each flat was 350 sq. ft. On the first floor were maisonettes type "B" of 550 sq. ft. per quarter, and type "C" of 640 sq. ft. per quarter. The basic plan shape followed that of the ground floor flats, and additional bedrooms approached direct from the living room were placed in the roof space. Construction was of 14" machine-made red brick walls finished fair-faced internally and roofed in blue slates. Floors to bedrooms and living rooms were in timber while those to sculleries and W.C.'s were of concrete. The communal stairs were of stone with W. I. balustrading. See fig. 20.

Just before the first World War, four blocks of terrace houses were started on the camp at Strensall for 40 married families, they comprised

32 type "A" quarters of 500 sq. ft., with living room, bedroom, kitchen and a W.C., which was entered from an external lobby.

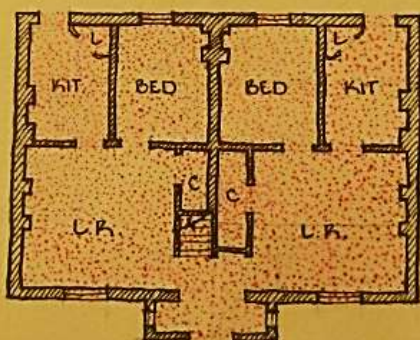
4 type "B" quarters of 600 sq. ft., with the extra bedroom built over the kitchen. These quarters were placed central in two of the blocks.

4 type "C" quarters of 750 sq. ft., with an entrance hall and passage to the kitchen which had a good sized larder and fuel store.

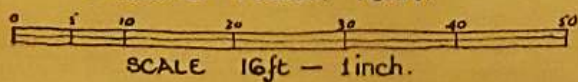
Construction of these blocks was of 11" cavity brickwork, plastered internally with timber floors and slate roofs. A novel feature was the window types, sliding vertically.



VIEW OF BLOCK IN CAVALRY BARRACKS



GROUND FLOOR PLAN.

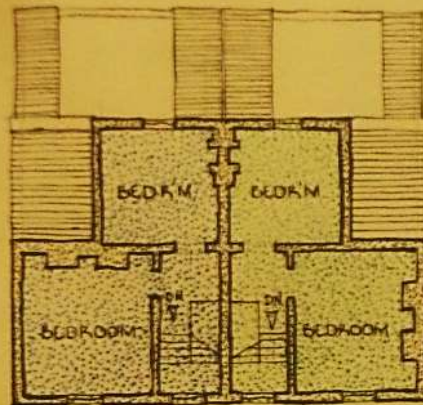


BLOCK OF FLATS CAVALRY BARRACKS.
AND ORDNANCE LANE YORK. TYPE A.
BUILT 1892-1895 408 SQ FT. (per flat).

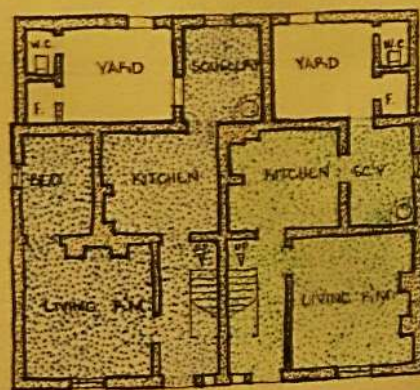
FIGURE 18.



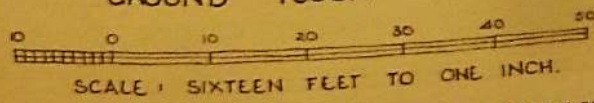
VIEW FROM PLAYING FIELD.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

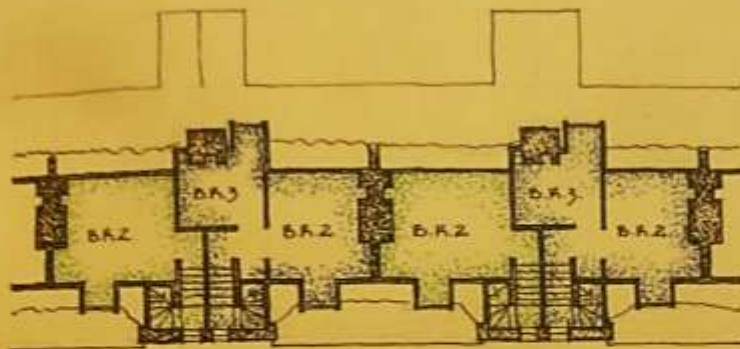


WARRANT OFFICERS' QUARTERS INFANTRY BARRACKS YORK.
 TYPE 'C' 1000 f.s. BUILT 1895. TYPE 'B' 820 f.s.

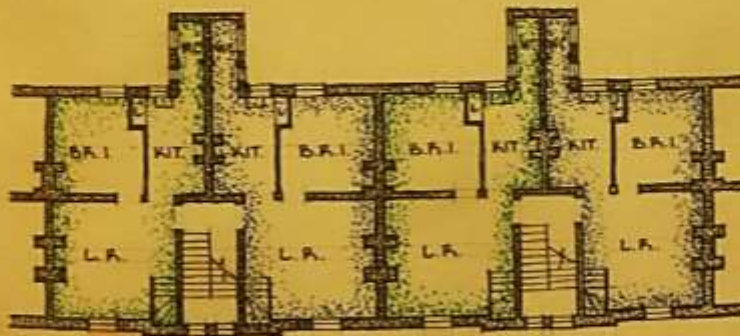
FIGURE 19.



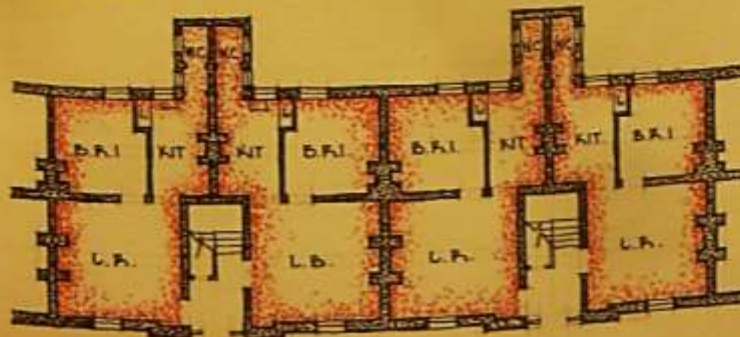
MAIN ENTRANCE.



ATTIC PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN.

TYPE 'A' 390 s/f.

TYPE B 590 s/f.

TYPE C 640 s/f.

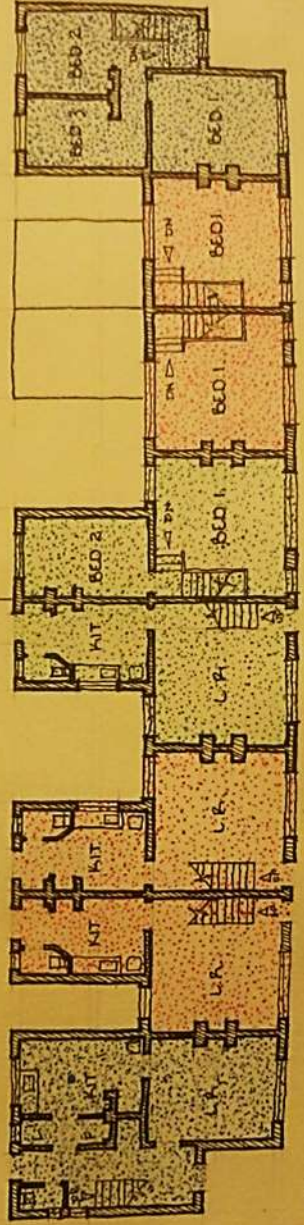
SCALE OF SIXTEEN FEET TO ONE INCH.

THREE STOREY MARRIED QUARTERS ORDNANCE LANE, YORK.

FIGURE 20.



FRONT ELEVATION.



GROUND FLOOR PLAN

TYPE 'A' 500 f.s.

MARRIED SOLDIER'S QUARTERS

FIRST FLOOR PLAN.

TYPE 'B' 600 f.s.

STRENSALL

BUILT 1914.

TYPE 'C' 750 f.s.

SCALE 1/8" = 1'-0"

FIGURE 21.

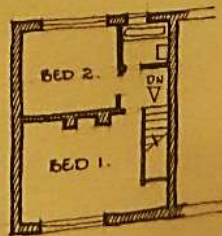
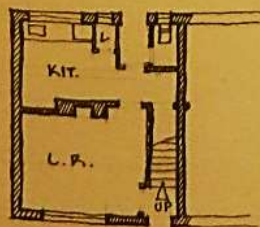
sliding horizontally and top hung, they were constructed of soft-wood, all with teak sills. See Fig. 21.

Ten years later in 1924 four blocks of married quarters were built adjacent to the Military Hospital in York. This small colony was known as Hospital Fields. There were two blocks of type "B" quarters and two pairs of semi-detached type "C" quarters for Warrant Officers. As mentioned earlier the period shortly after World War I saw a great economy drive on the armed services and these quarters were built during this period. The construction of these houses was of 11" cavity brickwork, with timber windows and asbestos-cement slate roofs.

The type "B" quarters had a bathroom upstairs whilst the living room, kitchen and W.C., were on the ground floor. The floor area of each quarter was 690 sq. ft. See Fig. 22.

The type "C" Warrant Officers' quarters had a living room, kitchen, scullery and W.C., on the ground floor with the bathroom upstairs. The floor area of each quarter was 1,050 sq. ft.

The next important stage in the development of married soldiers quarters was Moorland Fields in York, built in 1938. Eleven blocks of four terrace houses were built, again with bathroom upstairs and W.C., in the rear entrance porch downstairs. This small estate was a particularly pleasant advance on previous work, built with pleasant facing bricks, and good quality tiled roofs. Two houses in each block are capable of conversion from two to three bedrooms by taking over one bedroom from the neighbouring house. This necessitates bricking up one doorway and knocking out another, but, has the weakness of placing the additional bedroom over the living area of the adjacent house. See fig. The floor area of the standard (two-bedroom) type house is 685 sq. ft. See Fig. 23.



GROUND FLOOR PLAN

FIRST FLOOR PLAN

TYPE 'B' AREA 690 f.s. BUILT 1924.
MARRIED SOLDIERS' QUARTERS, HOSPITAL FIELDS, YORK.

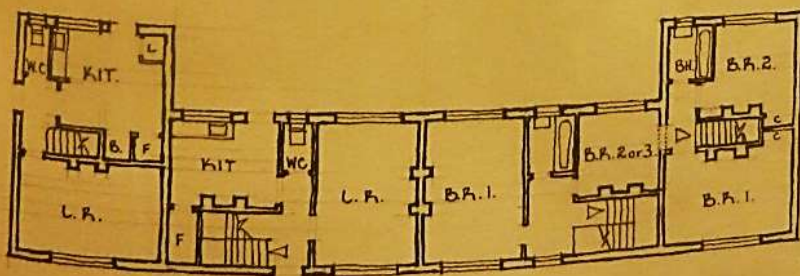
FIGURE 22.
28.

Broadway Grove is a post-war estate of Army housing in York, built during 1954. These houses follow very closely local Government Council Housing, and have no doubt been influenced very much by this type of work, which predominates at the moment in the domestic field. They are built semi-detached, of 1,020 sq. ft., having a living room with dining recess, kitchen, and spacious hall, three bedrooms and bathroom with W.C., In the outbuildings are W.C., fuel store (coal and coke) and a large general store. Construction externally is common bricks, colour washed, and a roof of red tiles. Internally, walls and ceilings are plastered, the ground floor is solid with quarry tiles in the kitchen and asphalt tiles in the living room and hall. The first floor is of timber on joists. See fig. 24.

MARRIED OFFICERS' QUARTERS.

The 1855 Report recommended that twelve Officers of each Regiment should be provided with married quarters. This recommendation was never carried into effect.

The first Officer's quarter built in York was the Commanding Officer's house for the Cavalry Barracks in 1861. This two-storey house with semi-basement had a floor area of 2,000 sq.ft. It was provided with two living rooms, two bedrooms and a dressing room as well as two W.C.'s. The semi-basement accommodated servants room, kitchen and scullery together with



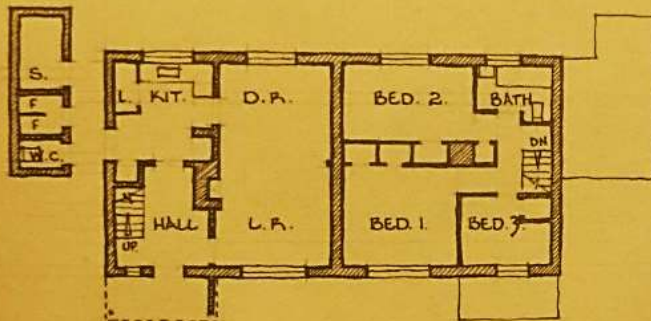
GROUND FLOOR PLAN. FIRST FLOOR PLAN.
 BLOCK OF FOUR TYPE 'B' QUARTERS (CONVERTIBLE)
 BUILT 1938 685 f.s. SCALE 1/6 ft - lin.
 MARRIED SOLDIERS QUARTERS MOORLAND FIELDS YORK

FIGURE 23.





GENERAL VIEW.



GROUND FLOOR PLAN. FIRST FLOOR PLAN.
SCALE: 1/8" = 1'-0"



VIEW FROM BROADWAY.

BROADWAY GROVE MARRIED SOLDIERS' QUARTERS.
BUILT 1954
1020 SQ. FT. PER HOUSE. INCLUDING OUTBUILDINGS.

FIGURE 24.

wine and beer cellars. The construction was of 14" facing bricks with a very low pitched slate roof. See fig. 25.

The scheme for the Officers' Mess of the Infantry Barracks to the 14th Regimental District showed a Commanding Officer's and a Quartermaster's married quarters. Both sets of accommodation were built under the same roof as the Mess, though entrances were discreetly tucked away from the main elevations. The Commanding Officer's quarter had a floor area of 2200 sq. ft., with two living rooms, two bedrooms, a study and other offices. The Quartermaster's accommodation was of 1,600 sq. ft., with one living room, two bedrooms, a dressing room and other offices. See figs. 26 & 27.

A general policy of the War Department in 1850 was the introduction of type plans for Commissioned Ranks in the following manner:-

- | | |
|-----------------|-----------------------------|
| Group I and II. | Generals and Full Colonels. |
| Group III. | Lieut. Colonels. |
| Group IV. | Majors. |
| Group V. | Captains and Subalterns. |

Though Group numbers were introduced for Commissioned Ranks accommodation, they were still only provided for the Commanding Officer and the Quartermaster. Lloyd Spencer illustrates a Group V terrace house dated 1905 having a floor area of 1550 sq. ft., and being provided with a bathroom as well as three bedrooms. See fig. 28.

Married soldiers had been provided with quarters at Strensall since 1914, but it was not until 1924 that Officers' houses were built. Accommodation was provided for seven married families.

A Group III quarter for the Commanding Officer of 1,221 sq. ft., having four bedrooms, dressing room, two living rooms and study as well as servants' rooms and store in the attic. See Fig. 29.

The Group IV quarters (two in number) were of 1,480 sq. ft., having one bedroom less and only one servant's room.

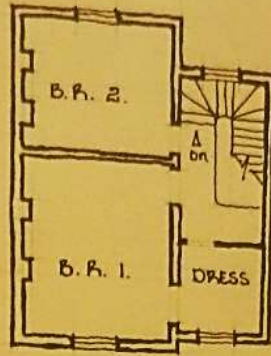
The Group V quarters (four in number) were of 1,400 sq. ft., and had three bedrooms, one servant's room but no garage. See Fig. 13.

After World War II with the recommencement of building programmes more Commissioned Officers' quarters were provided at York and Strensall. The first of these known as the "Harwell" Group VI type was semi detached and designed within a floor area of 1250 sq. ft., having four bedrooms, two living rooms, kitchen and store as well as two W.C.'s and bathroom. See fig. 30. These are now classified as Group V quarters.

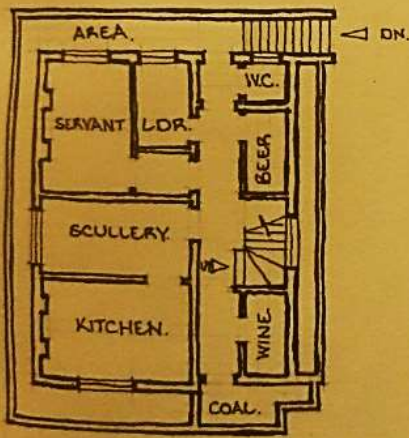
From approximately 1950 onwards all commissioned ranks new houses were built detached with the same basic design and having the following floor areas:-



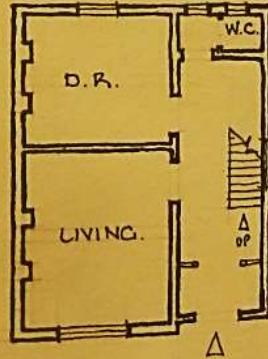
VIEW FROM GREEN.



SECOND FLOOR PLAN.



BASEMENT PLAN



GROUND FLOOR PLAN.

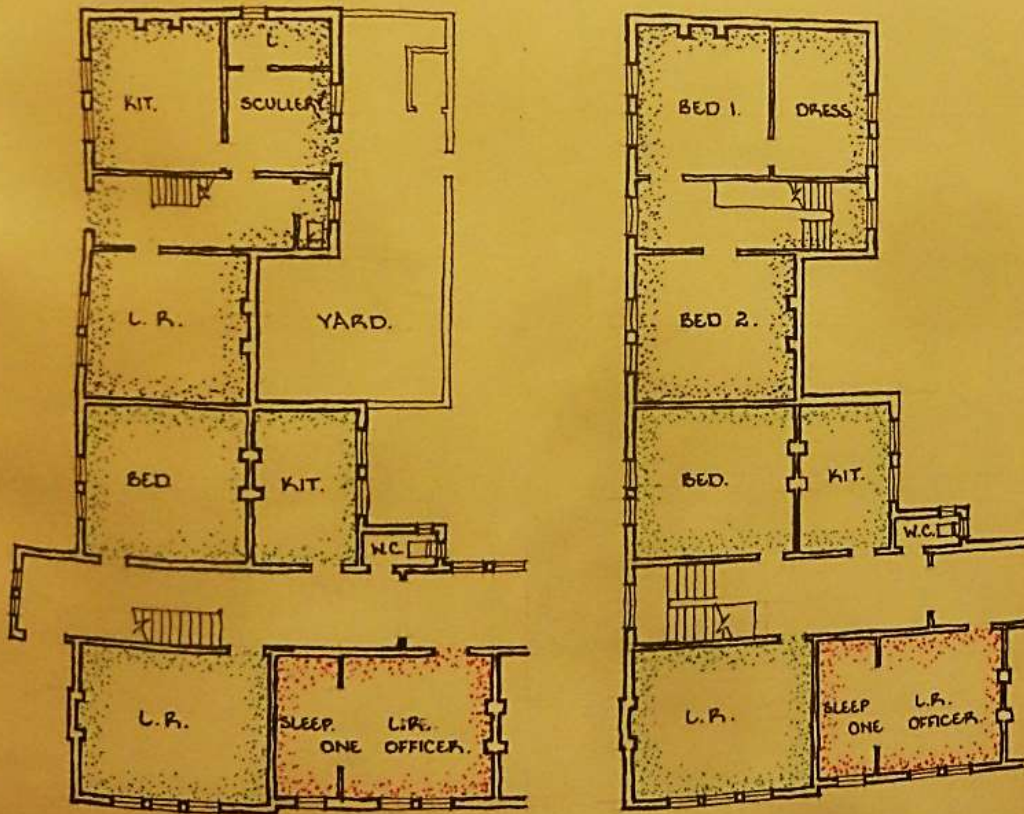
SCALE : 16 feet to 1 inch

COMMANDING OFFICER'S HOUSE
YORK CAVALRY BARRACKS.

BUILT 1861.
2000 ft.s.



FRONT VIEW FROM GREEN OF BATTALION OFFICERS QUARTERS. (MARRIED AND SINGLE).



GROUND FLOOR PLAN.

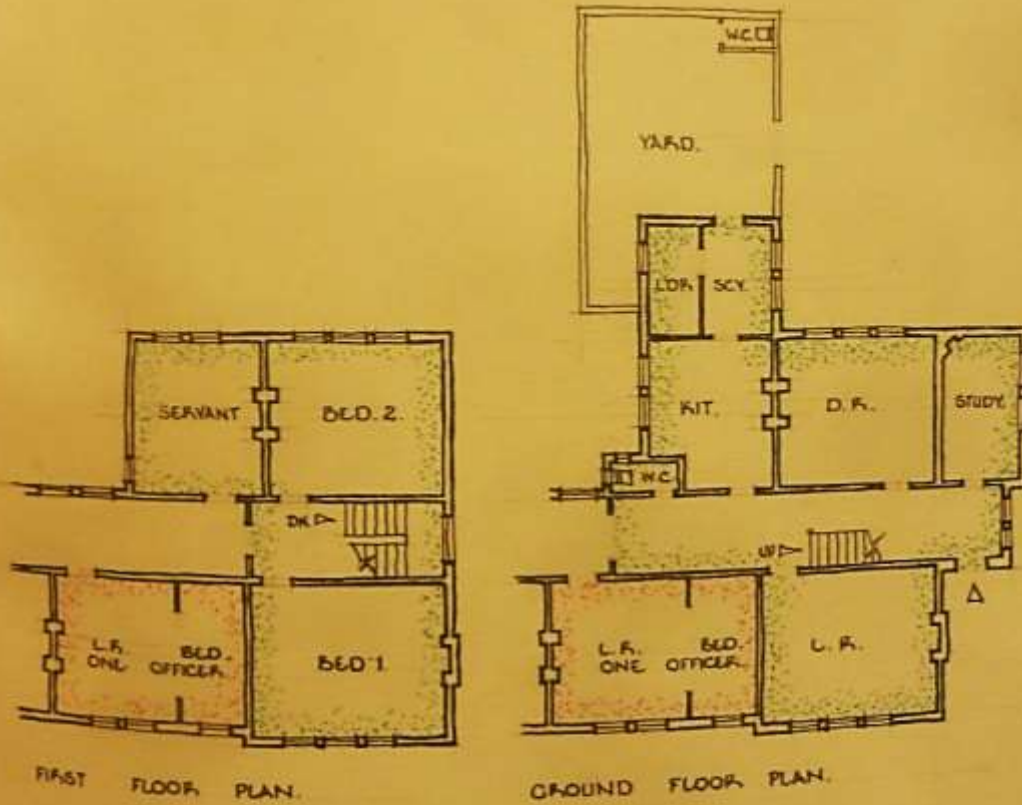
FIRST FLOOR PLAN.

OFFICERS' MESS INFANTRY BARRACKS YORK.
 PART PLAN SHOWING: FIELD OFFICERS (2) SINGLE 730 f.s.
 QUARTERMASTER (1) MARRIED 1600 f.s.
 SINGLE OFFICERS ROOM. 295 f.s.
 built 1877.

SCALE: 16 feet to 1 inch



GENERAL VIEW OF DEPOT OFFICERS' QUARTERS. (MARRIED AND SINGLE).



FIRST FLOOR PLAN.

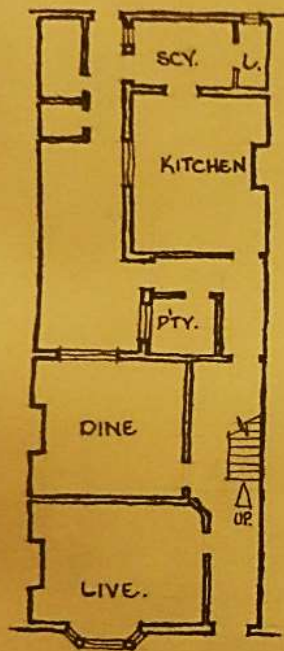
GROUND FLOOR PLAN.

OFFICERS' MESS INFANTRY BARRACKS YORK.

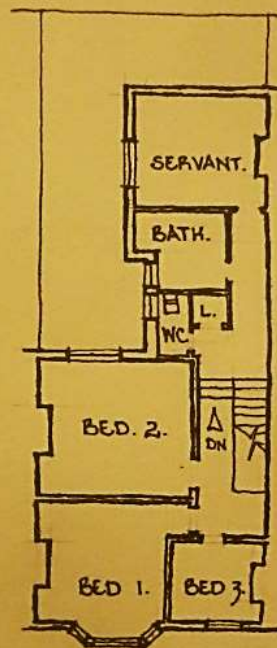
PART PLAN SHOWING - COMMANDING OFFICER (1) 2200 ft.s. married.
 SINGLE OFFICERS ROOMS 295 ft.s.

SCALE: 16 feet to 1 inch.

Built 1877.



GROUND FLOOR PLAN



FIRST FLOOR PLAN.

SCALE : 16 feet to 1 inch

MARRIED OFFICERS HOUSE GROUP V

1903.
1350 ft.s.

FIGURE 28



FROM GARDEN.



ATTIC PLAN.



GROUND FLOOR PLAN



FIRST FLOOR PLAN.

COMMANDING OFFICERS HOUSE GROUP III 1924.
 3,225 ft.s. including garage. SCALE $\frac{1}{500}$.
 STRENSALL CAMP. (NOW QUEEN ELIZABETH BARRACKS).

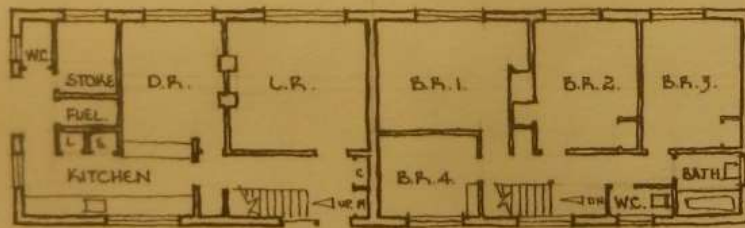
FIGURE 29.



SOUTH ASPECT TYPE



NORTH ASPECT TYPE.



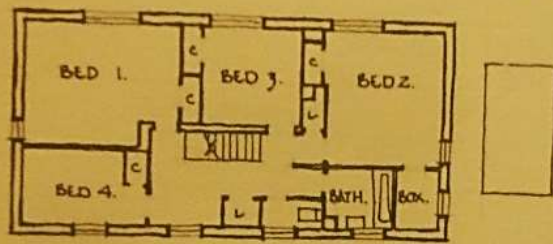
GROUND FLOOR PLAN FIRST FLOOR PLAN.

SCALE : 16 feet to 1 inch

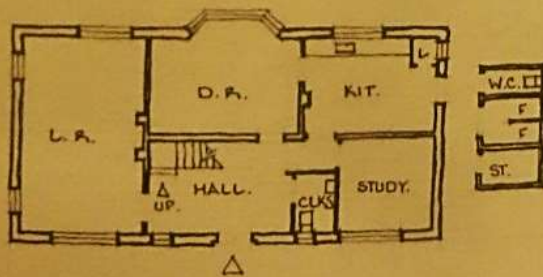
GROUP II OFFICERS HOUSE. (NORTH ASPECT) BUILT 1948.

BRENSALL. QUEEN ELIZABETH BARRACK 1290 ft.s.

FIGURE 30.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

SCALE : 16 feet to 1 inch.

GROUP III OFFICER'S HOUSE. (Lieut. Col.)

STRENSALL. B.L.T. 1953 1720 ft. 6.

FIGURE 31.

Group III	1,720 sq. ft.
Group IV	1,650 sq. ft.
Group V	1,470 sq. ft.

They all have four bedrooms, two living rooms and kitchen, the Group III have a study, while in Groups IV and V these are replaced by smaller utility rooms. See fig. 31.

At Strensall, close to the Queen Elizabeth Barracks, these three house types are being used to create a small village of officers' quarters, a unique feature in Army building work, brought about by the overcrowding of War Department land in York.

SUMMARY.

At the time of writing a Select Committee has published its Report on Estimates for Army Building Work. Though this Committee's main purpose was not to enquire into living conditions; whilst it met at York mention was made of the Cavalry Barracks^x there, and its inadequate accommodation.

The Horse has now disappeared from the Army scene, and these stables are now in use as stores and offices. The men however, still occupy the first floor as they did when Napoleon terrorized the Continent.

Since that day not only has the space per man been fixed by regulation at 600 cubic feet but the whole method of housing troops has changed. Many barracks are now built as small townships, with many grades and ranks enjoying a number of standards and variety of amenities all provided by the Army.

The technical corps have grown in numbers and their requirements have increased so much in recent years that a large proportion of building work must surely fall on housing these complex mechanical, electrical, and atomic units, plus their attendant offices, stores and staff.

Thus, there can be no direct comparison between the Barrack Office Establishment and the Directorate of Fortifications and Works. Comparison can be made though, between the Board of Ordnance, housing a soldier's family in a one roomed flat of 200 square feet and the accommodation of a Private's family in a 1,000 square feet semi detached house with its own garden. It may be that these changes reflect quite accurately the development in Working Class Domestic Architecture of Great Britain, but to determine this would be the subject of another Thesis.

^x Date of construction of 1861 Married Quarters given inaccurately as 1801. See page. 24.

Extract 1806 Enquiry.

List of Barracks ordered to be erected by Major General Oliver De Lancey, Barrack Master General to his Majesty's Forces.

CAVALRY BARRACKS

Places	Number of Troops at 58 men including Officers with accommodation for the Regimental Staff and the proper proportion of Horses in conformity to His Majesty's Regulations.	Places	Number of Troops
Sheffield	Three	Northampton	Two
Manchester	Six	✓ York	Four
Nottingham	Three	Edinburgh	Six
Birmingham	Three	Perth	Three
Coventry	Three	Hamilton	Three
Norwich	Four	Hastings	One
✓ Exeter	Three	Leicester	One
Totness	One	Arundel	One
Modbury	One	Hythe	One
Barnstable	One	Bristol	Three
Dorchester	Three	Wells	One
Taunton	One	Gloucester	Three
Bridport	One	Shrewsbury	Three
Weymouth	One	Winchester	Four
Southampton	One	Saxmundham	One
Christchurch	One	Cromer	One
Wareham	One	Lynn	One
Troubridge	One	Colchester	One
Brighton	Three	Chelmsford	One
Eastbourne	One	Beverley	One
Canterbury	Four	Scarborough	One
Deal	One	Lincoln	Three
✓ Hounslow	Five	Dumfries	One
Ipswich	Three	Dunbar	One

INFANTRY BARRACKS

Places	Number of Men.	Places	Number of Men
Deal	600	Dundee	400
Glasgow	1,200	Aberdeen	600
Ayr	400	Winchester (fitted for)	3,000

I do hereby certify, that Major General Oliver De Lancey, Barrack Master General to His Majesty's Forces, has received from time to time Orders from this office to erect Barracks at the aforementioned places for the number of Troops as specified at each place, and to provide all such accommodation as should be requisite, for the convenience and comfort of the Officers and Soldiers to be stationed therein, as per Plan and Documents in this Office approved and signed by the Secretary at War.

War Office,
23rd February, 1796.

(signed) M. LEWIS.

Barracks marked thus (✓) a Certificate for the Building etc., sent to the Auditors.
22nd January, 1798.

Extract 1806 Enquiry

Letter from Lieut. General Hewett, B.M.G., to the Commissioners of
Military Enquiry,
Barrack Office, 12th Nov, 1806.

Herewith I have the honour to transmit in compliance with your
precept of the 23rd ultimo, a Return "of all the Builders employed
by the Barrack Office, stating the "Buildings which each Builder
has erected;" to which is added some Remarks, to shew the state of
the Builders Accounts at the present time.

BARRACKS	NAMES OF BUILDERS.	ACCOUNTS.
	<u>EXTRACT OF ACCOUNTS.</u>	
YORK	Messrs. James Rusby, Thompson and Watson, John Atkinson, John Croft, E. Clark, Robt. Parkinson, Willm. Stavely, John Foster, J. Atkinson, Joseph Fell. Saml. Smith, Jonat Dorson and Harvey.	SETTLED

24th July, 1805. Barrack Office listed all barracks together with
rents and dates built and rental charged or ground purchased.

EXTRACT

RENTS

YORK.	Cavalry built in year	1794	Established A	£2: 3: 7.
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A. denotes built of Brick or Stone.

SOURCES OF INFORMATION

Acknowledgements are gratefully extended to the following, who have given their assistance and allowed documents and buildings to be inspected.

- The Officer Commanding, The Depot, West Yorkshire Regiment,
Imphal Barracks, York.
- The Officer Commanding, The Royal Corps of Signals,
Cavalry Barracks, York.
- The Officer Commanding, The Military Hospital, York.
- The Officer Commanding, The Queen Elizabeth Barracks,
R.O.Y.L.I., and Light Infantry Brigade Depot, Strensall.
- The Commander, The Royal Engineers, East and West Riding, York.
- The Reference Room Librarian,
York Public Library.
Derby Public Library.
-

The following books and papers have been consulted in the preparation of this thesis.

- Fourth Report of the Commissioners of Military Enquiry, 1806.
- Report from an Official Committee on "Barrack Accommodation for the Army" 1855.
- General Report of the Commission appointed for Improving the Sanitary conditions for Barracks and Hospitals. 1861.
- Third Report from the Select Committee on Estimates. Works and Buildings of the Service Departments (Army) 1955.
- Martial Annals of the City of York.
- Rev. Caesar Caine.
- History and Development of Modern Military Buildings.
- Lloyd Spencer.
- A Biographical Dictionary of English Architects 1660 - 1840.
- H. M. Colvin.
- Lord Cardwell at the War Office.
- Sir. Robert Biddulph.
- Old Cavalry Stations.
- B. G. Baker.
- Army Quarterly.
- R. E. Journal - March, 1945.
- The British Army.
- De Watteville.
- English Radicalism.
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- Various drawings at the G.H.Q., Office, York., together with books and papers at the York Public Library.
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