

Vestibule schools, etc.



COPY

October 31, 1918

Mr. C. T. Clayton  
Director of Training and Dilution  
United States Department of Labor  
Washington, D. C.

Dear Mr. Clayton:

Replying to your favor of the 18th instant: I am very glad at any time to give you such information as you desire regarding our vestibule school, through the medium of which some seven hundred women have been trained for shop work. Very briefly, our methods are about as follows:

E 2

Students are obtained through requisition from the general employment department, and from non-mechanical departments through the welfare organization. Our school equipment consists of lathes of the engine, turret and speed types, general purpose and single purpose, or manufacturing millers and a sensitive drill.

Students are given instruction in scale and micrometer reading - their relationship and application. Blue prints are used only as they furnish an illustration of limits and tollerances. The school has been of principal service in bridging the gap between irresponsible soft-living and this very exacting industrial work. This was the serious problem met with when the policy was adopted of employing those meeting other than just physical requirements. Women are used as machine operators and bench hands only, no attempt being made to teach them tool grinding or machine setting other than to recognize a dull tool and to make readjustments.

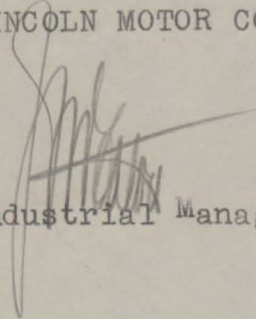
School trained women are now operating in our plant grinding machinery, working on cylinders as well as smaller parts; at the benches on straightening, burring and sub-assembly; numbers are used on millers of all types, light lathe operations, drilling, reaming and broaching. We are also using women successfully as operators of Gleason bevel gear generators. They have also taken over many inspection jobs where rather complicated measuring instruments are used.

F 2

We are holding women in school two weeks when the supply and demand for help can be made to balance. All student women start at a thirty cent day rate, which holds until they are finally placed on specialized production and are capable of maintaining themselves on piece rates.

Yours very truly,

LINCOLN MOTOR COMPANY



Industrial Manager

JME M



*Training*  
U. S. Department of Labor  
INFORMATION AND EDUCATION SERVICE  
Washington

*Multiple Schools*  
October 1918.

Dear Sir:

Inclosed is a memorandum in regard to Speedy Methods of Training Employees based upon replies from employment managers in different factories. Much more detailed information concerning this subject may be had by writing to the Training and Dilution Service, Department of Labor, 618 - 17th St. N. W., Washington, D. C., which is prepared to advise as to methods.

It will be of service to others if you will send an account of your own experience, if it throws further light on such methods and results.

Yours truly,

*Davis R. Dewey*

Davis R. Dewey,  
Director of Economics Section,  
Information and Education Service,  
1706 G St. N. W., Washington, D. C.

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U. S. Department of Labor  
INFORMATION AND EDUCATION SERVICE  
Washington

TRAINING SCHOOLS

Reports from plants in different localities.

1. Connecticut (Pop. over 100,000.)

We have lately installed a Vestibule Training School, where we take in female help and after undergoing a period of training, they are transferred into the factory. Although this has been in existence only a very short while, the good work already accomplished speaks well for its success in the future.

2. Connecticut (Pop. over 100,000; large establishment.)

We have inaugurated a training school which occupies a space of approximately 60 x 150 feet together with a force of instructors, machine set-up men, and an experienced supervisor of training. We hire men directly from the street for the school and after two or three days' intensive training, we put them on production work in actual manufacturing.

3. Illinois (Pop. over 50,000; large establishment.)

We have had to train many new workers entirely inexperienced in the kind of work we do, and our methods have been to select groups of machines in each department and appoint men best fitted as instructors, who work with the green hands until they have gained proficiency enough to be moved out into the general machine room, and we find this method proving to be as satisfactory as could be expected. Generally speaking, new workers are taught only a few operations, or in other words, become familiar with certain pieces upon which they become expert in a short time.

4. Massachusetts (Pop. over 150,000; No. of employees: 3,600 men, 600 women.)

This Company provides a Training Department where men of special promise in the factory are given a full course of training in order that they may take up the more advanced branches of work for which they seem especially fitted. These men often pass up into the office force. The Training Department is also running a vestibule school, and proposes to open several more in which men previously unfamiliar with mechanical methods may receive rapid and adequate training in order that they may enter the shop as skilled rather than unskilled workers. This type of vestibule school has been used for over two years.

5. Michigan (Pop. over 45,000; No. of employees: 1,500 men.)

We are just starting an Engineering Club which will consist of, among its other activities, a series of classes and these classes will be not only for general schooling in the three "r's", but will also provide the technical side of the work on which an employee is engaged in the shops. We believe that this plan will go a long way towards training men in our special lines and as there is a social feature in connection with this Club, we have so far met with no difficulty in holding the membership together, but, to the contrary, we find it somewhat difficult to bring our meeting to a close at a timely hour.

6. New York (Pop. over 450,000; large establishment.)

We are training our employees, particularly the women, by a vestibule school method of intensive industrial training. The school proposition is handled as a separate function entirely from the production or employment. The girl, hired by the Employment Department, is assigned to the Training Department without designation as to the class of work she will be assigned to. When she reaches the Training Department, they take steps to ascertain the class of work she is best fitted for and by having a variety of work in the Training Department we are able to transfer her from job to job until we are satisfied she has found the work that suits her best.



7. New York (Pop. over 250,000.)

We are giving special training to employees in the three following ways: (1) We have a three-year apprenticeship course for machinists in which we are training about twenty boys giving them three months in each department, and at the same time giving them a course in mechanical drawing consisting of two two-hour periods per week during working hours for which they receive full pay. We feel that this apprenticeship course is very thorough. (2) Handymen are trained by putting them directly into the various departments, having them work as helpers with skilled mechanics, starting them on the simplest machine and bench work, and gradually advancing them in work and pay. (3) We are starting the training of women in a vestibule school. Although we have been doing this only for the past few weeks, the women are already showing results which are very gratifying.

8. Pennsylvania (Pop. over 50,000.)

We have put on one man whose sole duty it is to instruct employees as to the best method of doing work, and this is in addition to another such man, part of whose duties lay in this line also.

9. Pennsylvania (Pop. over 15,000; No. of employees: 400 men, 400 women.)

We have in all of our Mills a so-called "Learner's Section" in which every operation connected with our work is taught by a suitable expert, thus enabling the learner to become proficient in the shortest possible time. We have found this very helpful.

10. Pennsylvania (Pop. over 250,000; No. of employees: 17,000 men, 3,000 women.)

Until recently it has always been our plan to train new employees in the section in which they were going to work and on the machine which they were regularly to operate. The various shop departments have instructors who are picked from the best workmen, to demonstrate the machines and their operation.

Recently we have inaugurated two training courses. Departments have been especially equipped for teaching women. One of these departments instructs women in the operation of machine tools, such as lathes, drill presses, screw machines, grinders and milling machines. This department also gives special training for women who are to do bench work and fitting. The second department is for training women employees in electrical work such as winding, taping, soldering, connecting and insulation. These schools or training sections are primarily for beginners, and we obtain women for this training section from our centralized employment department. When any department wishes a new employee, instead of obtaining her from the Employment Department, application is made to the training section.

The instructor of this training section is a high grade man assisted by a woman. Both of these instructors are obtained from our best employees. The length of the training period runs from 2 or 3 days up to 3 or 4 weeks, depending upon the difficulty of the position and the adaptability of the woman being trained.

Up to the present time we have done nothing about a special training department for men. We believe preliminary training is desirable for both men and women, and that if equipment and space are allowable, special training departments should be established wherever the nature of the work will permit it.

11. New Jersey (Pop. over 250,000; No. of employees: 800 men, 20 women.)

Making our best workmen foremen or instructors, and placing about 10 men under them, skilled, semi-skilled, and unskilled, and breaking them in to do our class of work with the supervision of the foreman at all times.



Training Dilution Vestibule Schools  
Service

SECTION ON INDUSTRIAL TRAINING  
FOR THE WAR EMERGENCY

No. 118

Executive Committee

Percy S. Straus, Chairman H. E. Miles, Chairman  
 John Golden; C. R. Dooley

107 Council of National  
 Defense, D. and 18th Sts.  
 Washington, D. C. N.W.

August 24, 1918.

PARTIAL LIST OF VESTIBULE SCHOOLS  
 OR TRAINING ROOMS IN FACTORIES

- X W Recording and Computing Machines Co., C.U.Carpenter, C.P., Dayton, Ohio.
- X W Curtiss Aeroplane Corp'n., J.W.Russell Dir. of Training, Buffalo, N. Y.
- W Wright-Martin Aircraft Corp'n., J.F. Johnson, Dir." Long Island City, N. Y.
- Nordyke & Marmon Co., Indianapolis, Ind.
- Packard Motor Car Company, Detroit, Mich.
- Lincoln Motor Company, "
- T W Norton Grinding Company, John C. Spence, Supt., Worcester, Mass.

(Note: The above training rooms are remarkably efficient and successful; they should be seen. By special arrangement, the men above named are assisting in the development of training rooms in their vicinity. Write them when ready to act. Also O. D. Evans, very expert in training, Army Ordnance Dept., Prod'n Div'n. 1710 Market St., Philadelphia.)

- Gillette Safety Razor Company, Boston, Mass.
- Royal Typewriter Company, Hartford, Conn.
- Scoville Manufacturing Company, Waterbury, "
- + W Remington Arms Company, Bridgeport, "
- Bullard Engineering Company, " "
- The H. E. Harris Engineering Company, " "
- Trego Motor Company, New Haven, "
- Winchester Repeating Arms Company, New Haven, "
- Taft-Peirce Mfg. Co., Woonsocket, R. I.
- Brown & Sharpe Company, Providence, R. I.
- Crompton & Knowles Loom Works, Worcester, Mass.
- American Steel & Wire Company, " "
- Norton Company, " "
- John Bath & Company, " "
- Graton & Knight Company, " "

(Note: the following companies in Worcester have taken over for the summer the Worcester Trade School for the upgrading of their mechanics; Morgan Construction Company, Norton Grinding Company, Norton Company, Leland Gifford Company, Whitcomb Blaisdell Machine Tool Company.)

- Blanchard Machine Company, W. W. Blackman, Supt., Cambridge, Mass.
- E. W. Bliss Company (torpedo factory), Brooklyn, N. Y.
- Ford Instrument Company, New York City.
- Pierce-Arrow Company, Buffalo, N. Y.
- King Sewing Machine Company, Buffalo, N. Y.
- New York Airbrake Company, Watertown, N. Y.
- Seneca Falls Mfg. Company, Seneca Falls, N. Y.
- Savage Arms Company, Utica, N. Y.
- W Henry Disston & Sons, Philadelphia, Pa.
- W Fayette R. Plumb, Inc., " "
- W Hess Bright Manufacturing Company, " "
- Roberts Filter Manufacturing Company, " "

W-Edw. S. Budd  
 W-Kulbourne  
 W-Rest mfg co



✓ + W	Wright-Martin Aircraft Corp., J. F. Johnson, Director	New Brunswick, N. J.
+ W	Remington Arms Company, Eddystone Plant,	Philadelphia, Pa.
✓ + W	Naval Aircraft Factory, League Island,	" "
	American International Shipbuilding Company, Hog Island,	" "
	Newton Machine Tool Company,	" "
	Warren Webster Company,	" "
	L. H. Gilmer Company,	" "
	Burke Electric Company,	Erie, Pa.
+ W	Bethlehem Steel Company,	Bethlehem, Pa.
+ W	J. G. Brill Company,	Philadelphia, Pa.
✓ + W	Lanston Monotype Machine Company,	" "
	Leeds & Northrup Company,	" "
W	David Lupton Sons Company,	" "
	North American Motors Company,	Pottstown, Pa.
+ W	Standard Aircraft Corp'n.	Elizabeth, N. J.
	Snead & Company Iron Works,	Jersey City, N. J.
	Spicer Mfg. Company,	Plainfield, N. J.
	International Motors Company,	" "
	Woodbury Bag and Loading Company,	Woodbury, "
	Barbour Flax Spinning Company,	Paterson, "
	American Bronze Co.,	Philadelphia, Pa.
	American Tool Works Company,	Cincinnati, Ohio.
+ W	Cincinnati Milling Machine Company,	" "
	Cincinnati Grinder Company,	" "
W	Cincinnati, Planer Company,	" "
	Cincinnati, Bickford Tool Company,	" "
	Oakley Machine Tool Company,	" "
	Buckeye Twist Drill Company,	Alliznce, "
	Morgan Engineering Company,	" "
W	National Cash Register Company,	Dayton, "
+ W	Ohmer Fare Register Company,	" "
	The Timken Roller Bearing Company,	Canton, "
	Joseph & Feiss Company, May Thomsen, Emp't Dept.	Cleveland, Ohio.
	Mosler Safe Company,	Hamilton, Ohio.
	Sprague Electric Co.,	New Jersey, N. J.
	Rome Wire Co.,	Rome, N. Y.
	Ford Motor Company,	Detroit,
	Long Manufacturing Company,	" "
	Studebaker Corporation,	" "
	Solvay Process Company,	" "
	Morgan & Wright Company,	" "
	Detroit Steel Products Company,	" "
	Burroughs Adding Machine Company,	" "
	Dodge Brothers,	" "
	Detroit Lubricator Company,	" "
	Timken Detroit Axle Company,	" "
	Steel Products Co.,	" "
W	Stenotype Co.,	Cleveland, Ohio.
	Haskellite Mfg. Company,	Indianapolis, Ind.
	Republic Motor Truck Company,	Grand Rapids, Mich.
	Sparks Withington Company,	Alma, "
	Illinois Tool Works,	Jackson, "
	Union Special Machines Company,	Chicago, Ill.
W -	Electric Storage Battery Co	Philadelphia Pa
W -	Edw. J. Schmitt Co	" "
W -	Tacony Ordnance Co	" "
W -	Saugvick Silk Co	" "
W -	St. Louis Gun Co	" "



Nordyke & Mormons  
 Thomas A. Edison Inc.,  
 Western Cartridge Company,  
 Independent Pneumatic Tool Company,  
 Diamond Chain & Manufacturing Company, L. W. Wallace,  
 + W General Electric Company, E. H. Barnes, Supt.,  
 Pawling & Harnischfeger Company,  
 American Optical Co.,  
 Yale & Towne Mfg. Co.,  
 Gray & Davis Inc.,  
 Blanchard Machine Co.,  
 Westinghouse Electric Co.,  
 Carlton Machine Tool Co.,  
 Locomobile Co. of America  
 Willys-Morrow Co.,  
 Standard Parts Co.,  
 Underwood Typewriter Co.,

Indianapolis, Ind.  
 Orange, N. J.  
 East Alton, Ill.  
 Aurora, "  
 Indianapolis, Ind.  
 Fort Wayne, Ind.  
 Milwaukee, Wis.  
 Southbridge, Mass.  
 Stamford, Conn.  
 Boston, Mass.  
 Cambridge, "  
 E. Pittsburgh, Pa.  
 Cincinnati, Ohio.  
 Bridgeport, Conn.  
 Elmira, N. Y.  
 Cleveland, Ohio.  
 Hartford, Conn.

The following firms in Worcester, Mass., are using the vestibule principle in special efforts at training unskilled men in their shops: The Heald Machine Company; Reed Prentice Company; Sleeper & Hartley, Inc.; Rice Barton & Fales.

ALL THESE TRAINING ROOMS are on a production basis every moment, with speed and accuracy as the watchword.

Three tests should be made through daily reports:-

- (1) How many new operatives are sent into the factory? (If this were the only test, they might be sent in too fast and only partly trained.)
- (2) Cost, net, after crediting production which should equal the shop average. (Were this the only check, learners would be kept in training too long.)
- (3) Wastage. There should be none. Insist on 100% government inspection.

There should be a follow-up cost production daily sheet on each new worker for a few days after he enters the shop to be sure he makes good.

This gets RESULTS. Those who have tried this training would not do without it.

Factories in England and France have to have training by governmental order.

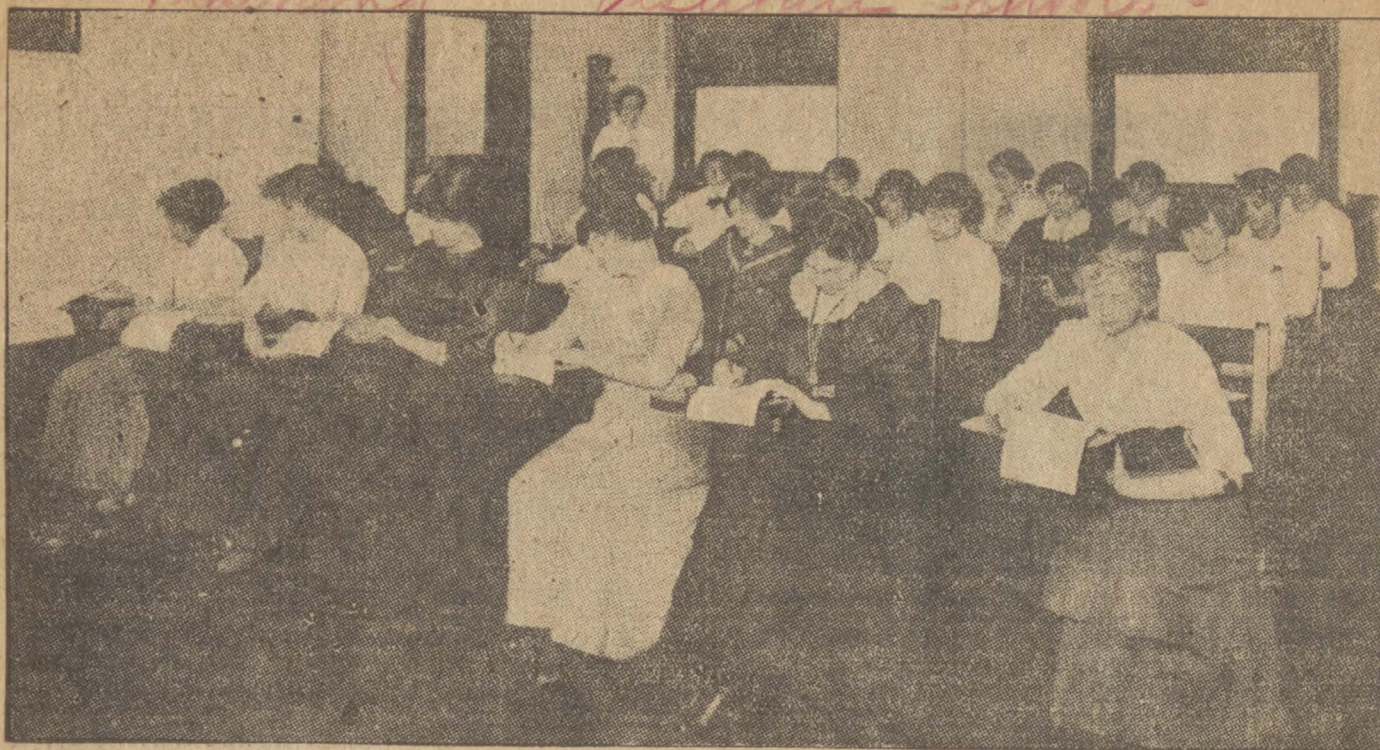
Why wait?

H. E. MILES,

Chairman, Section on Industrial  
 Training for the War Emergency.

July 22, 1918, Following a general meeting of manufacturers in the Philadelphia Ordnance District and the report of shortage there of 50,000 skilled workers, 75 companies either have decided on Training Rooms or are seriously considering this with our expert, Mr. O. D. Evans, Ordnance Department, 1710 Market Street, Phila.





Photo, courtesy of C. & P. Telephone Co.

11/5/18

## Run a School---Train Your Own Skilled Help!

Don't groan about the labor turnover and then yourself, by trying to get your competitors' skilled people away from them, help to make it turn faster.

The Government is operating a great training school—all branches—teaching the nation the things which will win the war.

Can't **you** operate a small school to develop the skilled workers whom **you've** got to have?

### Are You Already Running a School for the Instruction of Your Own Unskilled Help?

Tell us about it so that we can pass the details on to others who can benefit similarly and similarly help the general labor situation.

**Be Sure to Write Us**

### Some of the Advantages of training your own workers

While teaching girls new jobs, you can teach them the sense of responsibility, self-appreciation, the importance of the word **STICK** which will go far toward cutting out the restlessness of help—its inclination to move from place to place.

Dissatisfaction is all too frequently the result of not being able to do something which earns good pay, and yet not being satisfied with the small pay which unskilled work commands. The competent, first-class worker is usually the happy, contented worker **WHO STICKS TO HER JOB.**

## News want ads will search out workers for you

So start a school to create your own skilled help from the unskilled applicants who will respond to your advertising in *The News*. With your school you will also create spirit, idealism, morale, esprit de corps of the same sort which is developing our soldiers into the best in the world.

For anything easy to get, one or three time advertisements in *The News* will be enough (11c a line for one time, 10c a line for 3 consecutive in-

sertions), but to find the difficult—to search all Baltimore for what you want—to make sure that you catch the eye of the person who only once in a while glances through the want ad. columns, but who may be the one person in a thousand whom you must reach, put your advertisement in *The News* 7 times at a cost of 9c a line each insertion, or, better still, for a month, which costs per insertion only 7c a line.

Have you friends who want to work or who are even thinking about helping win the war by taking employment of some kind?

Perhaps they hesitate about going out to look for a place, even answering a help wanted advertisement. Ask those friends to get in touch with **US**—send us their names—will you do this? We'd like to make the way easy and render a general service ourselves by putting people willing to work but timid about going after a place in touch with the waiting job.

What kind of a place will she take or does she want? Has she had any experience? What sort? At what pay is she willing to start?

**Call St. Paul 100**  
Want Ad. Department

Or ask by phone or postcard that an experienced classified advertising man come to see you personally or call at the classified office of *The News*, first floor, on the right main entrance, Munsey Building, on

Calvert street, where you will come in contact with competent stenographers and Want Ad experts who will see that your visit takes the minimum of your time.

**IMPORTANT**—Nearly every drug store in Baltimore and suburbs receives *News Want Ads* at regular office rates. The service at these drug store agencies is complete; every possible assistance is given in preparing a Want Ad for any classification on these pages.

## WANT ADS

Phoned or Left at Business Office of *The News* up to

**2 P. M.**

Will Go Into Financial and Later Editions the Same Day except Saturday and Sunday. Closing hours these days 12 noon.

*Paul Owen*

Advertising Manager  
THE BALTIMORE NEWS.



...e two pages, while bristling with instances where the savings are  
and worth while, are only a part of the many opportunities cited  
**Will Prove A Revelation to You--Come, See**



Models in the dresses  
\$4.75.

**Ordinary Offer**  
*Smart Conceptions*

**5**

...ke these values in dresses and the  
...e to take advantage of this chance.  
...d colors, and whether you are slim  
...a the collection a size and style to

*None Returnable*

**Reductions**

...ly  
...ning that each and every one was  
...lines, and uncommon general

**50**

marked until now at

**50**

gabardine and poplin  
\$4.75. Styles and sizes for

**of Those Suits**  
**at \$28.00**  
this big sales event.

**19c Turkish Towels**

With Stamped scallop,

**12½c Each**

Large size.

**Pillow and Bolster Cases**; select designs; stamped on extra quality tubing. Sale price ..... **\$1.39**

Second Floor, Stewart & Co.

**Regular 40c Percales**

**32c Yard**

Choice of dress and shirting styles, in light and dark colorings.

Main Floor, Stewart & Co.

**Fine Dress Gingham**

**35c Yard**

Choice of beautiful, effective plaids, checks and stripes; also plain colors.

Main Floor, Stewart & Co.

**English Longcloth**

**10-Yard Piece—\$3 Value**

**\$2.48**

Chamois finish.

**Nainsook**; 10 yards to the piece; \$3.75 value. Sale price ..... **\$2.95**

Main Floor, Stewart & Co.

**Full-Size Comforts**

**\$5.95 Each**

Figured silkoline covering with plain-color silk mull border.

Fifth Floor, Stewart & Co.

**\$2.65 Bleached Cotton**

**Sheets**

**\$2.25 Each**

Size 90x99 inches; just a limited quantity to dispose of.

Main Floor, Stewart & Co.

**\$2.25 Georgette Crepe**

**\$1.89 Yard**

Choice of all the new fall street and evening shades. On sale at the lace department.

**Chiffons**, in figures and checks; also Georgette Crepe in a few shades; \$1.50 and \$1.75 values. On sale at lace department. Yard ..... **95c**

Main Floor, Stewart & Co.

**75c Ruffled Baby Flouncing**

**59c Yard**

27 inches wide; choice of small, neat, dainty patterns.

**Ruffled Baby Flouncing**; 27 inches wide; regular price 69c. Sale price, yard ..... **49c**

Main Floor, Stewart & Co.

**Over 500 Framed Pictures**

**\$1.00 Each**

Choice variety of subjects; suitable for any room; values to \$1.50.

**Framed Pictures**; large assortment, consisting of carbons, hand-colored photos, French prints and Japanese prints; all splendidly framed; \$2.98 values. Choice ..... **\$1.98**

Fifth Floor, Stewart & Co.

**Nurses' \$4.95 Uniforms**

**\$3.95**

One-piece style, of white linene; box pleat on shoulder; pocket and button cuffs; sizes 36 to 46.

Second Floor, Stewart & Co.

**Percale House Dresses**

**\$1.39**

Shown in checks, stripes and figures in light, medium and dark colorings; sizes 36 to 44.

Second Floor, Stewart & Co.

**Pattern Tablecloth**

**Circular Design**

**At Generously Reduced**

**\$3.00 Cloths**—size 64x64 inches

**\$4.00 Cloths**—size 72x76 inches

**\$5.00 Cloths**—size 72x90 inches

**Napkins to Match**—size 21x21

value; sale price, dozen.....

**Union Hemstitched Huck Towels**—

colored border; each.....

Main Floor, Stewart & Co.

**Trimmed Millinery**

*A wonderful assortment and remarkable values at*

**\$4.75**

Some of them were secured especially for this distribution, others represent certain fashions, selected from our higher priced lines and reduced.

All are very fetching and different from the ordinary run of fashions.

**Banded Felt Hats**—black and colors

\$4.95. Special for this sale, at...

**Misses' Trimmed and Ready-to-Wear**

profusion at our customary moderate

**MOURNING HATS AND VEILS**

Third Floor, Stewart & Co.

**\$3.95 Envelope Chemises**

**Of Satin or Crepe de Chine**

**Color Only**

Choice of fifteen pretty styles; some some V neck; some hemstitched and with embroidery trimmed, with lace and

36 to 44.

**Crepe de Chine Gowns**

Flesh color only; square, V and round necks; some hemstitched, others elaborate

and wide ribbons; sizes 15, 16 and 17.

**\$1.00 Undermuslins**

Choice of Nainsook Gowns, in square-necked Chemises of dimity, voile or batiste, in white

Silk Camisoles, in flesh color only.

Second Floor, Stewart & Co.

**Coats for Children**

**From 2 to 8 Years**

**\$5.00 and \$6.00 Values**

**\$3.95**

These Coats have just arrived. Every one of them. They are extremely good looking value. Belter models, with Chase pockets plain or trimmed with material. Materials, zibeline, basket cloth, velvet mixtures and boucle. Colors, burgundy, green, navy and maroon.

Second Floor, Stewart & Co.

**Stewart's American**

**Toy Department**

**Is Now Ready To Sell**

Not wishing to alarm but to state facts to our customers **buy now**. The shortage of manufacturing man power have created a shortage that duplicate orders will not be obtainable.

**Kiddie Kars**

For little boys and girls from 2 to 5 years old.

\$1.00 Kiddie Kars..... **89c**

\$1.50 Kiddie Kars..... **\$1.25**

\$1.98 Kiddie Kars..... **\$1.75**

\$2.50 Kiddie Kars..... **\$2.19**

\$2.98 Kiddie Kars..... **\$2.75**

Sixth Floor, Stewart & Co.





# Training the Workers Who Are Unable to Fight

SHIPLOADS of supplies are daily leaving American ports to provide men in battle with their arms, with their engines of every character and denomination for the great operations, with their hand tools for the details of construction and destruction, and with their physical needs in the way of textiles and food. As a matter of actual calculation, it takes just six tons of shipping a year to transport one man and his supplies to the other side.

To provide these necessary supplies means labor, and today every thinking man and woman has come to a realization of the fact that the conversion of labor from peace-time standards to the production of war essentials is one of the greatest factors in the current program. It means that labor is running shoulder to shoulder with the fighting machine and cannot lag for a moment without causing untold loss on the battlefield. It has been estimated that the ordnance department will require between 600,000 and 1,000,000 trained workers by February. How are these skilled workers to be obtained?

While means for speeding the war labor engine have been many, one very effectual and effective agency in inspiring efficiency has been the training departments created throughout the country in connection with a number of the establishments producing war materials. The object of these "vestibule" schools is to train skilled workers for the performance of some definite task by means of short intensive courses. Their mission is purely emergency, and in their very nature and character they are qualified to maintain the integrity of labor for the benefit of the mechanics who have left their benches for the battle line.

At the same time these training schools stand for the opportunity for the man too old, or the man physically disqualified, to fight; they give him a chance to adapt his line from a non-essential to an essential industry, as well as the boy under eighteen to do his war bit, also the woman with the desire to put her hand to the war machine at home in the place of her man, whom she has sent to the front to fight in her behalf.

Today the 150 training departments, operating in connection with as many establishments, represent one phase of labor's adaptation to



GIRL OF TWENTY ACTING AS ASSISTANT INSPECTOR OF GAUGES.

overcomes fear of factory life in women not accustomed to factories. It inculcates the best spirit, for instruction includes the development of war spirit, speed and accuracy, which must be given in an atmosphere surcharged with these virtues.

The second form of training is for difficult but "repeat" operations, where the operator performs a single operation of a single series, as on a turret lathe, again and again. It is here that remarkable success is quickly attained through a training department, as has been proved wherever tried with judgment. The third type of training teaches processes instead of repeat operations, and a training department is necessary for the best accomplishment with large numbers.

When the war began it was believed that a man or woman wholly unfamiliar with machine shop practice could not quickly be trained for operations of the greatest precision in non-

er satisfactorily by means of their training departments.

Never was Oslerian theory more convincingly refuted than it is today, with the draft limit set at forty-five, and men by the hundreds past "the chloroforming period" are rendering as valuable service as any in war production by means of training. At a vestibule school in New Haven, Conn., a painter, aged sixty, quickly learned to be an adept. Said the superintendent of a factory in Worcester, which has one of the best training departments in the country: "I recently hired a man sixty-three years of age, who had been a pattern maker, a millwright and a stone mason. He came to me and said that he had 'hankering to learn the machinist trade.' We put him to work in the training department and he is showing wonderful progress. His training in those other lines have given him a good course in mechanical work, and we believe that in a short period we can make a first-class instructor out of him."

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Another man of about sixty-eight, formerly a farmer, who had had mechanical training in his youth, walked into the training department of a war factory the other day and quickly qualified for skilled production. A Cincinnati firm, finding it difficult to procure boys, has substituted old men with great success. They find the mature men dependable and ready to accept responsibility, never absent, never late and glad, most of them, to have obtained steady employment at good wages in a high-class institution. Incidentally, a period of training has made them the equal of younger men in the performance of their own particular task.

In Bridgeport a laundry shirt ironer over forty-five years of age, after three days of training, was running a screw machine and producing 25 per cent faster than estimated by the maker of the machine. At the end of a week he was receiving 60 cents an hour in regular production. An enameler of the same age was doing as well on a companion machine in the same training room, but he stayed a month in training so as to qualify as foreman in a screw machine room.

So much for the men over the new draft age. The boys under eighteen are also receiving their share of training to do their part in the war emergency. The Boardman apprentice shops, under which name New Haven, Conn., operates a trade school, is doing its share toward meeting the shortage of skilled and semi-skilled help. This training school teaches many trades under actual work conditions. The machine trains fifty boys in the day course, and under normal conditions the boy graduates after 4,800 hours of study, 75 per cent being trade practice and 25 per cent being academic study. At present many boys leave before the completion of their course to enter local munition

factories. These boys are in great demand and even after a few months of training are found very useful in the factories. The boys who complete their studies and receive their diplomas are largely sought for toolroom work.

The boys in this school work eight hours a day, forty-four hours a week, fifty weeks a year, and produce real machinery, practically all of which goes into the munition plants. One lot of forty-five horizontal tappers was recently built, boxed and ready for shipment to Glasgow for use on British Munitions. The boys build two sizes of screw slotting machines, lathes, slide rests, drill press vices and hundreds of small cutters. They have built and shipped about six hundred machines, not including slide rests and vices. Thus, the school, while following its basic plan, is supplying the country's vital needs in training boys and at the same time making an essential product.

The Blanchard Machine Tool Company of Cambridge, Mass., describes work done to its satisfaction by the "green" operatives who have undergone the short intensive course in its training department. They are employing a man sixty-three years old in the assembly of their caliper device used in connection with their high power vertical surface grinder, for fine measurements on parts being surface ground. He is a shoemaker by trade and has been on this work since June 27, this year. In that time he has learned to assemble completely these delicate instruments, making the proper adjustments, lapping and doing a quality of work that passes rigid inspection.

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This firm employs a number of women who have used its training department as an entrance to the factory. A young woman is used for a thread-cutting operation on a feed screw for a surface grinder, which is made from 40 carbon steel, is twenty-six and one-half inches long and has a one-fourth-inch pitch acme thread about two-thirds of its length that must be a close fit in a bronze unit. This young woman has been on this class of work since last May and she is able to take the screws from the rough stock and turn them to grinding size and finally finish cutting the thread in a time less than was formerly taken by skilled machinists. This is the most remarkable job done by a woman in this shop and requires unusual skill.

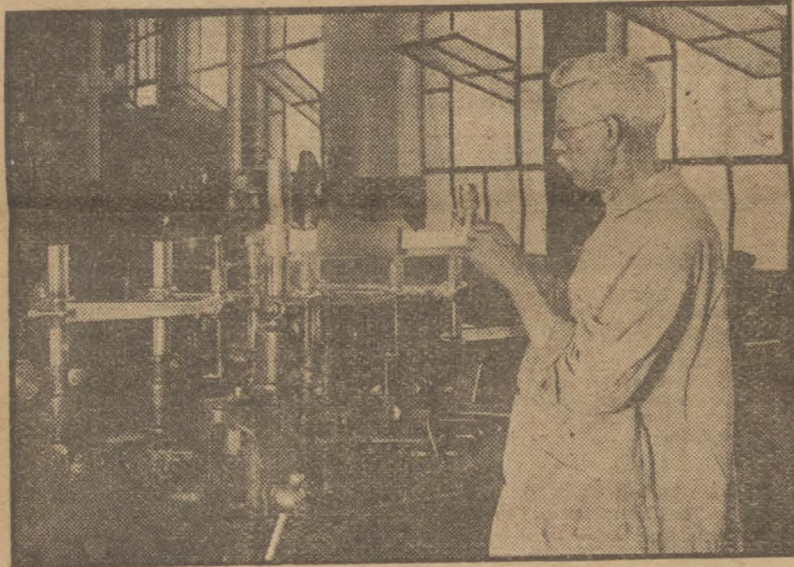
Another woman in this shop who had no previous experience in lathes and went to work in June of this year is employed by this company for finish turning of steel bevel gears to accurate dimensions. She uses a compound slide and produces a quality of work that will pass the most critical inspection. Twenty women are employed in jig drilling, using a 20-inch upright drill. These operatives from the training department have been able to reach the

speed attained by men of long experience in this work. The office of assistant inspector with this firm has been filled since April last by a girl of twenty. While she does not understand all the technical phrases and processes used in connection with the work, there is a very large percentage which is merely routine, and if it does not pass the gauges provided for she refers it to the inspector. By this means a man has been released for productive work.

Women are earning high wages on the skilled work of the class mentioned. Four girls trained to do difficult work in the vestibule school on going into the shop earned an average of \$7 the first day, \$8 the second day, \$9 the third and a little later \$11. The production of the training department worker is said to be between 25 and 33 per cent greater than that of the untrained man or woman, and the test of its satisfactory operation for employer and employee is evidenced by the fact that of those who enter the factories through their training departments only 2 or 3 per cent leave. Credit for a considerable degree of this mutual content is undoubtedly due to the comfort and welfare agencies which have been instituted in the training departments and the factories for the especial benefit of the woman workers.

That a deep interest is being taken in the training of workers for essential war industries was recently demonstrated by the offer of the Chicago board of education of the use of a vacant school building splendidly adapted for factory and machine training. This tender was supplemented by the board's voting \$10,000 as a preliminary fund toward the expense of equipping the building. A number of employers, under the leadership of an expert works manager, are now outlining the complete equipment of the building.

England and France are giving special attention to training their older men who have been merchants, professional men, etc., for skilled production.



THIS MAN, SIXTY-THREE YEARS OF AGE, FORMERLY A SHOEMAKER, WAS TRAINED TO ASSEMBLE CALIPER DEVICE FOR FINE MEASUREMENTS.

the war need, their peculiar function being that, while they familiarize their pupils with one or two essential processes, and the war machine, is by that measure of efficiency speeded to full production in quantity, the permanent labor situation remains stable, so far as the trained all-round mechanic is concerned. In peace the skilled mechanic may acquire proficiency in many branches of his own trade; with war's necessity for intensified production has come the emergency need for experts in the manufacture of single parts, or for skill in a single series of processes in order to expedite quantity production.

The idea of establishing schools for unskilled labor for the war emergency found its inception in the advisory commission of the Council of National Defense, in the national subcommittee on welfare work of its committee on labor. Samuel Gompers is chairman of that committee, and he early foresaw the need of definite training agencies for unskilled labor. The section of his committee which has been mainly responsible for the development of the plan is known as the section on industrial training for war emergency, with H. E. Miles as chairman. The Department of Labor has recently established a training and dilution service, with Charles T. Clayton as director and Mr. Miles as chief of training. This connects the work started in the Council of National Defense, which from its nature is mainly advisory, with a government department with executive power.

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Three types of training are given in the schools of industrial establishments. Many machine operations are very simple, and can be taught an intelligent person in a few minutes or a few hours at a machine or bench. The value of the training department in such a case of simple repetitional work lies in the fact that it teaches the new worker the best and quickest ways of doing his or her task, instead of letting them acquire by imitation the habits of the next worker, which may be good, bad or indifferent, may be wasteful of material or of time, and may be a dissipation of the worker's energy and strength. It also



BOYS BELOW THE DRAFT AGE BEING TRAINED AS EXPERT MECHANICS ON WAR WORK.



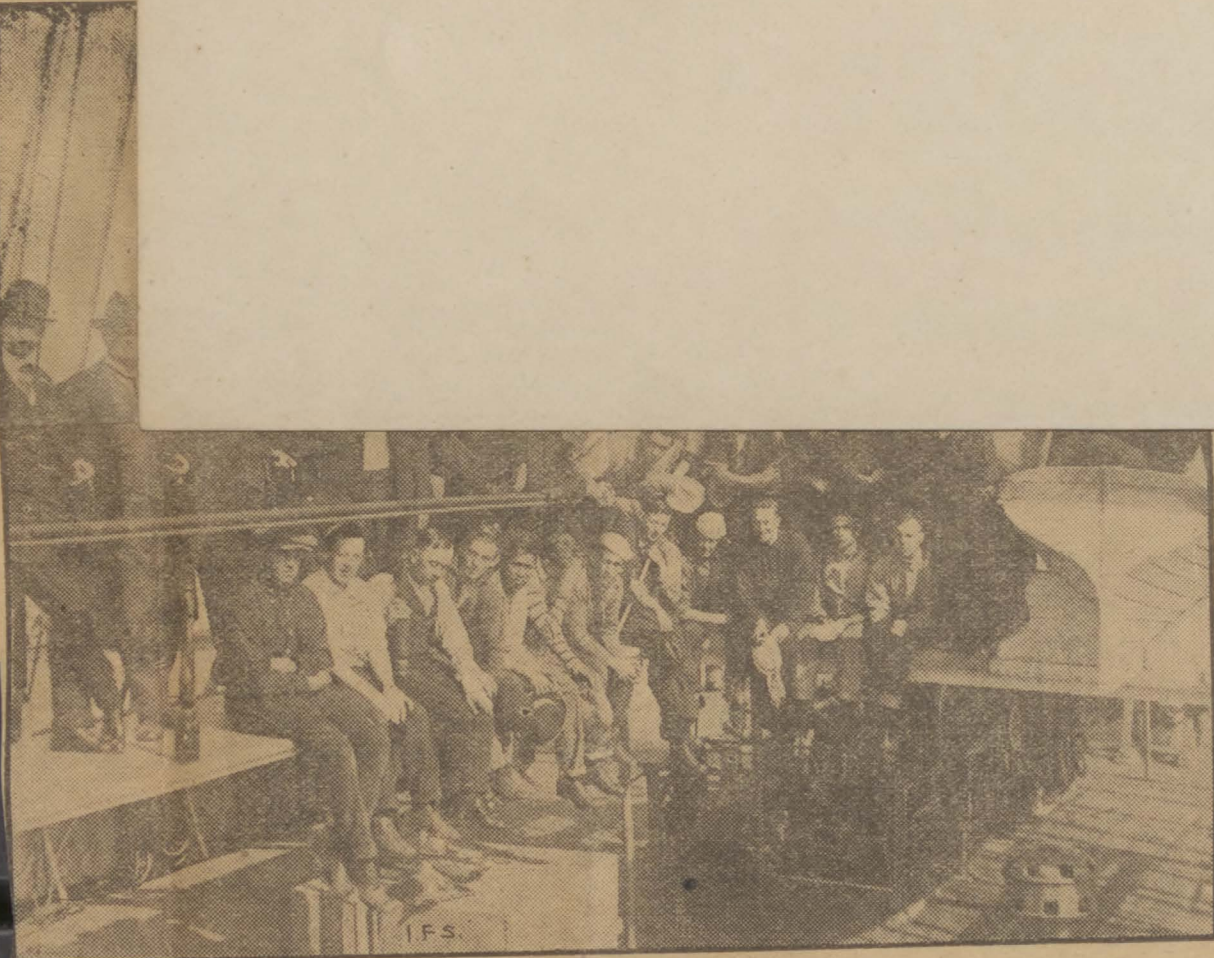
An Important

Power of One Man in  
Washington, Though  
Nowhere to Be Found  
in an Act of Congress,  
Is Prodigious—He  
May Alter the Trade  
Currents of Europe  
and South America.

BY JAMES B. MORROW.

GOODS are left on the docks or taken and ships change from one long route to another at the suggestion of an unseen man in Washington.

Unseen and until now almost unnoted, yet the power of this man, though nowhere to be found in an act of Congress, is prodigious. What



THE FEARLESS CREW OF AN AMERICAN MERCHANT SHIP. MUCH HAS BEEN DONE BY THESE MEN TOWARD DRIVING HUN PIRATES FROM THE SEAS.

nation and its contest with the barbarians. Doctrines were surrendered to measures for war. The scientists, grouped into a company known as the division of planning and statistics, went eagerly and unitedly to work in making the cargoes fit into the vessels still afloat.

It was a delicate as well as a colossal task. Countries were involved. Great interests were concerned. Products are paramount in the view of those who make or grow them. Thus iron, to the furnace man, controls the world of trade and industry. But workers must eat, says the farmer, pointing to his field of wheat. And must be clothed, replies the herdsman, whose specialty is sheep.

Iron, wheat, cotton and wool are among the basic products of civilization. They are large and are given much publicity. But other products are necessary. Some of them are small and sound strange in print. Such matters, therefore, wide and narrow, obvious and obscure, were brought into the counsels of the scientists, who, besides their mathematics, were compelled to exercise their skill in diplomacy.

The ships were listed—American, French, Italian and British. Routes were measured. Freights were estimated. War transportation, at the very start, had to be given a background of facts. That was the beginning of all activity. Into the facts came such items as the history of commodities. Where could they be obtained without waste of tonnage? How could they be obtained—by purchase with money or in exchange for other articles.

A large building, soon filled with clerks, maps, charts and statistics, was requisitioned for Dr. Gay and his staff of scientists. With the ships before them, on paper, and the troops before them, also on paper, together with cannon, shells, rifles and pistols, bridges, rails, cars and locomotives, and so on and so forth, likewise on paper, the scientists began their labors.

Into their figures had to be included, as heretofore stated, food for France and Great Britain, their armies and non-combatants. The ships would not hold the freight—would not hold it by many millions of tons. And ships were being sunk by the Huns daily, almost hourly, in the eastern waters of the Atlantic.

Only one thing then could be done. The mountain of freight had to be leveled down. Soldiers must go; and their weapons and supplies. The French, English and Italians must be kept, with sugar and fat, meat and wheat, on the battle fronts.

Unessential products, as they are called, have confounded the wisest men in politics and business. Early in the war the railroads settled the matter with a typewriter and several long sheets of paper. "Here," they said, easily and complacently, "are 525 items that can be cut from our schedules without much injury to general business."

Up rose at once the producers of and dealers in the 525 articles that were to be excluded from the going and coming freights. Each man proved his case, more or less, except the seller of diamonds, the maker of musical instruments, the brewer of lager beer and the distiller of strong beverages.

Members of the cabinet and their assistants, senators and representatives; dollar-a-year millionaires, Hurley of the shipping board, Hoover of the food administration, Garfield, director of mines and mining, worked over the problem of unessentials and were all and separately floored. No man agreed with any other man. The infinitude of combinations and elimi-



DR. EDWIN F. GAY,  
Who is fighting the Hun with high velocities composed of facts.

nations baffled the wisdom of Washington, not to mention Boston, Philadelphia, Chicago and New York.

Dr. Gay and his council of sages and strategists turned the beam of perplexity end for end. "Why waste time," they asked, "on things that are not essential? What we want to know are the things that are essential to the winning of this war." Immediately the case became as clear as two times two are four. "We need," says Gay, "manganese for the hardening of steel; coconut shells for the making of gas masks; tin, platinum and nitrate of soda with which to manufacture explosives. The more of these articles the better."

This list became inviolate. Now it should be understood that Dr. Gay and his brilliant company of associates have no authority to say what must be done or what can not be attempted. Their functions are to investigate and to suggest. Whereupon the shipping board acts. But their lists, in effect, are real statutes. The board accepts them and they go into force.

To mention the order of the lists after the first one would occasion debate and much unavailing correspondence. Protesting men would call for explanations. "I am in broom corn, why give coffee pots preference?" some one might ask, if such, indeed, happened to be the fact.

It is enough to say that many products are given cargo space in vessels bound for America, provided there is room for them, and they are on the docks ready for shipment. They included flax, jute bagging, hides, quebracho extract (for tanning), wool, camphor, coffee, kemp, spices and mica. There are a number of others.

Having found the essential products, it was not difficult to catalogue those that were not essential. Works of art, shoe blacking, carriages, agricultural implements, clocks and watches, billiard balls, poker chips, manufactures of cotton, electric

lamps, live animals (except for breeding purposes), feathers, eggs, cocoa and chocolate and all fruits, except pineapples and bananas, Dr. Gay holds, are not needed in the United States at this time.

To these things he adds jewelry, matches, pencils, malt liquors, wines, candy, pipes for smokers, toys, perfumery, umbrellas, penholders, certain chemicals, musical instruments and so forth. Altogether, there are hundreds of articles, prior or impossible, in their relation to ships bound for America.

Each article has a history. It has a source and a use. Over it may be one or a dozen flags. Behind it are men and their money, foreign men and inhabitants of this country. If a foreigner is injured he may retaliate. If a native is injured he cannot pay war taxes or buy liberty bonds and savings stamps.

Hence the scientists were obliged at once to be historians, diplomats and statisticians; also geographers and commercial experts. Sources of supply had to be ascertained. Quantities on hand, the world over, had to be tabulated. And always "Whose ox is being gored?" was written in large letters on the walls of the rooms wherein questions were argued and decided.

Blondin at Niagara never balanced himself more perfectly than did Gay and his political economists. Linseed, wool, hides and quebracho extract are exports from the Argentine Republic to this country. Necessary articles, yes—linseed for oil, wool for clothing, hides for leather.

Some Argentine wool, however, is not suitable for clothing. As to hides the supply present and the supply prospective had to be learned and estimated. How much leather will be needed? was another question that required an answer. And of what quality? Again, Can hides be procured by a shorter route?

The distance is long from Boston or Baltimore to Buenos Aires and ships were sorely needed between New York and Southampton and between Bordeaux and Philadelphia. Nor could Calcutta, many thousands of miles off, be excluded from the grave conferences of the scientists. Jute is grown in India. The English make bags of it and fill them with sand for the trenches. Americans make bags of it for wheat and rye, oats and corn. A scarcity of bags in this country would cause a loss of millions of bushels of grain, which, in thousands of instances, is threshed in the fields and directly hauled to market.

While rivets were being driven, speeches were being made, articles were being written, timbers were being hewn, steel was being rolled and masts were being felled in the forests, these men, Gay and his economists, their names unknown, their voices unheard, were adding and dividing and then subtracting to make the troops and products go into the holds. And the torpedoes were working greater and still greater ruin. To them also must honor be given in the future for helping to clear the barred road to Berlin.

Their labors, moreover, continue. "Ten thousand tons eliminated," they declare, "are ten thousand tons transported on the North Atlantic, if the machinery works." So their facts, national and international, separate and collective, go to Hurley of the shipping board, Baker of the Army, Daniels of the Navy, and Lansing, Secretary of State, that the machinery may work to the rout of the Prussians. Furthermore, the facts, if important internationally, are submitted to the

United States, Great Britain, France and Italy, recommends the recruiting of vessels and other helpful shipping measures.

It was Gay, of course, who, being himself chosen, picked and organized his men. An economist, a scientist, a professor, a doctor of philosophy, as is shown by the records of the University of Berlin, he is, nevertheless, practical and free of all mischievous and unachievable dreams. The rainbows he sees have no pots of gold at their two ends.

Dark of hair and eyes, compact of frame, brisk but never brusque, cheerful and stalwart, he would harmonize with and function perfectly, atmospherically and otherwise, in a factory or a bank. Lecturing to classes has given him style, vigor and readiness as a conversationalist.

There is the academic mind and there is the trained historical mind and there is the disciplined economic mind. Gay has them all. Business during the sixteenth century has been one of his most patient studies. The hero of that age, according to his analysis of the age, was John Calvin, the man of "unpausing activity," as Dr. William Lindsay Alexander, the Scotch scholar, has described him.

"Why are the Yankees of New England money-makers?" Gay asks his classes in political economy, business management, banking, bookkeeping, salesmanship and cost accounting. The answer is without geographical prejudice because Gay was born in Michigan, where his father was a lumberman. "Because," says Gay, replying to his own inquiry, "New England men have followed the light of John Calvin."

Stricken with fever, asthma, stone and gout, Calvin toiled on. Too ill to preach himself, he was carried on a litter to church. "Would you that the Lord should find me idle when He comes?" was his answer to remonstrating friends. A pious man, indeed, was Calvin, but Gay asserts that he transformed the face of business. He made labor at last respectable. Adam, sent away, was not cursed, but blessed. This Calvin taught and his teaching was brought in the Mayflower to Massachusetts.

Yet he did more. He reformed the habits of living. Jewels and velvet were put aside for the plainest of clothing. Even the hours for eating were changed. "It was his wont, after a frugal supper, to labor till midnight," Dr. Alexander writes.

Therefore the Puritans became industrious, thrifty and temperate and they took these virtues with them when they set out for America. Such is the reply, then, to the great question that Dr. Gay asks of his classes, and which he answers. Adding meanwhile that Calvin revolutionized the thought and program of mankind.

To Gay facts always are dominant. They are concrete and can be handled, boxed, shipped and utilized. Opinions may be sound and safe or false and dangerous. Facts, accordingly, are the base from which he moves toward any end that he has in purpose. With him the history of business is an open page. Human transactions are accurately defined. And the result, so far as Gay himself is concerned, is an almost canny foresight of that which is to happen. Thus: The facts are so and so and this or that will come to pass.

Usually, the political economist says: "Ethically, regardless of experience and the infirmities of humanity, conditions under my formula will improve." But they do not, fundamentally. Vision in such a case is invariably forward. Gay begins by looking backward.

Gay's childhood was spent in the woods, whither his father, Aaron F., had moved from Detroit. In those days a pine village consisted of one street, in which there were stumps and a roadway of slabs embedded in and covered with sawdust. Houses were built of rough lumber from the mills. There were stores and saloons and sidewalks peppered with holes made by the spikes in loggers' boots.

It was no place, Aaron F. thought, in which to rear a family. He sent his wife and son, therefore, to Europe, where they lived alternately in England, France and Switzerland and where the son attended school.

Dean Gay was graduated at the University of Michigan at the age of twenty-two. Then he returned to Europe and two years later won his degree at Berlin. He began at Harvard as an instructor. Since 1905 he has been professor of economics and since 1908 dean of the graduate school of business administration.

"This," says Emerson, "is the key to the power of the greatest men—their spirit diffuses itself." The forty-scientists are Gay, proportioned more or less in equal parts; and troops are moving and the allies are being sustained.