



Committee on Women in Industry
of the
Advisory Commission
of the
Council of National Defense.

MAKING THE UNIFORMS
FOR OUR NAVY

WOMEN IN WAR INDUSTRIES SERIES, No. 2.

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OF THE
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Clothing trade -

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HD 9940 (73/42)

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PREFACE

The present war has called for unprecedented production in military and naval supplies. The Navy was confronted at the outbreak of the war with the problem of clothing an enormously increased naval force on short notice. On the Provisions and Clothing Depot of the Brooklyn Navy Yard fell the weight of this new responsibility. Through the foresight of the Officer-in-Charge, the Depot was well stocked with the materials necessary for the uniforms, but the industrial problem was a more serious one. For the Brooklyn Naval Provisions and Clothing Depot depended on outside "pieceworkers," *i. e.*, home workers and small shop owners to make up the materials into uniforms when they had been cut in the Depot.

This report which was made by the Committee on Women in Industry describes the methods of production during the first year of the war; the gradual evolution of the policy encouraging direct dealing with the manufacturers; and the effort to bring the production of uniforms into establishments where the conditions of employment can be controlled.

The importance of this policy is apparent. The need for it is described in Chapter II on the Home Work System of Production for the Provisions and Clothing Depot. This investigation and the preliminary report was made by Mrs. Clara M. Tead of the New York State Committee on Women in Industry. The investigation extended over four weeks from October 15 to November 10, 1917. This Committee was aided in making the study by the co-operation of the State Department of Labor and by the Standing Committee on Industry of the Mayor's Committee of Women on National Defense.

The development of the new policy is described in Chapter I and the conditions of production at the beginning of the second year of the war are described in Chapter III by May Allinson, Executive Secretary of the Committee on Women in Industry, who also prepared the report for publication.

Visits were made to the Provisions and Clothing Depot in Brooklyn and conferences held with the Officers in Charge in April, June and August, 1918, and two days in June were spent with the

Depot Inspector visiting the shops of piece workers and manufacturers who were making naval uniforms.

This report of the conditions and methods of Making the Uniforms of our Navy is published with the approval and through the courtesy of the Navy Department.

The Committee has met throughout the investigation with the most cordial co-operation from the officials of the Navy Department who have uniformly offered every opportunity for inspection, observation and the collection of the data presented. The following extract from a letter from the Provisions and Clothing Depot expresses the attitude shown by the Department:

"The Officer-in-Charge wishes to record his appreciation of the work that has been done by the Committee on Women in Industry of the Advisory Commission of the Council of National Defense in investigating the production of uniforms for enlisted men of the Navy. The preparation of this report has required an infinite amount of painstaking investigation which has been most accurately and thoroughly done."

The Committee is gratified to learn that the report has proven of value to the officials immediately concerned with the production problems.

FLORENCE J. HARRIMAN, *Chairman,*
Committee on Women in Industry.

September, 1918.

MAKING THE UNIFORMS FOR OUR NAVY.

Recommendations.

One year's experience shows conclusively that the supervision of federal contracts should rest with the branch of the federal government which lets the contract. The department which is responsible for securing an acceptable product, must be in a position to insist on conditions of employment which will make these requirements possible.

In the opinion of the Committee on Women in Industry of the Council of National Defense and as a result of this detailed study of the methods of manufacture:

The Navy Department should assume responsibility for conditions of employment in the factories making naval uniforms and for the supervision and inspection of the plants.

This should be done not only to promote prompt delivery of acceptable product but in the interests of the workers themselves upon whom the Navy depends for its production, and in the interests of the enlisted men who wear the uniforms.

In view of the facts brought out in this report the Committee on Women in Industry makes the following specific recommendations:

1. The Navy Department should give authority to the Bureau of Supplies and Accounts
 - (a) to supervise conditions of work in the manufacture of navy clothing by private firms and factories, and
 - (b) to establish standards of employment as to wages, hours and physical conditions as has already been done by the industrial service sections in some of the other branches of the Government with great benefit to output;
2. The Navy Department should discontinue the giving out of work to be done in the homes as soon as practicable because of the waste of time and services and the dangers to health;
3. The contracts should be awarded only to manufacturers who can prove their ability to make the navy uniforms in accordance with the requirements of the Provisions and Clothing Depot and with the terms of the contract;

4. Naval inspectors should be stationed in the uniform factories as they are in the munitions and airplane factories to supervise production and conditions of employment.

5. Women agents should be appointed

(a) to work out the best methods of employing and developing the labor force of women workers, training them for and directing them into the specific occupations for which they are best fitted;

(b) to insure for them physical environment, conditions of employment and protection of health which will conduce to their highest productivity.

MAKING THE UNIFORMS FOR OUR NAVY.

CHAPTER I.

INTRODUCTORY.

Where the Uniforms are Made.

The uniforms of the whole United States Navy are made in only two centers, Brooklyn, New York and vicinity, and Charleston, South Carolina. The strength of the Navy, including marines and reserves, has long since passed the 500,000 mark. The Bureau of Supplies and Accounts of the Navy must, therefore, allow for a larger number in estimating the clothing supply, as the number is increasing all the time. Each sailor, when he enters the service of the Navy, is equipped with four pairs of trousers and three middies of white cotton; two pairs of trousers and two middies of blue flannel or serge; one overcoat; three white cotton hats and one blue flannel cap which he pays for out of his wages.

The rapid increase in the size of the Navy called for unprecedented supplies of clothing to outfit the new men. The new demands for replacement of garments worn are also continually increasing in proportion to the men in the service.

The following table shows the tremendous increase in production of naval uniforms during the year ending June 30, 1918 over the year ending June 30, 1917, and gives some conception of the enormous problems confronting the Bureau of Supplies and Accounts in the Navy Department.

TABLE 1 SHOWING THE INCREASE IN PRODUCTION OF NAVAL GARMENTS UNDER THE PROVISIONS AND CLOTHING DEPOT IN BROOKLYN DURING THE YEARS 1917 AND 1918.

GARMENTS PRODUCED	NUMBER GARMENTS PRODUCED DURING THE		
	Fiscal Year Ending June 30, 1917	Fiscal Year Ending June 30, 1918	Percentage of Increase
Blue Trousers.....	116,615	1,809,730	1,451.9
Blue Overshirts.....	134,276	1,330,111	896.5
Blue Undress Jumpers.....	23,136	192,749	733.1
Overcoats—Sailors.....	22,698	680,155	2,896.5
Chief Petty Officers Shirts.....	18,557	130,523	603.3
Sailors Cloth Caps.....	98,870	546,360	452.6
White Trousers.....	12,109	1,189,062	9,719.6
White Undress Jumpers.....	245,931	978,581	297.9
White Hats.....	436,260	1,295,802	197.2
Dungaree Trousers.....	.....	208,289	.....
Dungaree Jumpers.....	.....	205,187	.....
Total.....	1,108,452	8,566,549	672.9

The production of blue serge trousers increased 1,451 per cent; of sailors' overcoats, 2,896 per cent. and of white trousers, 9,719 per cent. The supply of woolen and white cotton garments as a whole was increased 672.9 per cent. The Provisions and Clothing Depot in Brooklyn was confronted with the responsibility of finding manufacturers who could meet these new demands.

All of the blue uniforms, *i. e.*, the trousers, overshirts, undress, jumpers, overcoats, petty officers' suits, a large part of the white cotton uniforms and all of the sailors' blue caps and white hats are made in Brooklyn and vicinity. White cotton uniforms and dungaree (blue cotton) uniforms for machinists and for gunners' mates on the ships are also made in Charleston, South Carolina.

Systems of Production.

Two quite different systems of manufacture prevail:

1. The Brooklyn Clothing and Provisions Depot's system of distributing the work from a central depot to home workers, piece workers and contractors to be made up into garments;
2. The Charleston (South Carolina) system of complete production under the roof of a Government-owned factory.

The Brooklyn Provisions and Clothing Depot.

The Home Work System. The Brooklyn Naval Clothing Depot dates back to 1879 and still retains the old out-work system of production which is also found in the old Quartermaster's Depots of the Army in Philadelphia and in Jeffersonville, Indiana.

Up to the beginning of 1918, the Brooklyn Clothing Depot was housed in one of the old buildings of the Brooklyn Navy Yard. The new production demands upon the depot and the need of water front for ship building resulted in the removal of the depot outside the Yard into a six-story building leased from the American Can Company. The same processes of manufacture were retained by the depot on a much larger scale.

All materials used in the uniforms made for the Brooklyn Clothing Depot are bought by the Depot, stored in great store-rooms; inspected; the flannels and serges steamed and sponged to avoid shrinkage; cut into garments; done up in bundles and given out to home workers, pieceworkers and to large contractors who have bid for the garments in competition to be made into garments

outside the Depot. The garments, when completed, are returned to the Depot, inspected and approved by depot inspectors, baled and packed up and sent to their destination. This system insures a standard material and a high grade of product since the Depot buys and inspects all the material which goes into the uniform and passes upon all uniforms received and accepted for the Navy.

While all the uniforms are made outside the Brooklyn Depot, several stages of production are discovered. The home work system secured a strong foothold at the time of the Spanish-American War because it brought a sudden and unforeseen demand for sailors' uniforms which was met by large numbers of women living in the vicinity of the Brooklyn Navy Yard who volunteered to take the work home, make the garments and return them to the Depot when completed. It became customary to let out work to the wives and other dependents of men who had served in the Navy or the United States Government in some capacity. The practice of "home finishing" on piece rates set by the Depot has continued in the Brooklyn Clothing Depot since that time but recently on a decreasing scale, as improved machinery and methods make it uneconomical.

Some of the more enterprising home workers gradually developed shops in their home and took on several workers. Some shops grew even larger and developed into small factories and some of these manufacturers even came to own several factories. One manufacturer says he began 23 years ago with three machines in one corner of the first floor of his four-story factory. He now owns eight small factories, making naval clothing on a piece work basis.

The Contract System of Production. In May, 1918, a new policy of competitive bidding for making the naval garments in large lots was inaugurated by the Bureau of Supplies and Accounts of the Navy. This new plan was a part of the general policy of the Navy in encouraging direct dealing with manufacturers and dealers. The large clothing manufacturers are finding their regular market cut off by the war and can afford to bid on large amounts at a comparatively small profit. Indeed, the competition was so keen that the prices were shaded to the limit—so much so that when these firms begun actually to make up the samples they complained that they could not follow the specifications and requirements maintained by the Provisions and Clothing Depot.

Some of the old-time piece work manufacturers appreciated that this new method of large contracts, if continued, would soon

take all the work out of their hands and went in a delegation to Washington for a hearing before the Bureau of Supplies and Accounts. They were assured that those who had been working on naval garments before the war would be kept at capacity. Some of these firms have made naval uniforms for 20 years or more, have employees who have worked 15 or 20 years on naval uniforms and do a very high grade of work. Some pay higher salaries, maintain better working conditions and do higher grade work than the firms which were able to underbid them.

The pieceworkers who had been put on the rolls during the first year of the war, however, were ordered to be dropped in June, 1918, in the belief that these large contractors together with the old time pieceworkers could produce the Navy's uniforms.

But this admirable plan of concentrating the manufacture of naval uniforms in a comparatively few large establishments under factory conditions and state supervision has received a decided check from these same firms, who, six weeks after the award of the bids were not able to organize their factories properly for Navy work or to meet within 50 per cent. the output they had guaranteed in their bids. Nor have they turned in satisfactory work although some of them are among the best known garment makers throughout the country. In one case, 2,000 out of a delivery of 2,500 garments were rejected. Every garment rejected requires a reinspection when it is again submitted which doubles the cost of inspection and causes great delay in putting the clothing into use.

The Officer-in-Charge says the work of the old pieceworkers has been far superior to the work of the contractors,—it seldom being necessary to reject any of their work. These difficulties with the contractors are due to several causes: (1) The Navy demands a high standard of workmanship which the workers who have not made the uniforms before cannot immediately meet; (2) There is a great deal of special work, such as eyelets, taped and starred collars and double rows of stitching which cannot be done on double-needle machines and special methods of button-holing and button-sewing; (3) The employers have bid so low that they speed up their employees and attempt to resort to short cuts in order to make a small profit and the consequence is poor work which the Navy will not accept; (4) The workers in the trade are restless and are demanding increases in pay on which the employers did not count in naming their prices.

But, whatever the cause, the fact remains that the Navy has

been delayed in securing the necessary supply of clothing by the difficulties of these contractors in meeting the terms of their contracts. The Officer-in-Charge of the Depot has therefore recommended, in view of the fact that the contractors are not living up to the terms of their contracts that all the pieceworkers who were dropped from the rolls in June because they had not been employed before the outbreak of war, should be reinstated which will probably be granted.

The possibility of a self-contained Government-owned factory such as in Charleston has also been under consideration. The Officer-in-Charge, however, estimates that such a factory would require more than 6,000 machines to handle the production and believes that suitable space, equipment for the factory and an efficient working force could not be secured in less than 18 months. He urges that the time and energy of the Provisions and Clothing Depot should not be required for such a big undertaking under the present pressure of the war demands.

The Charleston Government-Owned Factories.

About four years ago a small clothing factory was established in the Navy Yard at Charleston, South Carolina, as an experiment in making the uniforms in a Government-owned factory. The product was confined to cotton garments. When war was declared, the Charleston factory was designated to make all the white cotton uniforms and blue cotton dungaree suits worn by mechanics and enlisted men. The small factory expanded into three buildings and the number of employees increased from 614 in May, 1917 to 1,142 in May, 1918, but has been able to meet only a small part of the demands for cotton uniforms. Bulletin No. 3 of this series describes the employment of women in the Clothing Factories of the Charleston Navy Yard.

CHAPTER II.

THE HOME WORK SYSTEM OF PRODUCTION FOR THE PROVISIONS AND CLOTHING DEPOT IN BROOKLYN DURING THE FIRST YEAR OF THE WAR.*

The manufacture of navy blue serge and flannel blouses and trousers, petty officers' shirts, overcoats, white working jumpers, trousers, caps and hats for the Brooklyn Provision and Clothing Depot may be roughly divided into two parts: the preparation of the material and cutting of the garments in the Clothing Depot, and the finishing of the garments outside the Depot by pieceworkers who take the garments to their homes, shops or factories and make them up at a definite piece rate set by the Government.

Processes of Manufacture in the Clothing Depot Work Rooms.

Only men workers are employed on the processes carried on in the Clothing Depot work rooms. They are engaged in the following processes:

Examining. All new material is examined for imperfections before it is cut. It is run over rollers by two hand-cranked machines. One man stands under the frame and behind the cloth and looks through it toward the light. Another looks at the other side with the light on the cloth. In up-to-date commercial factories, these examining rollers are driven by power.

Sponging, shrinking and pressing the material. All serge for uniforms is run over hot steaming rollers, where the cloth is steamed, shrunk and pressed.

Cutting. Long tables extend the width of a huge cutting room. The material is spread out on these tables in many thicknesses both by hand and by machine spreaders where it is then cut by electric cutters. The serge cloth can be cut 30 to 40 thicknesses at one time.

*This investigation was made by Mrs. Clara M. Tead of the New York State Committee on Women in Industry. One hundred nineteen visits were made to the homes and shops of workers on naval uniforms during October and November, 1917, as follows: Industrial home workers, 67; home shops, 13; piece workers, 21; home workers for contractors, 9; sub-contractors, 8; home workers for sub-contractors, 1.

Bundling. The pieces of the garments of similar material and color are bundled up, ready to be sent out to home workers or contractors for finishing. Bundles of cut garments and supplies used in finishing, such as thread, buttons, etc., are given to home workers and contractors. Records are kept of amounts taken out, rates and date when garments are expected to be returned in finished condition.

Inspection of finished garments. Each garment returned by home workers or contractors for finishing, is inspected in the Depot workrooms. If any of the work is poor, the garment is returned to the finisher, who is required to do the work over until it is satisfactory to the inspector. In case part of a garment is spoiled (if, for instance, a sleeve has been cut accidentally with scissors), a new part must be bought by the finisher at cost and the garment remade.

If the inspector finds that the number of finished garments returned does not correspond with the number given out, a charge is made against the finisher for each lost garment, according to the net cost of the garment to the Navy Department.

Outside the Provisions and Clothing Depot.

The finishing of garments cut in the Depot work-rooms has until June, 1918 been done largely by "pieceworkers" who might be "bundle women" working in their homes, home shop owners, or small manufacturers.

Civil Service Regulations. The bundle women and home shop owners are selected and employed under Civil Service as "seamstresses," and must meet the requirements which provide: 1. That the worker be a citizen of the United States; 2. Eighteen years of age or over; 3. That she present a health certificate from her own doctor, which costs \$1.00; 4. That she make her application under oath and file with the Labor Board, vouchers giving acceptable evidence of her good character, training and previous experience as a worker; 5. That she give the names and addresses of five persons in the United States who are competent to judge of her fitness for the work.

Applicants are then rated quarterly by the Civil Service Commission and those receiving 70 per cent. or more are eligible for appointment. Appointments are made according to percentage ratings. Because of the Civil Service requirements outlined above, the group of home finishers on the Navy Yard payroll is a picked group of

responsible, capable women workers who learn of the work through friends already employed. The Paymaster says the women who do home finishing directly for the Depot take a personal pride and interest in their work and in the fact that they are employees of the United States Government which make for a high grade of workmanship and the prompt delivery of finished garments.

Regulations of Home Work. The name and address of each home worker is filed with the New York State Department of Labor and the homes of finishers in tenements are inspected under the provisions of the Division of Home Work Inspection of the State Department of Labor, which require that tenements in which home work is done must be licensed by the Department of Labor. Although a dwelling house in which home work is done does not require a license, the finishers in one or two-family houses were visited by the home work inspectors of the Department of Labor, as far as it was possible, during the latter part of 1917 because of certain current rumors that home work was being done on naval garments under poor conditions. A home finisher for the Navy Yard may sublet to other workers who are not on the Navy Yard list the starring and taping of collars and may also employ other workers in her home which then becomes a "home shop."

The Bundle Women.

The individual home workers or bundle women are in the direct employ of the Navy Yard and are paid standard piece rates set by the Government for starring and taping the navy blue collars, which are most commonly done by the individual home workers, and for making the blue serge overshirts and the white cotton jumpers.

Through the co-operation of the New York State Department of Labor, a list was secured of the names and addresses of 102 individual home workers, of which 67 were visited. Twenty-five of the 67 home workers had been working for more than 10 years, and 30 since war was declared. Three times a week these bundle women receive bundles of cut garments of various kinds from the Clothing Depot. "Blue work" is distributed on Mondays, Wednesdays and Fridays and "white work" on Tuesdays, Thursdays and Saturdays.

Method of Work. The work on the blue blouses is sectionalized and done by three different women. The collars are stitched and the braid put on by one group of women called tape hands. They are returned to the Depot and sent out again to women called star hands, who embroider two stars on each collar. These women

again return them to the Depot and they are sent, with the material for the blouses, to women home workers, to home shops, or to contractors who stitch the garments and sew on the completed collar. As a rule, the completed blouse is sent by these last women to a shop where buttonholes and eyelets are made by machine before they are returned to the Depot. The four parties to a blouse may live literally miles apart.

Of 45 women found working on navy blue overshirts, 19 were taping, 18 were starring, and eight were stitching blouses. All of the eight stitchers were sending the garments out to shops to have the buttonholes and eyelets made. Eighteen women were found making white jumpers, and, of these, four were sending the blouses out to have the eyelets made by machine. The remaining 14 women were making the four eyelets in each jumper by hand.

Type of Workers. Fifty-six of the 67 workers were Americans, three colored, one Danish, one English, one German, two Irish, one Italian, and two not specified.

The families in whose homes this work for the Navy is done, are, for the most part, American families accustomed to a fairly high standard of living. The majority of the women would not think of taking ordinary finishing from a garment factory into their homes, or of going into a factory to work. The Navy work is considered a pleasant, superior kind of occupation. The fact that in many instances the work has been going on in the families for years and, that, as several women expressed it, "we feel that we are doing something for our country," relieves it of all the stigma usually attached to home work. The starring, since it is hand work, can be done in any part of the house, enabling the worker to entertain guests and embroider at the same time and therefore is very much in demand.

Number Working in a Family. In many cases the family consists of two or three sisters living together; of a mother and a grown daughter, or of a widow or unmarried woman living alone. In 28 of the 67 families visited, the entire family earnings were obtained from the Navy work. In 40 families only one person was working, in 19 families two persons were working, and in three families three people were working.

The Homes. Twenty-seven of the families lived in tenements, *i. e.*, houses accommodating three or more families. The remaining 40 lived in one or two-family houses, many of them very attractive and well furnished.

In 56 houses the home conditions were rated as good; in five as fair; three were classed as poor; and entrance was refused in the three other cases.

Most of the women do their sewing in the dining room and kitchen although a few have sewing rooms which they use for no other purpose. Nineteen used the dining rooms; 16 the kitchens and 12 the living-rooms as work-rooms. Eight had sewing rooms and five worked in bedrooms. In most cases, the work is carefully protected, the tables on which it is piled and the floor under the machines being covered with oil cloth or paper. In a few instances, the work was found piled on beds or couches not very attractive in appearance.

Inspection. The 27 tenements in which the work was done at the time of the investigation were licensed. In 14 cases, however, where the women took on the work after the declaration of war in April, the date of granting the license by the Department of Labor was from one to three months later than the date when the women began work. With the exception of four or five houses, all the tenements had been inspected by the Division of Home Work Inspection of the Labor Department within the three months preceding the study. The others were inspected in May.

Hours. Before the war, home finishers for the Navy Yard were requested by officials of the Clothing Depot not to work more than eight hours per day on naval garments. With the declaration of war this ruling has been suspended and the home-workers have been asked to do as much work as possible.

The actual working hours of the bundle women vary greatly. The women keep no record and have a very vague idea as to the length of time spent in making a given amount. Their time is broken by household duties and many are afraid to make definite statements which might cause them trouble.

Twenty-nine of the 67 women said that they were working eight hours or less per day and 25 that they worked from nine to 14 hours. Thirty families estimated that they worked less than 50 hours per week and 23 that their weekly hours ranged from 50 to 80.

Night Work. No new work can be obtained from the Depot until the completed work is turned in. Thus, if a woman does not finish her taping by Wednesday, she cannot take it in and get new work until Friday—the next day for distribution of blue work. As a result, she must either let Thursday pass with no work to do

or else she must work extra time on Tuesday to have it ready by Wednesday. The latter is the course generally followed. Many women stated that they worked until late at night the day before the work was to be turned in.

Wages. Piece rates paid to home finishers are fixed by the Provision and Clothing Depot of the Brooklyn Navy Yard and submitted for approval to the Navy Department at Washington. The rates paid in November, 1917, were as follows: White jumpers—20 in bundle—finishing and stitching—\$5.00; navy blue collars—80 in bundle—taping and starring, \$4.00 (2½ cents per star).

Weekly earnings are difficult to get and the following data are offered as indications of amounts earned, rather than as actual facts.

TABLE 2 SHOWING NUMBER OF FAMILIES IN WHICH WEEKLY PER CAPITA EARNINGS WERE SPECIFIED.

WEEKLY EARNINGS	NUMBER OF WOMEN EMPLOYED ON					Total
	Taping	Starring	Blue Over-shirts	White Jumpers	Jumpers, Except Eyelets	
Less than \$5.....	...	2	1	2	...	5
\$ 5 and less than \$ 8	8	2	...	3	...	13
\$ 8 and less than \$10	...	1	...	1	2	4
\$10 and less than \$12	2	10	2	1	...	15
\$12 and less than \$14	...	...	...	...	2	2
\$14 and less than \$16	3	...	1	3	2	9
\$16 and less than \$18	1	...	3	...	...	4
\$18 and less than \$20	...	...	1	...	...	1
\$20 and more.....	3	...	...	1	1	5
Total.....	17	15	8	11	7	58*

*No information was received from nine families.

Two-thirds of these home workers seemed to be earning less than \$12.00 a week. These figures were computed by multiplying the rate paid per bundle by the number of bundles which the worker said she finished per week and dividing by the number of workers in the family.

Charges. The weekly earnings quoted above do not represent actual income derived from home work since charges incidental to the work must be deducted.

Transportation is an important charge on home work. In some cases 10 cents carfare once or twice a week is the only expense in-

curred, but if the bundles are sent to and from the Depot by expressmen or errand boy, the worker is charged from 20 cents to 50 cents per bundle, according to size of bundle and distance.

Eyelets and buttonholes when sent out to a contractor to be made, cost 25 cents a bundle for eyelets in white jumpers and 54 cents a bundle for eyelets and buttonholes in navy blue blouses.

Installation of machines is another heavy expenditure. Several women have bought foot machines, costing from \$35 to \$40 and, in several cases, power machines have been installed which cost from \$49 to \$68 each. Machines are usually bought on the installment plan. The cost of the upkeep of machines varies according to the power used. The upkeep of foot machines is slight—oil, needles, etc.,—but upkeep of power machines, including cost of electricity, is considerable. Rent of machines may figure in the charges on the worker. Foot machines are in some cases rented at the rate of \$2.00 per month.

Charges for spoiled garments sometimes reduce the profits. If a garment is spoiled or lost the worker is obliged to pay for the material to replace the part spoiled or for an entire new garment and to make it up.

The Home Shops.

The home shop has developed as an outgrowth of the home finishing scheme just described. A home finisher was assisted by her daughters when they grew up; a neighbor desiring work was invited to join the group; one or two relatives came to work; sewing machines were added to the family's equipment and the work became better organized, with the original home finisher as the employer and forelady.

During the Spanish-American War several home shops sprang into being to meet the sudden demand for naval clothing.

Six of the 15 home shops visited have been in existence for several years and nine had been started as shops since April 1, 1917. Each finisher was asked personally and by letter to guarantee as large a weekly output as possible to be delivered on specified days. Those who already had small home shops were urged to install new machinery, hire more workers and expand as much and as quickly as possible. As a result, summer kitchens, wash houses and basements were pressed into use; foot machines and power machines were set up in dining-rooms, kitchens and wherever space allowed.

Location. The home shops show a greater variety in the type

of work room provided than was discovered among individual home workers. Those visited were located as follows:

Location	Number
Kitchen.....	2
Dining Room.....	2
Other room in house.....	2
Basement on ground floor.....	2
Wash house converted.....	1
Summer kitchen converted.....	1
Room added to house for purpose.....	2
Store.....	1
Old factory extension.....	1
Upper floor rented in adjoining house.....	1
Total.....	15

Kinds of Garments Made and Amounts of Output. Home shops do the same kind of work as the individual bundle women and the piecework manufacturers. The output varies greatly with size of shops, efficiency of management, and number of employees. Thirteen of the 15 home shops visited were producing naval garments as shown in the following table:

TABLE 3 SHOWING PRODUCT, NUMBER OF EMPLOYEES, AND WEEKLY OUTPUT OF 13 HOME SHOPS.

Article Produced	Shops	Number of Employees in Each Shop	Weekly Output Number
White Duck Blouses	A	3	240
	B	3	120
	C	2	180
	D	8	400
	E	7	360
	F	8	600
Navy Blue Serge Trousers	A	20	1,200
	B	36	1,500
	C	43	1,600
*Navy Blue Overshirts or Blouses without Collars	A	3	180
	B	10	{ 300 blouses 200 collars
	C	2	80
	D	8	300

*In shops C and D taping, eyelets and buttonholes were sometimes sent out.

Amounts of Pay. While uniform rates are paid by the Clothing Depot of the Navy Yard to all home shop employers the wages paid by these employers to their own employees vary from shop to shop for each process. Some shops pay on a week work basis, some on a piece rate basis and some shops have both week workers and piece workers.

Equipment. In the small shops, employing two or three workers, foot machines are used for the stitching. Eyelets and buttonholes are often sent out to a contractor who does that work exclusively. Rates paid him are as follows: Buttonholes and eyelets, four of each in each navy blue blouse, 54 cents for a bundle of 20 blouses; eyelets, four in each white blouse, 25 cents for 20 blouses.

In the very small shops the crow-tacking is frequently done by hand by a finisher. The larger home shops have installed power-machines for stitching and in many instances special machines for making eyelets, buttonholes, crow-tacking and button-sewing. For example, one shop employing eight persons had invested in machine equipment as follows:*

Five power machines including motors.....	\$400.00
One eyelet machine.....	120.00
One buttonhole machine.....	165.00
One crow-tacking machine.....	200.00

The expansion in this shop has been taking place during the last seven years. The machines are placed in the kitchen and in an adjoining room. The owner said that it costs her about \$12.00 per month for power. Buttons are still sewed on by a woman at 15 cents per hour.

Transportation. Seven of the 15 shops studied have their cut material brought to them from the Depot, by an expressman who has regular routes among the bundle women and home shops. Four of the larger shops own automobiles and do their own transportation. The other four send boys for bundles or go for it themselves on the trolley car.

Supplies. Thread, buttons, tape, lacings, and all supplies used in the making of the garments are furnished to the home shop employer by the Navy Yard. The upkeep of machines, needles and leather belts for power machines are items which the shop-

*Figures given by owner.

keeper must meet herself. Charges for spoiled or lost articles are the same as for the bundle women.

Physical Working Conditions. Many of the shops are crowded because of the sudden expansion and the introduction of new machinery. One shop employing 37 workers, located on the ground floor of a dwelling house, is so crowded that the employer hit upon the bright idea of having the women operators and finishers sit upon piano stools.

Subletting of Work. It was impossible to ascertain the extent of the sub-letting of collars for taping and starring as the women were suspicious and unwilling to give any information which might cause their work to be taken away from them, or which "might be of use to the enemy" as a few naively said.

One owner of a home shop has three tapers whom she pays at the rate of \$4.00 per bundle of 80 collars. She herself receives \$8.00 per bundle for this work from the Provisions and Clothing Depot.

The Piecework Factories.

A number of factories also take out the uniforms and finish them on the piecework basis exactly as do the home shops. Twenty-one factories doing work of this type for the Brooklyn Navy Yard and eight sub-contractors employed by them were visited. Only two of these 21 piecework manufacturers employed home workers so far as could be discovered. One employed seven and one employed two home workers.

Regulations. If the manufacturer employs home workers who live in tenements, he is required to obtain a license from the New York Department of Labor and to register the names and addresses of all tenement home workers with the Home Work Inspection Division. A manufacturer may have sub-contractors, who in turn may have home finishers. The manufacturer who takes the clothing from the Depot is responsible for seeing that all work which he sends out to tenements is done in licensed tenements.

The seven home workers mentioned above lived in licensed tenements, which are old houses but fairly clean. These seven women were Italians and, with one exception, have started home work since the outbreak of the war. They all do some kind of hand finishing on navy blue serge or flannel trousers and are paid at the following rates:

Crow tacks.....	6 cents a pair*
Sewing on buttons.....	} 4 cents a pair†
Putting lacing in back.....	
“Cleaning” of threads, etc.....	
<hr/>	
Total.....	10 cents a pair

*2 cents each and three on each pair of trousers.
†15 buttons on each pair of trousers.

The thread, buttons and lacings are furnished by the contractor, who in turn, gets them from the Depot. Three women work at this shop during the day and finish on an average of 10 pairs of trousers each evening. One of these workers has two children and another three under 16 years of age. Another woman worked at the home of the owner during the day and finished about 10 pairs of trousers each night.

The other three home workers (one with three children and another with four children under 16 years of age) have relatives who work in this shop and bring the work home. They average about 15 pairs of trousers per day.

Practically all the home work is done in kitchens which serve as the family living rooms. The average hourly earnings of these seven home workers, as near as could be estimated from the available information, was between 15 and 20 cents per hour.

Efficiency of the factory system vs. the home work system.

For the majority of contractors, home finishing on naval garments is a thing of the past. There are two reasons for this. First, because orders have gone out from the Provision and Clothing Depot of the Navy that the state regulations regarding home work must be strictly observed in the making of naval garments, and, second and more important, is the reason that employers are realizing that home finishing does not pay. Some of the reasons given by manufacturers as to why it particularly does not pay on naval garments are that there is relatively little hand finishing to be done on them; these processes can be done much more quickly by machinery; the work is bulky to send out; and the pressure of war orders and the prospect of increasingly larger orders for some time ahead justifies them in making heavy initial expenditures for the installation of machinery by means of which they can attain maximum output in the shortest time. In short, the introduction of machinery for crow tacking, starring, button-sewing, and for hemming the bottoms

of the legs of trousers has changed the whole character of the home work situation as far as naval garments are concerned. This may be illustrated by briefly sketching the methods used in a few of the best shops.

One manufacturer employed 70 workers and turned out 3,000 pairs of serge trousers per week. In his shop each pair of trousers passed through 28 pairs of hands. The work is sectionalized and a man carries the material from one operator to another. All the latest machinery is utilized.

The crow tack process is divided into two parts, each being done by a different machine. The first machine embroiders the three points of the crow tack and the second machine outlines the crow tack with a long, heavy stitch. According to manufacturers, a machine crow tack is much stronger and more durable than one made by hand. A comparison of the amount of time used in making a crow tack by machine and by hand is sufficient. Two average experienced operators (one at each of the crow tack machines mentioned above), can together put three crow tacks on each of 350 pair of trousers or make 1,050 crow tacks in a nine-hour day. This means that each operator makes 525 crow tacks in 540 minutes, or roughly speaking, makes a crow tack per minute, with a steady output during the day upon which the employer can depend.*

Home workers have little conception of the actual amount of time required. The closest estimate is that it takes a woman from six to ten minutes to make a crow tack. In other words, it takes from six to ten times as long to make a crow tack by hand as by machine. Moreover the home workers' time is broken by household duties; their skill varies greatly and time is consumed in going for and taking back the work.

In this same shop, eyelet machines operated by women can each turn out an an average of 4,000 eyelets in a 9-hour day, yet some home workers of the Navy Yard were found making eyelets by hand on white jumpers, because, as they said: "The sailor boys like them better by hand."

Button sewing is still done by hand in many shops. In this shop, buttons are sewed on the trousers by men operating button-sewing power machines at the rate of 3,500 buttons per operator in a 9-hour day.

The only hand finishing done in this shop is cleaning the trousers of threads and putting lacings through the eyelets.

* Figures as to daily output given by shop manager.

Another manufacturer had several sub-contractors working for him in the manufacture of serge blouses and trousers and white duck trousers, but had no home work on any of his output. He has found it does not pay. He secures the material from the Depot; cuts it in his own rooms, and has the garments made up in sub-contract shops and other shops under his control. He produces for the Navy an average of 3,500 navy blue and white duck blouses and 3,500 pairs of trousers per day.

This means that the production of blouses in his shops is never held up because of the slow output of tape hands and star hands, as is frequently the case under the present home work system of the Navy. Several of the contractors making blouses who have to use the collars made by the home workers remarked to the visitor that their output was often limited and held up because of the difficulty in getting from the Depot the finished collars (taped and starred by the home workers) in sufficient and regular amounts.

CHAPTER III. THE SYSTEM OF PRODUCTION THE SECOND YEAR OF THE WAR. LARGE CONTRACT PRODUCTION

During the first year of the war, the Navy Department was able to handle the clothing of its enlisted men by the old time method of piecework production, but the war has changed the situation in two ways. Large clothing manufacturers are finding their market increasingly cut off by the war as more and more men are wearing only the khaki or navy blue. At the same time the Army and the Navy are suddenly confronted with demands for enormous quantities of clothing as shown in Table 1. The manufacturers are therefore willing to bid for contracts to make uniforms and the Government is turning to them since they have the equipment for large scale production. Bids for the making of about 6,000,000 garments for the Navy were advertised for May 9th, 1918, as follows:

- 500,000 blue cloth trousers;
- 500,000 blue serge or flannel overshirts;
- 250,000 blue serge or flannel undress jumpers;
- 1,000,000 white working jumpers;
- 1,000,000 white working trousers;
- 100,000 chief petty officers' blue flannel shirts;
- 200,000 sailors' overcoats;
- 25,000 chief petty officers' uniforms of blue cloth or serge (double-breasted coat, vest and trousers)
- 100,000 chief petty officers' uniforms of white drill;
- 10,000 chief petty officers' overcoats.

The Provisions and Clothing Depot in Brooklyn still cuts the garments and provides all materials used in making them up. The contractors at their own risk and expense call at the Depot for the supplies and return the garments to the Depot. This provision practically excludes all manufacturers outside the immediate vicinity of the depot because they can not pay express charges and compete with those who do not have to meet this additional expense.

Bidders must submit their bids on affidavit stating specifically the location of the shops in which all work is to be done; their interest in these shops; the firm name under which they do business,

and no work can be done at other shops except on written authority from the Officer-in-Charge. They must state the date on which they can commence work; the number of garments they can deliver weekly and the number of garments they will have to keep out in operation to deliver this weekly production. Bidders must also put up a bond sufficiently large to insure the proper performance of the contract and cover the value of all material and garments held.

About 25 manufacturers were awarded the contracts for making up this great number of garments. None were for lots of less than 25,000 garments and the majority were for lots of 100,000 to 200,000 garments with some contracts as large as 400,000 garments. Among the manufacturers receiving the large naval contracts were manufacturers of men's suits and shirts and women's dresses and waists who must seek a new market because of the war.

These new manufacturers enter the field as severe competitors for the small manufacturers who have been making naval uniforms for 20 years or so in small orders and on piece rates set by the Government.

TABLE 4 SHOWING SIZE OF CONTRACTS UNDERTAKEN BY CONTRACTORS IN COMPETITIVE MARKET AND COMPARING THEIR RATES WITH THE PIECEWORKERS LABOR PRICES.

GARMENTS	Number Manufacturers Receiving Contracts	Number Garments Contracted for		Rates Awarded Contractors		Piece-workers Labor Prices
		Min.	Max.	Min.	Max.	
Blue Serge Trousers.....	5	25,000	150,000	\$0.89	\$0.95	\$1.10
Blue Serge Over-shirts.....	4	25,000	250,000	.46*	.67	.55*
Blue Serge Undress Jumpers...	4	25,000	100,000	.42	.44	.44
White Working Jumpers.....	4	200,000	400,000	.175	.22	.25
White Working Trousers.....	6	100,000	350,000	.3875	.45	.50
Chief Petty Officers' Shirts..	2	25,000	75,000	.275	.28	.35

* Taped and starred collars furnished.

Few of the old time pieceworkers bid on the contracts and in most cases where they did, they submitted the rates at which they

had been making uniforms on a piecework basis, and were underbid by the large manufacturers.

One hundred sixty-eight pieceworkers were still on the rolls of the Brooklyn Depot in June, 1918. Indeed, they produced most of the uniforms for the Navy through the summer of 1918. For the first tendency of the new large contract system was to slow up production. Some of these manufacturers have never made the naval uniforms before. They try to use short cuts which the Provisions Depot will not accept. They do not have the force of skilled workers on this particular type of product and a large proportion of their garments are rejected. They hold large contracts which delay the delivery of large numbers of garments if they fail to meet the standard required. The piecework manufacturers have therefore been kept at full capacity as they are equipped for and experienced in the making of the Navy uniforms.

PIECEWORK PRODUCTION.

Geographical Distribution of Shops.

The factories and shops making naval uniforms on a piecework basis at the beginning of the second year of the war cover a wide geographical area. Thirteen different cities, villages or suburbs appear on the list of hands or pieceworkers on naval uniforms prepared by the Depot in June, 1918. They are distributed as follows:

TABLE 5 SHOWING GEOGRAPHICAL DISTRIBUTION OF PIECEWORKERS ON NAVAL UNIFORMS IN JUNE, 1918.

Location	Number of Hands Making Navy Uniforms
Long Island.....	155
Brooklyn.....	130
Corona.....	1
Flushing.....	2
Glendale.....	1
Jamaica.....	1
Lake Konkonkomo.....	1
Maspeth.....	10
Middle Village.....	1
Rockaway Park.....	2
Richmond Hill.....	3
Union Course.....	1
Woodhaven.....	2
New York City.....	13
Total.....	168

These figures do not represent the total number of shops. One of the New York manufacturers had 16 shops at the time of the visit in June, 1918, and one in Brooklyn had eight shops.

Ninety-four of these hands were garment makers, making undress jumpers, overshirts, trousers, overcoats, and hats, and 74 were star hands and tape hands. The 36 tape hands merely sew the three rows of white braid or tape on the sailor collar and the 38 star hands embroider the two stars on the corners of the sailor collar.

All the tape hands are located in Brooklyn except one at Lake Konkonkomo, L. I. The star hands are scattered over eight cities or villages in the following districts:

TABLE 6 SHOWING GEOGRAPHICAL DISTRIBUTION OF STAR HANDS ON NAVAL UNIFORMS.

Location	Number Star Hands in Each City
Long Island.....	37
Brooklyn.....	30
Flushing.....	2
Rockaway Park.....	1
Jamaica.....	1
Woodhaven.....	1
Richmond Hill.....	1
Corona.....	1
New York City.....	1
Total.....	38

Production.

Stars and Taped Collars. Some of the star and tape hands are women home finishers who can carry the bundles of collars back and forth. The wide variation in output, however, shows that most of them must employ helpers. Four of the tapers and 11 of the star makers produce on a large scale, making 2,000 or more collars each month.

Two firms tape 3,200 collars a month. Two firms star 4,480 collars, one stars 6,880 collars and one 7,740 collars a month.

TABLE 7 SHOWING WEEKLY OUTPUT OF STAR AND TAPE HANDS ON NAVAL UNIFORMS.

NUMBER	NUMBER WORKERS MAKING SPECIFIED AMOUNT	
	Tape Hands	Star Hands
Less than 500 collars.....	8	5
500 collars and less than 1,000.....	6	5
1,000 collars and less than 2,000.....	12	16
2,000 collars and less than 3,000.....	2	6
3,200 collars.....	2	...
3,280 collars.....	...	1
4,480 collars.....	...	2
6,880 collars.....	...	1
7,740 collars.....	...	1
Total.....	30*	37†

*6 firms not reported.

†1 firm not reported.

Taping the collars is also done in the large factories which make the overshirts. The factory making overshirts in large quantities finds it profitable to have its own taping machines, which are double-needle sewing machines with an attachment for holding the tape firm and straight as it is fed under the needles and stitched down on both edges at the same time. Even this work is sectionalized, one worker stitching only the first row, a second worker stitching only the second row and a third worker stitching only the third row.

The star embroidery machine, however, is a big cumbersome Swiss embroidery machine which only a few manufacturers, who make navy uniforms on a large scale, would find it advantageous to own. Many of the manufacturers, both large and small, therefore, receive their collars already made or at least already starred from the Depot.

The machine makes a much prettier and more perfect star than the hand workers. The star hands employed before the war will undoubtedly be retained during the war, but hand-starring is already doomed with the appearance of the embroidery machine in the industry, and more and more of it will be done by the machines which make twelve dozen stars at one time.

The difficulty of matching the material of the collar with the material of the middy on which it is to be sewed is also an important influence in abolishing outside taping and starring of collars. In

the factory each layer of cloth for every part of the garment is numbered or labeled so each section of the garment is made from the same piece of cloth. This is impossible when the collars are made by different people.

Undress Jumpers. The undress jumpers of blue flannel and of white cotton are also made by both home workers and manufacturers. These undress jumpers are similar to the overshirts except that they are made of lighter weight material, do not have the stars and tape on the collar, or the cuffs on the sleeves. Three of the 39 undress jumper hands made an average of less than 100 jumpers a month. The majority (23) made from 100 to 500 jumpers each month. Five shop-keepers made 500 and less than 1,000 jumpers per month, and seven had a weekly output of 1,000 and less than 5,000 jumpers. One firm manufactured 25,080 jumpers a month giving some indication of the size of the factory.

Blue Flannel Overshirts. The overshirts which are made of heavy blue serge or flannel are difficult to make because of the heavy material used, the double yoke, setting in of the pocket and the collar, and the necessity for a tailored finish. They are made mostly in factories and by men operators. Twelve of the 21 overshirt hands produced less than 500 overshirts a month. Six made from 1,000 to 5,000 shirts and three made 5,000 or more, one making 25,000 shirts a month.

Blue Flannel Trousers. The trousers are made in the factories almost entirely. Thirty processes are involved in making the sailors' trousers. Fifteen buttonholes and 15 buttons must be sewed on, double stitching around the belt and at the base of the pockets and the bottoms of the trousers must be felled so the stitches do not show through. Specialized machines make quick work of these processes but handwork and ordinary foot-power sewing-machines would be too slow to be profitable. None of the 21 trousers makers make less than 2,000 pairs a month. Four made from 15,000 to 21,000 a month and one made 62,292 pairs a month.

Overcoats and Jackets. The sailors' overcoats which are made of 30 ounce cloth and lined with heavy serge are made entirely in the factory. Each factory on the list produced from 11,000 to 12,000 overcoats each month. Men operatives do almost all the work on the overcoat. Women do the marking and cleaning, stitch the sleeve linings, the coat linings, fell the inside coat sleeve at the shoulder, make the pocket facings, trim the collars and flaps, and sew on the big buttons by hand.

White Hats. The white sailor hats are made by only three firms, two in Brooklyn and one in New York. One Brooklyn firm makes 250,000 white hats a month, which is more than the other two put together. The other Brooklyn firm makes 17,750 hats a month and the New York firm only 7,200 hats a month.

This is light work and is done entirely by girls. The largest firm, whose factory was visited, had developed a good deal of specialized automatic machinery for stitching the hat bands, which contain over 60 rows of stitching to stiffen the band. The band stitching machines run automatically so one girl can oversee three or four machines.

Sailors' Blue Caps. The largest white hat manufacturer also has a factory which makes the sailors' blue caps and white tops of officers' caps.

Increase in Number of Pieceworkers Making Navy Uniforms.

During the first year of the war, the Clothing Depot continued the old system of giving out its work in lots as large as the shop or factory could handle. Some of the old pieceworkers greatly increased their capacity. One of the manufacturers who had been making navy uniforms along with orders for civilian clothes for 20 years or more cancelled all orders for the latter at the outbreak of the war. He gave over his shop entirely to making the navy uniforms and took over in addition several shops which had been making dresses. At the time of the visit he had eight shops working on the Navy clothing.

New factories also agreed to make uniforms because the war had cut off their trade. The following table shows the increase in the number of firms making naval uniforms during the first year after the declaration of war.

Many of these firms make three or four different kinds of garments. They are listed for only one product. The interest of this table lies in the type of product which has been taken over by new "hands." The star and tape hands have almost trebled, the undress jumper hands have increased 50 per cent. and the trousers hands have doubled.

Many of the new firms have not the equipment and do not care to bother with starring and taping the collars. The Depot must provide the completed collars to these manufacturers. This undoubtedly means some increase in the number of home workers. Nine

of the 21* tape hands employed since April, 1917 made less than 500 collars a month, but eight made more than 1,000 collars. One large firm tapes 2,960 and one 3,200 collars a month.

TABLE 8 SHOWING INCREASE IN NUMBER OF FIRMS MAKING NAVY UNIFORMS SINCE OUR ENTRANCE INTO THE WAR.

PRODUCT	NUMBER FIRMS MAKING NAVY UNIFORMS		
	Before April 1917	Since April 1917	Total
Stars.....	10	28	38
Taped Collars.....	9	27	36
Undress Jumpers.....	18	26	44
Overshirts.....	20	2	22
Trousers.....	11	12	23
Overcoats.....	3	...	3
Sailors' Hats.....	2	...	2
Total.....	73	95	168

Only seven of the 28 star hands taken on since April, 1917 starred less than 1,000 collars a month and seven made more than 2,000 collars.

The overshirts, overcoats and hats are still handled by the old manufacturers who were on the rolls before April, 1917. The trousers involve less innovations and could be taken over more easily by manufacturers of civilian clothing.

Types of Shops and Factories and Physical Conditions of Work.

The factories and shops in which the naval uniforms are made vary greatly in size and equipment. In one afternoon one may visit a factory in Brooklyn which occupies two floors of a three-story wooden building designed to house three families, the owner occupying the other floor as a residence. We find shops occupying one floor of a small four or five story building, or all four floors of a factory building. In New York, we find shops springing up overnight on the first floor of empty store buildings; we visit factories occupying a loft which rents for \$5,000.00 a year and again big factories filling six or seven stories all owned by one firm.

*Amount not reported for 5 tape hands.

In Brooklyn. The Brooklyn factories, which predominate on the Depot's list of pieceworkers range from a single floor in a factory building employing about 30 workers and owned by a man, or two floors of a three-story wooden building designed to house three families with the owner, a woman, occupying one floor for living quarters, to four and five story factory buildings owned and operated by one man. One Brooklyn manufacturer owns eight factories ranging from 30 workers to 150 workers.

Some of the buildings have iron stairways and some have only wooden stairways leading to the third, fourth and fifth floors where women work. In general, these buildings are small and fairly well-lighted with windows on two or three sides.

The smaller shops and factories are crowded, the machines placed end to end as close as possible and most of the open space piled high with cut materials from the Depot or completed garments ready to go back.

In some of the establishments only one type of garment, trousers, overshirt, etc. is made in a workroom. In others, not only different woolen but different cotton garments are made side by side presenting a most confusing situation to the visitor. One girl is making blue flannel trousers; the girl next to her, white blouses; the girl across the table, blue flannel overshirts. This occurs where the manufacturer has several small assignments for several hundred of the different kinds of garments.

The floors of the buildings visited were very clean and the uniforms were usually kept on low platforms, tables, on the seat beside the worker, or in large boxes set close to the machine between the workers.

In New York. The New York plants usually occupy upper floors in high buildings between 21st and 30th streets west of Fifth Avenue, though one was visited in an empty store building on the first floor. Some of these factory workrooms are rented for \$5,000.00 a year with practically no equipment for the comfort of the workers. In one of these \$5,000.00 lofts, only one side of the room had natural daylight from the windows. A small space was boxed off on one side of the room by a three-sided panel wall extending up about six feet, within which the women hung their coats and wraps. An open sink, stopped up and filled with water at one end and several porcelain

basins on the wall at the other end of the workroom constituted the washing facilities. In this factory, large piles of uniforms were stacked on the floor back of the workers' chairs.

Physical Conditions. Toilet facilities in most of these factories both in Brooklyn and New York were most primitive. In two factories, one toilet on one side of the workroom was boxed off by a wooden partition. One was screened only by a door at least three feet from the floor.

In two contract factories in New York, one of which made both army and navy uniforms, the power-machine operators sat on long low wooden benches in front of the machines; men and women, tall and short workers, sat side by side. The benches seemed low and certainly were not equally adapted to all the workers. The New York State law says: "suitable seats" shall be provided for the workers.

Most of the workrooms visited in Brooklyn were well lighted with windows on two and three sides which supplied the comparatively small rooms adequately with daylight. Some of the largest workrooms in the New York factories however, required artificial light in the center and sides of the workroom farthest from the windows. This light was supplied by shaded electric bulbs placed close to the needles of the machine.

In none of the factories were there lunchrooms or any place to eat lunch. In one which was visited at the noon hour, half a dozen workers sat eating their lunch at the machines. The others had left the building. One of the largest manufacturers in New York said he provided hot coffee for lunch but there was no place to drink it except in the workroom.

In general, the uniforms seem to be well looked after in the factories. The floors are kept very clean, but usually the uniforms are not allowed on the floor being kept on platforms, in boxes, or on the seats. In some cases, the Provisions and Clothing Depot has not been willing to allow the uniforms to be made in factory work rooms approved by the State Factory Inspection Department because it demanded better conditions for the manufacture of naval clothing.

On the other hand, the comfort of the workers in the factories seems to rest with the individual employers. Two inspectors are employed by the Navy who say they get around to the shops and factories about once in every two weeks. The home workers are

visited less frequently. The garments are not fumigated when returned to the Depot, which makes it most important that they should be made in clean and healthful places.

Personnel.

The personnel of a factory making Navy uniforms depends largely on the particular garment manufactured. In a large shop making overcoats and overshirts which employed about 350 workers not more than 50 were women. These garments are heavy tailored work which requires skill and strength. These men are aliens and will not be withdrawn by the war. They do practically all the machine work in the factory. The women do the cleaning (cutting threads); fell the sleeves in the coats by hand and sew on the buttons by hand. The buttons on the overcoat are about the size of a silver dollar and were sewed on by hand in the shop visited. A definite number of stitches through the button and around it are specified and required.

The women who sewed on the large buttons and felled in the sleeves were old women, and among them worked an old man of 70. Only a half dozen or so young women worked at the machine on such simple processes as stitching on tickets, stitching coat linings, etc. In a trouser factory owned by the same firm the women were mostly engaged in sewing on buttons by hand. Both these shops were entirely unionized. About a dozen colored women were employed in each of these factories, cleaning or cutting threads.

In a Brooklyn factory where overcoats were made on one side of the room, only men worked. The owner of this shop had done naval work for more than 20 years and most of his overcoat operators had been with him from 15 to 20 years. On the other side of the work-room where white jumpers and petty officers' white suits were made, mostly women were employed. Several men were working on white wear because there was nothing for them to do on the heavy work. In another small factory employing about 40 workers and making white trousers only women worked. White hats and caps are made entirely by women. In making the blue caps, men cut the materials, the canvas, make the whalebone bands which go into the sailors' blue cap, but girls do most of the stitching.

In one of the large New York clothing factories which had recently received a large contract for navy trousers, men and women did the same stitching processes. Men had predominated but women

were coming in. The scarcity of workers had opened the opportunity for women who were being taken on more and more in this factory.

Processes in Making the Naval Uniforms.

The heavy serge or flannel is usually cut at the Clothing Depot in 40 layers and the various parts of the garment come to the manufacturer in piles of 40 layers. As serge varies in weight and shade, it is most important that all the parts of the garment come from the same piece. The first thing the manufacturer does when he lays out these piles of sleeves, yokes, fronts, backs, collars, etc., on a table or platform is to number each layer either by a chalk mark or by a ticket tacked on by a special tacking machine which takes two or three stitches over and over and automatically clips the thread. The girl who operates the machine tacks the ticket in two or three places for safety. All the parts from the first layer are labeled one number, from the second labeled another number, etc. The assembler must put only pieces of the same number into a garment.

Another preliminary process is called fitting. Some of the small accessory pieces, such as flaps, flies, and pockets, are not cut exactly to fit in the cutting room. Edges must be rounded off, trimmed or notched with a big knife on the cutting table. New contractors frequently get into trouble because they are not sufficiently familiar with the construction of the particular garment to know this.

The Clothing Depot provides all materials and requires heavy black silk thread to be used throughout the naval garments. The finest grade serges and flannels and only the highest grade workmanship are accepted.

Undress Jumpers.

The undress jumpers are made of blue flannel and of white cotton. The Provisions Depot sets the rate of 44 cents each for blue undress jumpers and 25 cents each for white undress jumpers for its "pieceworkers." These prices are subject to change, however, on account of the recent low bidding of the large contractors. Both men and women operators work on these undress jumpers, the women producing about 15 per cent. less according to one firm which employs both. The white cotton middie is also listed with the undress jumpers. The office of the clothing workers' union submitted three occupations and wage classifications for the making of this garment; power machine operators, piece workers, \$20.00 to \$30.00; zig zag operators, \$12.00; and cleaners, \$8.00 to \$11.00.

The processes are described in Bulletin No. 3, The Employment of Women in the Charleston Navy Yard Factories.

Blue Flannel Overshirt.

The blue flannel overshirt with starred and taped collars furnished, are made by the pieceworkers at a rate of 55 cents each. The manager of a large unionized shop says that women produce about 25 per cent. less than the men operators. The processes are as follows:

Processes.

1. Stitching seams of collar and turning out.
2. Starring collar.
3. Taping collar.
4. Making the pocket.
5. Crow tacks at each end of the pocket.
6. Joining the inside shoulder seam of the shirt front and back.
7. Joining the outside shoulder seam of the yoke.
8. Stitching the yoke to the shirt—two rows of stitching on a single needle machine.
9. Stitching on the collar.
10. Embroidering lower point of neck with button hole machine—clipped at upper end.
11. Stitching seams of cuff.
12. Stitching sleeve in six plaits to the cuff—turning out.
13. Stitching cuff down with double needle machine.
14. Stitching sleeves in the shirt.
15. Closing inside seams of shirt and sleeve with special "closing on" machine.
16. Hemming bottom of overshirts.
17. Making eyelets with eyelet machine.
18. Making buttonholes in cuffs.
19. Tacking buttonholes.
20. Sewing buttons on cuff by machine or hand.
21. Putting tape in bottom.
22. Tacking tape in bottom.
23. Cleaning.
24. Examining.
25. Pressing on Hoffman Machine—by men.

The office of the clothing workers' union submitted the following average weekly earnings for women on the following processes:

Embroiders—pieceworkers, \$20.00 to \$30.00; collar tapers, \$16.00 to \$20.00; bushelers, \$17.00 to \$20.00; button markers, \$13.00; sleeve turners, \$13.00; sleeve matchers, \$13.00 to \$16.00;

closing, \$25.00 to \$35.00; pulling tape, \$15.00 to \$20.00; tacking tape, \$13.00 to \$17.00; lacers, \$12.00 to \$16.00; cleaners, \$10.00 to \$12.00; examiners, \$13.00 to \$21.00.

Blue Cloth or Serge Trousers.

The style of the sailors' trousers is quite different from the civilian trousers, requiring a good deal more work. They open across the front and down about six inches on each side with thirteen buttons and buttonholes, representing the 13 original states, the Navy men tell us. Cloth or serge flaps fasten across the front underneath this front panel, fastened by two more buttons and buttonholes. These are called the bearers because they bear the 13 buttons. One of the first processes is to sew the two fronts together and the garment is practically completed before stitching up the back seam and the one inside seam of the trousers leg. At the base of the side placket and pocket, a special stitched design consisting of a double stitched oblong about 2 inches by 4 inches with diagonal rows of stitching from corner to corner strengthens the placket hole.

The buttons are sewed on both by hand and by machine. The Navy requires that the stitching of the button shall not criss-cross from hole to hole so the buttons can be scrubbed. A few manufacturers have button sewing machines which sew on the button like hand-sewing in two parallel lines. The usual button sewing machine cannot be used.

The Navy will not accept the buttonholes made by the usual buttonholing machine as they fray out with hard usage. A special buttonhole tacking machine gives the square end which characterizes the handmade buttonholes.

The sailors' blue serge or cloth trousers goes through 30 different hands in one large shop employing a large number of women stitchers.

Processes.

1. Sewing on tickets by tacking machine.
2. Fitting parts—cutting by hand.
3. Linings turned.
4. Join fronts and sew in lining.
5. Stitch on buttons.
6. Stitch on waistband.
7. First double stitch around waistband.
8. Sew lining in back.

9. Second double stitch at base of placket.
10. Stitching in pocket.
11. Taping inside seam.
12. Stitching back seam.
13. Taping back seam.
14. Marking eyelet holes.
15. Making eyelets by eyelet machine.
16. Making buttonholes by machine.
17. Stitching tongue in back.
18. Trimming bottoms of trousers.
19. Turning in and felling bottoms.
20. Pressing off on Hoffman pressing-machine operated by men.
21. Marking buttons.
22. Machine stitching buttons.
23. Finishing buttons, clipping threads.
24. Putting lacing in the back by hand.
25. Cleaning trousers—snipping threads, etc.
26. Crow toe—special machine.
27. Crow toes—finishing.
28. Examining.
29. Buttonhole tacks.
30. Final examination.

The manager of a large unionized shop employing both men and women in making blue trousers says the women's output is about 35 per cent. less than that of the men.

The office of the clothing workers' union submitted the following average weekly earnings for women on the following processes:

Stampers, \$10.00 to \$13.00; hemming lining, \$17.00; turners, \$15.00 to \$18.00; pants turners, \$12.00 to \$14.00; bottom sewers, pieceworkers, \$16.00 to \$20.00; embroiders, piecework, \$20.00 to \$30.00; button sewers, piecework, \$14.00 to \$20.00; cleaners, \$9.00 to \$12.00; lacers, \$10.00 to \$14.00.

White Working Trousers.

Women predominate in the manufacture of white cotton trousers. The Provisions Depot sets the rate of 50 cents a pair for its pieceworkers.

One firm which employs both men and women says the women's output is about 25 per cent. less than that of the men. The processes are described in Bulletin No. 3, The Employment of Women in the Charleston Navy Yard Factories.

Sailors' Overcoats.

The overcoats are made almost entirely by men except for facing the pockets, stitching linings, basting, felling seams, marking buttons and sewing on tickets. The Provisions Depot sets a rate of \$2.80 each for its pieceworkers.

White Hats and Sailor Blue Caps.

The white sailor hat goes through 15 different pairs of hands during the following processes:

Processes—White Hats.

1. Stitching three cornered sections of crown together.
2. Stitching tape over seams on double needle taping machine.
3. Snipping off ends of seams to make lower edge straight and less cumbersome.
4. Stitching in narrow cheese cloth head band.
5. Making hat bands.
 - (a) Stitching two pieces together. (The band used to come in one four inch strip curving something like a letter S, but to save goods in cutting, the band now comes in two curved pieces which must be stitched together.)
 - (b) Doubling over the band, slipping in a canvas stiffening and basting by machine with two rows of long stitches.
 - (c) Stitching bands with 60 rows of stitching by automatic machine.
6. Basting crown to band by machine.
7. Hemming inside head band on machine that hems both sides at once.
8. Stitching in inside head band.
9. Stitching loops in crown to hang hat by.
10. Cleaning.
11. Pressing.
12. Packing.

Processes—Blue Caps.

1. Stitching circular top of serge and lining of blue and white gingham.
2. Stitching outside circular strip—underside.
3. Turning outside and finishing with two rows of stitching on double needle machine.
4. Stitching canvas lining in band.
5. Stitching on sweat band.
6. Putting in whale bone—(bands made in sizes by men).
7. Stitching ribbon bows.
8. Putting on ribbon band and bow by hand.

CHAPTER IV.

SUMMARY.

The uniforms for the Navy as shown in this report are made in two centers under two different systems of production; (1) in Brooklyn where the great majority of the uniforms are made under the "outside" piecework and contract system and (2) in Charleston, South Carolina where the white and blue cotton suits are made in Government-owned factories.

Continuing the old home work system of production on a piece rate established by the Navy Department, the industry in Brooklyn has grown until at the beginning of the second year of the present war, 168 "pieceworkers" were taking out naval uniforms from the Provisions and Clothing Depot to be made up in a great variety of work places ranging from the small home employing no workers outside the family to the large factory employing several hundred workers.

The new contract system of competitive bids for making large lots of uniforms which was inaugurated at the beginning of the second year of the war is a part of the new general policy of encouraging direct dealing with manufacturers and producers. Bidders are definitely committed to manufacture the uniforms in specified shops, to guarantee a definite weekly output and to insure the proper performance of their contract.

At present, bundle women, home shopowners, factory pieceworkers and manufacturers who have secured large contracts by competitive bidding, are making the naval uniforms under different systems of production.

Home work production, such as the taping and starring of collars by the bundle women is uneconomical because:

- (1) It can be done better and faster by specialized machines.
- (2) It is difficult to match the color and material of the collar and blouse which have been made in separate places:
- (3) It requires an unjustifiable amount of handling, transportation, and inspection as the collars go from one bundle woman to another:
- (4) Under this system it is practically impossible to insure that the naval uniforms are made under safe and sanitary conditions;

(5) The earnings of the home workers are low. Two-thirds earned less than \$12.00 a week, without considering reductions resulting from many charges. In 40 per cent. of the families visited, their entire earnings were obtained from the Navy work.

The foundation for large scale production by a comparatively few manufacturers is undoubtedly well started. The old home work system will probably still persist for some time, however, for three main reasons: (1) the strong pressure exerted on the Navy to recognize the faithful service of old employees; (2) the lack of special equipment for starring and taping collars in many of the large shops receiving the large contracts and (3) the inability of the large manufacturers to meet the terms of their contracts and to adapt themselves to Navy standards and requirements.

Contract System. The competitive bidding and award to the lowest bidder also presents the serious problems of insuring (1) quick deliveries of acceptable garments and (2) proper conditions of employment.

1. The manufacturer is awarded the contract before he has been required to produce a sample lot of uniforms to prove that he can satisfactorily meet the terms of his contract. As a result, weeks elapse after he receives his contract before he has organized his workroom and working force to make the uniforms he has contracted for. In a number of cases he has turned in large deliveries below the standard which the Provisions and Clothing Depot can accept. A great loss in time and services results—the wasted time and services of

- (a) The workers who do defective work on the uniforms in the factory;
- (b) The men who transport them to the Depot;
- (c) The inspectors who look them over and refuse them,
- (d) The men who transport them back to the factory;
- (e) The workers who repair the defects;
- (f) The men who transport them back to the Depot;
- (g) The Depot inspectors who reinspect them.

The making, transportation and inspection has thus been unjustifiably increased.

(2) Some of the contractors have hastily acquired new premises to handle the large contracts. Crowded work rooms, wooden stairways, wooden benches, poor lighting, inadequate and primitive sanitary facilities and unclean floors are found in these factories as

well as among home workers and home shops. The wages are in some cases lower than those paid in the smaller shops which are being crowded out by competition. The uniforms are sometimes less well cared for during the processes of manufacture whether made in homes or factories. The uniforms are not sterilized on their return to the Clothing Depot. The conditions under which they are made are therefore most important.

The Paymaster of the Clothing Depot appreciates the importance of production under healthful conditions and welcomes the opportunity to bring more and more of it under the factory system. Two young inspectors for the Navy are maintained to inspect these many work shops, but, for the most part, the Navy assumes that the inspection of privately owned shops rests with the State inspection department. This report shows the inadequacy of this method of supervision. Under these circumstances, it seems conclusive that the Navy Department is the only agency which can enforce proper working conditions.

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