INTERIM REPORT ON
TRAINING WITHIN INDUSTRY 1940 - 1945

WAR MANPOWER COMMISSION
BUREAU OF TRAINING
TRAINING WITHIN INDUSTRY SERVICE
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I. THE ORGANIZATION OF "TRAINING WITHIN INDUSTRY"

The idea of utilizing what industry itself was doing to help itself in its problems of training supervisors and workers for expansion and conversion stemmed out of the Advisory Commission to the Council of National Defense. The program was built around a volunteer staff of industrial men, on loan for full or part time during a time of critical, emergency need. The Training Within Industry organization was, accordingly, set up in August 1940 to provide consulting, advisory, and clearing-house service. This service was given, and a number of good principles of training, accepted by recognized industrial concerns, were set down in form that could reach all contractors for defense production. By May, 1941 rapid expansion had demonstrated the need for more specific assistance, and the growing pressures for service brought out the need for full-time, paid staff members.

The Establishment of Training Within Industry

In July, 1940 Owen D. Young of the Advisory Commission to the Council of National Defense decided that industry was going to need some help in getting ready for greatly increased production of new war materials. As a result of the first meeting of the Advisory Commission to the Council of National Defense, he and Sidney Hillman decided on an immediate next step. 1/ In mid-August Mr. Hillman asked Socony Vacuum

1/ Committee on Industrial Training, Council of National Defense, "Minutes of Meeting," July 24, 1940 (see Exhibit 1 in Appendix).

to lend the services of C. R. Dooley for a time, and Western Electric to make Walter Dietz available.

Mr. Young, in his outline of the picture of defense labor supply, said:

> "The first reservoir will be men trained in industry itself, for they have the qualifications next best to experience. As compartments are potentially threatened in any area, the training facilities in industry in that area should be brought into play so that they will be ready to supply the deficiencies. This will be the responsibilities of Mr. Dooley, your Director of Training in Industry." 2/

When Mr. Dooley and Mr. Dietz came to Washington in August of 1940 they looked on the assignment as one lasting six weeks or two months - they would establish a way for industry to help itself. They planned to organize a country-wide network of industrial training men who would have two functions:

1. establish a local panel of industrial men to serve as volunteer consultants on training problems in that area

2. serve as a link in the national pattern in order to make experience from one part of the country available in another section.

They proceeded to set up a very informal, decentralized organization of 22 districts. Each was headed by a prominent local production manager or industrial personnel man who directed his T.W.I. district on a dollar-a-year basis. Since it was recognized that he was not going to give full time to the job, he was given one paid assistant, and eventually a stenographer. But the bulk of the work was to be done by the panel - the group, ranging in size from 10 to 60 members, who would serve when their help was requested.

2/ Memorandum, Owen D. Young to Sidney Hillman, both of N.D.A.C., August 15, 1940.

The Lens Grinder Study

All of this was under way by the end of September, 1940. However, something which had happened in August began to have an effect which eventually determined the outline of T.W.I.'s work. All through the summer of 1940 there had been much discussion of shortages in particular lines of skilled work. One of the most serious shortages was in lens grinders for government arsenals and navy yards.

On August 28, 1940 a conference on lens grinding and instrument making was held in Washington. 3/ T.W.I., which at that time meant just Mr. Dooley and Mr. Dietz, arranged to borrow M. J. Kane from American Telephone and Telegraph to make plant visits and write the material in training form. Late in September, T.W.I. reported to Sidney Hillman, who was directing N.D.A.C. activities in the manpower field, that Mr. Kane had visited Bausch & Lomb, Eastman Kodak, and Spencer Lens to gather material on precision optical work. T.W.I. looked at the job as well in hand - the lens grinding study would be issued as a report; and the specific training steps recommended in it would be written up in bulletin form for general application. Mr. Dietz wrote to the T.W.I. districts as follows:

> "Out of Mike Kane's work there is evolving a very practical approach which will be covered in another bulletin in the series on production training called, 'Helping the Experienced Worker to Break In a Man on a New Job.' 4/ It is so simple and so practical that our prophecy is that it is going to be one of your best sellers. We are especially anxious to get your criticism on it because if it does not click with the men

3/ Training Within Industry, Labor Supply Division, Advisory Commission to the Council of National Defense, "Lens and Precision Instrument Industry Conference," August 28, 1940 (see Exhibit 2 in Appendix).

4/ Training Within Industry, Labor Division, Advisory Commission to the Council of National Defense, "Helping the Experienced Worker to 'Break in' a Man on a New Job," November 1940 (see Exhibit 7 in Appendix).

out in the shop it will be no good. Let us know how it strikes some of the production people out your way." 5/

In the meantime, T.W.I. was working on a few other bulletins to get the clearing-house function into operation before Mr. Dooley and Mr. Dietz returned to their companies. In order to speed the organizing job, they felt more help was needed. Accordingly William Conover was borrowed from U. S. Steel and James Mitchell was borrowed from General Somervell who at that time headed the Works Projects Administration in New York City.

During the fall of 1940, concurrently with the lens-grinding work, T.W.I. people were in touch with numbers of defense contractors. 6/ Two factors seemed to be common: jobs were going to have to be engineered, that is, broken down into small operations; and the men who already knew those operations (supervisors, skilled mechanics, and lead-men) were going to have to break in new men on these jobs.

Accordingly the lens-grinding study, even before it was ready to release, was regarded as something which would be used not only for its original purpose but also to set a pattern for what any contractor could do when faced by a shortage of skilled workers. For example, in Chicago a contractor was faced with a large order for precision optical light bulbs which are no larger than a grain of wheat. The customary training time for this work was three years. Engineering the job and the making of job breakdowns cut training time to six weeks.

The original problem in the lens-grinding field was to assist government arsenals and navy yards to get 350 properly qualified lens grinders.

5/ Walter Dietz, Letter to All T.W.I. Districts, December 6, 1940.

6/ Training Within Industry, Labor Supply Division, Advisory Commission to the Council of National Defense, "Meeting of Baltimore Personnel Men and Officers of Maryland State Employment Service," September 4, 1940 (see Exhibit 3 in Appendix).

Upon studying this problem, it was found that 20 jobs are really included in lens-grinding. It had been assumed that a lens-grinder must be able to perform all 20 jobs. In an emergency, the specific solution recommended was to up-grade workers now employed on precision optical work to the most highly skilled jobs, and to break in new people on just one of the simplest jobs. This required production specifications and intensive training.

Experimental work was done with the Frankford Arsenal, the Bausch & Lomb Optical Company, and the Eastman Kodak Company. One kind of work was found to include 14 operations. Each of these 14 operations was broken down by an experienced worker into assignments which could be made full-time work if the volume of production warranted it. Each part of the job was studied to find the important features or key points. In the account of this experiment, "Precision Lens Grinding," which T.W.I. issued in March, 1941, it was stated, "The main purpose in having the worker identify these key points is to enable him to recall them when he is breaking in new people. His own familiarity with the work often causes a competent worker to overlook the difficulties he had during his early stages and thus without intention, he fails to mention these difficulties when breaking-in a new man." 7/ It was also found that the production order was not always the best learning order.

T.W.I. thought that, by this demonstration, and by using the specific steps outlined in its instruction bulletin, a plant could break down its own skilled jobs. By stressing the value of key points, of taking small instruction steps at a time, and of outlining a method of good instruction, the plants would then be able to go ahead on their own. Within a short

7/ Training Within Industry, Labor Division, Office of Production Management, "Precision Lens Grinding," March 15, 1941 (see Exhibit 8 in Appendix).

time after the bulletin on breaking-in new men was issued in November, 1940, almost a half-million copies of this bulletin were circulated among industrial men. Good instruction was outlined as involving seven steps:

1. Show how to do it.
2. Explain key points.
3. Let him watch you do it again.
4. Let him do the simple parts of the job.
5. Help him do the whole job.
6. Let him do whole job - but watch him.
7. Put him on his own.

In line with the idea that T.W.I. would serve as a clearing-house on industrial training, a number of "examples of successful training programs" were issued. One described the staffing and training of employees of the Wright Aeronautical plant at Lockland, Ohio. Another gave specific details on training for electrical workers in a shipyard.

Later T.W.I. and the Apprentice-Training Service agreed on a specific division of work and T.W.I. withdrew from the field of techniques for training individual workers, and limited its activities to the skill needs of supervisors and the skill need of the plant man who has functional responsibility for training. 8/

Early in the defense program the Labor Division of the Office of Production Management was delegated the responsibility of getting the necessary workers into the plants of defense industries. Since it was soon discovered that such a program could not be executed from Washington, an organization

8/ War Manpower Commission, "Statement of Relationship between Training Within Industry Division, War Manpower Commission, and Apprentice-Training Service, War Manpower Commission," August 12, 1942 (see Exhibit 30 in Appendix).

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of Regional Labor Supply Committees was established under the Labor Supply Division, composed of representatives of the various training and labor supply agencies. The Labor Supply Division was not an operating unit but a coordinating agency which assigned duties and responsibilities to the appropriate agencies and insured that the duties were carried out.

The District Representatives of Training Within Industry served on these committees throughout the country. On occasion, the T.W.I. office in a district actually performed the task of a branch labor supply, labor relations or public relations office, until the appropriate agency was able to "take over." After the establishment and strengthening of local offices of the other agencies to handle manpower problems not directly related to training, T.W.I. continued to cooperate actively and constantly.

Each T.W.I. District functioned as an integral part of the Regional or Area Labor Supply organization. In this relationship, T.W.I. staff members were frequently required to make or assist in special plant or area surveys on problems of manpower and training. Because of the participation of Training Within Industry's Director, Associate Director and District Representatives in the Labor Supply Committee work, in-plant training programs were directly related to manpower shortages and problems as well as contemplated shifts in war production plans. The period of all this was from about July 1941 to April 1942 when the War Manpower Commission was formed. 8A/

While Socony Vacuum, Western Electric, American Telephone and Telegraph, and U. S. Steel often asked how much longer their men were going to be needed in Washington, it was always possible to arrange for just a little more time. General Somervell, however, felt he could not agree to an indefinite loan and recalled Mr. Mitchell to go with him to the Army's Services of Supply.

8A/ The various organization changes in which T.W.I. has been involved are outlined on page 42.

Background for T.W.I.

It is not possible to try to understand the World War II agency called the "Training Within Industry Service" without looking at the backgrounds of the four directors: C. R. Dooley, Director; Walter Dietz, Associate Director; M. J. Kane and William Conover, Assistant Directors. Each brought with him to T.W.I. his own experience and philosophy.

Mr. Dooley has had three industrial connections - with Westinghouse Electric and Manufacturing Company which he joined in 1902, with the Standard Oil Company of New Jersey, and with the Socony Vacuum Oil Company whose industrial relations manager he was when he came to Washington in 1940. In all of these companies the planning and direction of training was part of his responsibilities.

Mr. Dietz joined the Western Electric Company in 1902 and has been continuously associated with that company except when he has been on loan to the government for war-time assignments. He left the position of personnel relations manager of the Manufacturing Department to come to Washington in 1940.

Mr. Kane had been with the General Electric Company as a personnel manager before the first World War, and after that war went to the American Telephone and Telegraph Company where he handled training problems involving supervisors, instructors, and conference leaders. After spending four years with T.W.I., Mr. Kane left to become Director of Industrial Relations for the National Association of Manufacturers.

Mr. Conover came to T.W.I. from the United States Steel Corporation where he was Assistant Director of Industrial Relations. His previous industrial connections were with the Philadelphia Gas Company, the Western Electric Company, and Lycoming Manufacturing Company. In 1944 Mr. Conover

spent part of his time with United States Steel and then was on loan to the Office of Contract Settlement before leaving T.W.I. to become a works manager for the General Cable Company.

Mr. Dooley, Mr. Dietz, and Mr. Kane had been borrowed by the government in the first World War. Now they were back again to head a group facing even more difficult problems. They brought with them their own previous war experience and what had been happening in industrial training since World War I. And they also brought the knowledge that the valuable experiences of the first war had not taken root in many industrial establishments. This time, the work had to go deeper.

In 1940 there were, of course, many industrial people who gave verbal acceptance to the training principles established during the first World War - but these principles were not being generally used. That is, there were few indications that industry was actively following the principles which "everyone agreed" were right. These principles were:

1. Training must be done <u>within</u> industry.
2. Instructors should be plant men, preferably supervisors.
3. These supervisors would need help in the method of instruction.
4. Break-in time is cut by training on the job.
5. The most effective size of group for training by one instructor is from 9 to 11.
6. Spelling-out the importance of work and giving of personal attention develops worker loyalty.
7. Training is an investment - its costs are paid by eventual increased production.
8. Ability to instruct is an important supervisory qualification.
9. The four steps in good instruction (as outlined by C. R. Allen, of the Emergency Fleet Corporation, in his book, "The Instructor, the Man, and the Job",

published in 1919) are:

Preparation

Presentation

Application

Inspection

10. Job analysis or the making of job breakdowns is an important preliminary step before instruction.

Three of the four directors of T.W.I. are people who were familiar with these principles developed during the first World War and all four of them had actually been using them in their own companies. Their own conviction came from experience, and they were still optomistic about getting defense contractors to accept these principles and go ahead on their own, tc help themselves.

The "Survey" Stage

Mr. Dooley, Mr. Dietz, Mr. Kane, and Mr. Conover stayed on feeling all the time that the day of their return was just around the corner, that soon contracting companies would accept responsibility and no longer need help from Washington except as they learned of new techniques through the T.W.I. district clearing-houses. Mr. Kane and Mr. Conover, in particular, spent most of their time in defense plants, making surveys and giving individual counseling service. This could not go on forever, of course, and two men could not cover the country very quickly, but it was felt that the members of the various T.W.I. district panels would soon begin doing this same sort of thing. The program would soon be self-operating, so T.W.I. thought in the winter of 1941.

In May, 1941 all the industrial men who were heading the T.W.I. districts were brought into Washington where they reported their experience in making surveys and in getting the principles of T.W.I.'s bulletin on instruction

adopted. All the district men were asked to make at least one survey in June.

New Jersey Experience

Glenn Gardiner of Forstmann Woolen, who headed the New Jersey district, reported to T.W.I. Headquarters that "even after a survey is made and our recommendations proposed, not one company out of twenty-five will be found capable of carrying out the recommendations without considerable follow-up assistance and selling of successive steps. All of our contacts and surveys lead us to the conclusion that there is one common training need, which will be found without exception in every company. This is the need for Job Instructor Training. More than 90 per cent of the necessary training will have to be done on the job by the foremen, assistant foremen and key-men who have the know-how, and these key-men must be relied upon to pass that know-how along to workers. In the light of these conclusions, most can be accomplished in the shortest period of time by providing a plan whereby effective assistance can be given to every war production company in the District in training its foremen and their assistants as job instructors." 9/

9/ Training Within Industry, Labor Division, Office of Production Management, "Conference of District Representatives," May 13-14, 1941 (see Exhibit 9 in Appendix).

II. SUPERVISORY TRAINING

Defense contractors needed help - they were expanding and there were many green workers. It would not be possible for a small organization to reach all new workers - but supervisors, the key men transmitting management requirements to production workers, might be reached. The immediate need for supervisors was for assistance in breaking-in men on new work. Accordingly, the Job Instruction program was launched. T.W.I. provided "Institute Conductors" - trained men who prepared, in groups of ten, "trainers" who would conduct sessions in "how to instruct" for supervisors in groups of ten. This has often been called the multiplier technique. In the beginning, many of these "trainers" were vocational school instructors who were given specific preparation by T.W.I. It was found that an outside trainer did not satisfy continuing plant needs, and that the supervisor needed more than ability to instruct.

The Package Idea

The idea of 10 hours of instruction for a group of ten men, or what has been called the Training Within Industry "package" idea, is Mr. Gardiner's contribution. Men had been instructed in groups before in "how to instruct" using the same basic steps as now appeared in the Job Instruction program, but the sizes of groups varied, the lengths of the programs varied, and the content usually was determined by the instructor's opinions of the particular group.

Mr. Gardiner brought standardization to this field. His contribution can be compared to the introduction of power-cutting machines in the garment industry, for as long as every garment had to be hand-cut, the volume was small. Power-cutting machines and sewing machines have meant more clothes for everybody. A standardized package of Job Instruction meant that an

untold number of supervisors would get assistance which never before could have been available to them.

Industry's First Need - "Breaking in Green Men"

The prime problem in defense days was expansion to handle new contracts. This meant that millions of inexperienced workers had to learn their jobs, and learn this new work under supervisors who were new at the job of directing the work of others.

In the late spring of 1941 the New Jersey T.W.I. panel, working under Mr. Gardiner's direction, developed the first specific program in Job Instruction - 10 hours of basic instruction and practice for a group of 10 industrial supervisors, under the leadership of a trainer prepared by T.W.I. It was planned that the trainers would be drawn from vocational instructors who would be free for the summer. This was definitely regarded as a service to be rendered and financed by the federal government.

The first trial group followed a pattern which now has been used for 1,000,000 supervisors who have been given, by T.W.I., basic instruction in how to break in workers on new jobs. The worthlessness of "telling" alone, or "showing" alone, set the stage for a demonstration of good instruction which used the Allen steps. The four steps were put on a pocket-sized card. The first J.I. slogan, "If the learner hasn't learned, the teacher hasn't taught," gives the picture of the program. Each member of the group then demonstrated use of the method.

Within a month of the start of the program, New Jersey industries were beginning to ask to have their own men prepared as trainers - this need for helping supervisors to break in green people wasn't going to end with the end of the summer of 1941. What had been originally started as something that would be done during a period when vocational instructors had free time,

just could not stop when they went back to the schools.

T.W.I. Headquarters Adopts the Program

In August 1941, the T.W.I. district heads again met in Washington. Mr. Gardiner described New Jersey's "O.P.M. Trainer Plan," and stressed the following four essentials for a training program for defense industry:

1. The training program should be one of utter simplicity.
2. It must be prepared for presentation by intensive and carefully "blueprinted" procedure, utilizing a minimum of time.
3. It must be built on the principle of demonstration and practice of "learning by doing," rather than on theory.
4. The program should provide for "multipliers" to spread the training by coaching selected men as trainers, who, after being qualified in Institutes, go into industry and pass the program on to supervisors and their assistants in a uniform manner. 10/

The New Jersey plan provided for:

1. the making of contacts by panel men
2. the preparation of the trainer's schedule by the State Vocational Education department
3. sessions put on by trainers who were compensated from vocational education funds
4. quality checks by the panel members

T.W.I. decided that, on the basis of New Jersey experience with some seventy plants, it would be practical for the national T.W.I. organisation to promote one phase of training at a time, and that "T.W.I. can be more effective if some of the sideline activities are sheared off." 11/

10/ Training Within Industry, Labor Division, Office of Production Management, "Conference of District Representatives," August 7-8, 1941 (see Exhibit 12 in Appendix).

11/ ibid

This meant that, while T.W.I. still advocated upgrading, apprenticeship, etc., it had decided to focus its specific work in the field of supervisory improvement.

It will be noticed that T.W.I., in this first program, had set a pattern followed in all its later programs: T.W.I. programs were not available to individuals but were only available to plant management, for the people whom it designated as needing this assistance.

In September 1941, at the end of T.W.I.'s first year, the following summary was made:

> The whole objective in the field has been to assist contractors and sub-contractors to diagnose their training needs and to formulate suitable training set-ups. During 1940 it was necessary to deal with the reluctance of many employers to take action in planning to meet their anticipated needs for employees in various occupations. As an outgrowth of experience during the depression period the feeling existed that there was a surplus of unemployed skilled men available, and that requirements to meet the specific needs of a plant could easily be met by making the opportunities known. During the early months, T.W.I. took the attitude of availability for service upon call, if and when employers found that they were facing new problems in the expansion of their personnel. Notwithstanding general publicity, correspondence, and meetings with industrial groups spreading information about this new service, there were relatively few specific requests for help.
>
> It soon became evident that T.W.I. must take the initiative, and plans were worked out so that principal contractors were approached, their existing training plans appraised, and, where possible, complete surveys inside their plants carried on. In such in-plant surveys, specific recommendations were made and followed up by our training consultants. Training material was furnished and embodied in plant programs. Discussion groups with representatives of defense contractors took up various current training and personnel problems.
>
> In the New Jersey district, intensive job instructor training was launched on an experimental basis to help new supervisors, leadmen, and experienced workers to become more competent in breaking in new employees and in training present employees for new jobs. This program, on account of its adaptability and practical approach and the tested experience it embodies, proved to be so helpful that it

has now been similarly launched in several other districts and will soon be extended on a nationwide basis. 12/

T.W.I. headquarters at once began to work with L. S. Hawkins, the vocational education head of the Office of Education, in order that financing arrangements like those made in New Jersey could be set up in every state.

In November 1941, T.W.I. announced that the new program was actually in operation on a national basis.

On November 11 and 12, 1941, the district heads of T.W.I. again assembled in Washington and reviewed the progress in Job Instruction. At this time, it was agreed that there should be two other intensive streamlined supervisory programs, one to be in the field of Human Relations and one in the field of Production Supervision. A possible program for training directors was also discussed at this time. Thus, the broad outline of the four T.W.I. programs was projected in 1941. 13/

By September 1942, when T.W.I. was two years old and when the Job Instructor Training program had been in operation on a nation-wide basis for one year, T.W.I. stated:

> The greatest single accomplishment of T.W.I. has been to create a tremendous acceptance in industry of the importance of training. This far-reaching acceptance by industry will undoubtedly leave a lasting impression of the tremendous success of J.I.T. and the voluntary demand for additional programs are evidence of eager industrial participation . . . In connection with the continuance of J.I.T., our main problem is quality control and follow-through. This will require the development of additional men to specialize in this phase of the work. The problem is the extent to which J.I.T. should be made available to anyone who

12/ Training Within Industry, Labor Division, Office of Production Management, "First Annual Progress Report," September 1941 (see Exhibit 13 in Appendix).

13/ Training Within Industry, Labor Division, Office of Production Management, "Conference of District Representatives," November 11-12, 1941 (see Exhibit 15 in Appendix).

requests it on the basis that everything will be in the interest of the war effort in the future. 14/

Promoting the Program

In 1941 there were approximately 5,000,000 defense workers. With the actual beginning of the war, employment in war industry expanded tremendously. In the spring of 1942 the Government estimated that there would be 17,500,000 workers by the end of 1942 and 27,000,000 by the end of 1943.

In 1942, approximately 6,000 new workers were reporting for work every day. Four hundred workers who had had no experience in directing the work of other people were being appointed as supervisors every day. Some were experienced operators, but some of those who were going to direct the work of these new workers had neither knowledge of the job nor of how to break in new people. This undoubtedly contributed to the speed with which T.W.I.'s program was accepted.

The Job Instructor Training program was promoted at first in all districts by part-time industrial men who served as a volunteer panel. In no other way except with volunteer help could such a program have been so quickly launched. But gradually the districts realized that men with jobs of their own could not possibly fill all needs. Slowly, as suitable men could be located (largely on release from non-war industry) the district staffs grew.

In September 1942 when T.W.I. had completed two years of operation, the optimistic statement was made that "The promotion stage is practically over, and the organization is a going and growing concern. The problem now is 'production'." 15/ It was true that "J.I.T." was almost a national institution, and the size of the group who knew something of the program was greatly

14/ Training Within Industry, War Manpower Commission, "Progress Report," September, 1942 (see Exhibit 18 in Appendix).

15/ ibid

enlarged with the publication of an article as part of a three-part series written by Stuart Chase for the Reader's Digest in the fall of 1943. 16/

The fame of "Job Instructor Training," which was later renamed "Job Instruction," decreased the launching problems of the later supervisory programs - Job Methods, September 1942, and Job Relations, February 1943.

When T.W.I. reached the stage of its millionth supervisory certificate, it was appropriate that the celebration centered in New Jersey, J.I.'s birthplace.

The New Jersey State Chamber of Commerce took the initiative in arranging a public celebration to mark the granting of the millionth T.W.I. certificate. This was not the millionth Job Instruction certificate but Job Instruction had accounted for over seven hundred thousand out of the million. The National Association of State Chambers of Commerce chose this occasion to create and present a new kind of recognition which was called "Industry's Award." It has become quite usual for the Government to decorate industry for doing a good job. This was the first recorded instance of Government being decorated by private industry. In making the award, Thomas Roy Jones, President of the New Jersey State Chamber of Commerce, said that T.W.I., in the eyes of industry, has measured up to the following standards:

1. It is a service measurable in practical results.
2. The service being rendered is timely and shorn of non-essentials.
3. The service is economical in proportion to results obtained.

16/ Stuart Chase, "Teaching Foremen that Workers Are People," Reader's Digest, September, 1943; "Show-How: A Revolution in Management," October, 1943; "To Do It Easier and Better," November, 1943 (see Exhibit 44 in Appendix).

4. The personnel of the agency consists of people who intimately understand the paractical problems of industry, and recognize the value of the established system of free enterprise.

5. It is a service which does not undertake to do for industry the things industry can do for itself.

6. It renders a service devoid of all other purposes except that for which it is constituted. 17/

Vocational Education and the Job Instruction Program

On October 6, 1941, T.W.I. issued a general policy letter setting forth a number of provisions about the operation of the Job Instruction program. 18/ It was required that districts first make arrangements with the State Vocational Education Department as to financing the payment to trainers and arrange to have a schedule supervisor designated. It was emphasized that State Directors must understand that the program was to be presented exactly as offered by T.W.I. As a second step, the District Staff or a representative from T.W.I. Headquarters would hold a promotional meeting for management advisers, labor advisers, panel members, members of the State Vocational Education Department, and defense contractors.

It was emphasized that the plant men admitted to Institutes must be free to put on sessions both during and after working hours. For work on their own time they would be compensated by State Vocational Funds. Immediate scheduling of sessions was urged. "It is essential that the Trainers put into practice immediately what they have learned, because the greater the lapse of time before they go into action, the less effective their instruction will be."

17/ New Jersey State Chamber of Commerce, The First Million, February 3, 1944 (see Exhibit 45 in Appendix).

18/ C. R. Dooley to All T.W.I. Districts.

On October 26, 1941, T.W.I. issued a general policy letter transmitting the first directive from the Office of Education on the handling of J.I. sessions. This first release specified that T.W.I. would make contacts with defense industries, that T.W.I. would conduct the Institutes in which trainers were developed, that sessions held by these trainers either in their own plants or by temporary assignment to other war plants on time not covered by the trainers' regular salary could be compensated for through defense funds available in the state, that the contacts would be followed up and arrangements completed by a State Vocational Education representative who would work in cooperation with T.W.I. "This program is being successfully staged in a number of states and seems to meet an urgent need of industry. It should not be considered as complete instructor training or foremanship training program, but should be regarded as supplying a most urgently needed first step. It should be followed up with whatever training is indicated by the individual situation." 19/

On February 24, 1942, T.W.I. sent to its Field Representatives the first official instructions, jointly approved by the United States Office of Education and T.W.I., for the Administration of the J.I.T. Program. 20/ This first statement gave as the objectives:

1. the 10 hours of training for every first-line supervisor in war industry

2. the use of this training by supervisors as much higher than that as possible

Certification of trainers was made a joint function of T.W.I. and of the State Board of Vocational Education. Institute Conductors were drawn from T.W.I. The actual scheduling of sessions, the selling of additional groups,

19/ L. S. Hawkins, Office of Education, to All State Directors of Vocational Training for Defense Workers, Misc. 3442 VE-ND.

20/ C. R. Dooley to All T.W.I. Districts.

and the assignment of trainers were State functions. Quality Control was to be exercised by T.W.I. or by the State, but the State man performing this work must be acceptable to T.W.I. Rates of pay for the trainers were determined by the respective States and varied widely. It was made possible for the supervisor to be paid for sessions in his own plant, if they were conducted outside his regular working hours. The current agreement is that issued January 18, 1943. 21/

This instruction specified that T.W.I. would select prospective trainers and furnish and issue certificates for trainers. T.W.I. would conduct the Institutes, make initial sales contacts and arrange for the schedule supervisors to make plant calls in order to arrange for groups and assign trainers. T.W.I. would arrange for quality control by competent men. The State Boards for Vocational Education were made responsible for the plant follow-up calls in connection with scheduling by either being present at the Institutes or delegating to T.W.I. the responsibility for seeing whether the quality of sessions merited compensation.

When the Job Instruction program was started it was thus tied in very closely with the Vocational School set-up. This tie-up with Vocational Education largely determined eligibility for the programs. Actual payment of trainers was from federal funds disbursed by the states. Definite restrictions were necessary. These restrictions were, however, interpreted differently by the various states. For example, in California, it was ruled that machine shop foremen and water transportation foremen in the Golden State Creamery were the only ones who were eligible. The actual supervisors of the

21/ War Manpower Commission, Bureau of Training, "Administration of Job Instruction Training, Job Methods Training, and Job Relations Training," January 18, 1943 (see Exhibit 32 in Appendix).

Dairy, which held prime contracts with both Army and Navy, could not get Job Instruction. By early 1943, the War Manpower Commission arranged to get specific local approval on eligibility. 21A/

The Spread of the Program

News of this specific new way to prepare a supervisor to break in new people reached many groups other than the industrial customers for whom the program was designed. Mr. Conover conducted a J.I. Institute in November 1941 for United States Government representatives in Washington. The T.W.I. News Letter for November 8 reports "A great deal of interest was shown and there is a possibility that the training will be extended to various Government Departments."

By February 1942 there were numerous requests from ineligible groups such as industries not associated with war production, government agencies, and personnel groups. It was decided that, as long as no service to industry was delayed and no additional expense to State Vocational Funds entailed, a representative of such a group might be included in an Institute and that sample materials might be furnished. In other words, these groups were put on the basis of inclusion in case there was a vacancy.

The Job Instruction program was introduced at Picatinny Arsenal in March 1942 and the reaction was so favorable that in April the Office of the Chief of Ordnance in Washington began the introduction of Job Instruction into other Services of Supply establishments which led up to General Somervell's directive of August 18, 1942, specifying Job Instruction for all supervisors of civilian personnel in the S.O.S. 22/

21A/ Eligibility for T.W.I. programs has been on the same basis as for other W.M.C. training services and is covered in the Bureau of Training narrative.

22/ War Department, Headquarters Services of Supply, Administrative Memorandum No. 24, J. A. Ulio, "Job Instructor Training Program for Services of Supply," and Circular No. 45, W. D. Styer, "Job Instructor Training for Services of Supply," issued simultaneously by command of Lt. Gen. Brehon Somervell, August 18, 1942 (see Exhibit 31 in Appendix).

When the program was thus planned it was thought that there would be sixty thousand supervisors to train and that the Job Instruction program could be completed by December 1942. The rapid growth of the S.O.S. (which later became the Army Service Forces) and turnover in supervisors has meant that basic training in this program is still continuing. The Job Relations and Job Methods programs were later made available to A.S.F. After 100,000 supervisors had been trained, arrangements were made for the handling of these programs by A.S.F. itself. Other branches of the armed services and many government agencies have adopted the T.W.I. programs. 23/

With the growth and interest of applying Job Instruction to various fields there has been a volume of requests for adaptations. At first T.W.I. complied with these and made special variations for offices, hospitals, housing projects, and agriculture. As requests from additional fields came in, T.W.I. took another look at the idea and made a number of field inquiries with the result that there are now only two adaptations for Job Instruction - offices and hospitals. These are brief reminders to the trainer that instead of saying "bench" it is more reasonable to say "desk" in an office group, and "table" in a hospital group. Examples are given of breakdowns and timetables in office and hospital situations. It was found that this simple transposition is all the technical change that is necessary.

23/ United States Civil Service Commission, "A Program for Supervisors in the Federal Service," 1944; United States Department of Agriculture, "Management and Supervision," 1944; Treasury Department, Procurement Division, Director's Order No. 201, Supplement No. 1, "Responsibility of Operating Chiefs and Personnel Division for In-Service Training of Employees," July 24, 1944; Dominion of Canada, Department of Labour, Training Branch," Foremanship Training," 1944; Statement by Ernest Bevin, Minister of Labour, Great Britain, Parliamentary Debate, November 15, 1944 (see Exhibit 36 in Appendix).

The Job Instruction program was introduced to Canada in 1942. All the T.W.I. supervisory programs are now available in Canada through the Canadian Department of Labour, and both English and French manuals are used.

In February 1944, the British Ministry of Labour sent a representative, F. H. Perkins, to T.W.I. Headquarters to learn the T.W.I. programs which were launched in England in the fall of 1944.

Job Instruction materials have also been transmitted to representatives of Australia, New Zealand, Norway, and the Union of South Africa, and current arrangements are being made for the extension of the program to China.

In various other foreign countries the Job Instruction program has been used by branches of American corporations.

Management Participation in Job Instruction

When the program was started, T.W.I. recommended that trainers not put on sessions in their own plants. The reasoning behind this, though now seen to be mistaken, is clear - T.W.I. believed there had to be some device to control the work of the trainer, and it looked as if he would be harder to keep "on the beam" if he was putting on "just another company program." Of course, if a company would not accept the program on any other basis, use of its own trainers was approved. It was specified that such sessions should be conducted in exactly the same manner as those conducted by outside trainers, and that the program should not be mixed into other programs which were going on, and that the meetings should be open to T.W.I. Representatives for quality control.

Then in early 1942 T.W.I. began to move away from the idea of requiring trainers from outside the plant. It was agreed that a company could have trainers of its own if T.W.I. maintained quality control, if they made these trainers available for other companies, if they kept the programs separate

from other plant training activities, if they maintained the standards of attendance and participation, and if they followed the manual exactly.

The whole T.W.I. position has represented quite a development. In the first place, the Job Instruction program is not now available just for the asking. Priorities in the war production program determine which of the many eligible companies can be served. Lack of staff and limits on funds make it impossible to service all. T.W.I. now starts no program until top management thoroughly understands it, agrees not only to back it but to insist on its continuing use, introduces it to the middle management groups, and provides needed coaching assistance so that this can become a continuing regular function of management.

State-paid trainers are now used only in small companies for whom T.W.I. could not afford to prepare a trainer.

Results of Job Instruction

By the end of 1942, industrial companies which had made extensive use of the Job Instruction program were beginning to make surveys of its effectiveness. These first reports were not very specific and ran in a vein of which the following is typical:

> It was almost unanimously agreed by those interviewed that Job Instructor Training has been very helpful in breaking in new and inexperienced help. Nearly everyone reporting took less time to bring a "green" man up to standard production and the quality and quantity of this work was improved. It was also reported that the 4-step method of approach created friendlier feelings between the employee and his boss, resulting in better cooperation and more interest in the work. It was realized that not everyone who has received training is using it conscientiously, but it is safe to say that he has at least given it a try. Even the more skeptical admitted they benefited by the training and considered the time well spent. Not only the content of the course, but the way in which it was presented have been well-liked.

This particular survey pointed out the popularity of the program with supervisors who had previously received little help. This company also

found that women could be made quite efficient on totally unfamiliar work "if the right attitude can be created toward their job and they are sure at all times of what they are doing."

In May 1943, when the House Appropriations Committee began to ask for figures to back up T.W.I.'s claims of decreases in training time and increases of production, T.W.I. became more critical of the results which were sent in and early in 1944 a standard form was adopted. Each district was required to submit a minimum of one tangible results report a week. These reports are then tabulated. The latest summary appears in the appendix. 24/

The Evolution of the Job Instruction Program

Wide use of any training program provides experience and points to needs for improvement which can be spotted in no other way. When the program was used on a national basis, in tremendously large plants, in very new companies where the total of supervisory experience was small, and in remote areas, experience showed that certain refinements and safeguards were needed.

Mr. Kane's previous experience pointed to the value of making job breakdowns and stressing key points. Lens, instrument, and automobile companies had long broken jobs down into simple operations. New Jersey had followed the national pattern of calling attention to the value of breakdowns, and optimistically trusted to plants and to supervisors to go ahead. But experience showed that breakdowns were being neglected. It was properly insisted that the value of breakdowns be stressed by including practice in the 10-hour sessions.

Mr. Conover likewise contributed to the "get ready" points by pointing out the need for specific work on the timetable. When he conducted an

24/ Training Within Industry Service, Bureau of Training, War Manpower Commission, Memorandum No. 184, "Tangible Results from Use of T.W.I. Programs," April 19, 1945 (see Exhibit 27 in Appendix).

Institute in Seattle, Institute members pointed out that sometimes a whole squad of new men was dumped on the supervisor at once, or that occasionally the one man who knew a job quit and the supervisor was left in a bad spot. These Institute members decided that the following statement, properly filled out, would, if included in Job Instruction sessions, fully meet the situation:

"(Worker's Name) should be able to do (name of job) and do it (how well) by (what date)."

The "Time is Short" poster was in every government building in that fall of 1941, but up to then nowhere in the Job Instruction program was the time factor emphasized.

Putting it in was very simple - Mr. Gardiner suggested that it be called a "timetable." Accordingly, in the January 1942, manual the directions were given: "List the workers down the side of a page, list the jobs across the top, check jobs already known, set dates for completion of training to fill gaps."

Mr. Kane's and Mr. Conover's field experience also pointed to the need for further sharpening-up of the four steps. It was observed that, in Step 3, the supervisor simply had the worker do the job and corrected his errors. This, in many cases, was not enough. Too many operators copy motions without knowing <u>why</u> they are doing the various operations. Mr. Conover found, by experiment, that if the instructor gives "reasons why" in Step 2 and the operator repeats them in "Step 3," the operation is understood and performance immensely improved.

Although this concept of the relationship of Steps 2 and 3 was recognized late in 1941, it was not until the fall of 1942 that an exact procedure was adopted for the trainer to use in checking a demonstration and this insistence on correct instruction in Step 2, including reasons, and getting the reasons

from the worker in Step 3 did not appear in the Job Instruction manual until January 1943.

T.W.I. Headquarters felt that there was need for a national Quality Control meeting, and summoned one man from the paid field staff of each district to Washington in January 1942. Following this meeting, additional instructions were sent out to all trainers. In the fall of 1942, in order to improve standard operation of Job Instruction, three Headquarters Representatives — John Mollers, M. E. Carlson, and John Calhoon — were appointed.

The program was gradually improved throughout 1942 and the first of 1943 brought a new outline for the 10-hour sessions. Again in early 1944 improvements were incorporated in a new edition. All of these changes have represented no change from the fundamentals, but are details which have improved understanding and use.

In the beginning the 18-hour J.I. Institute (the means used to prepare trainers) consisted of putting on the five 2-hour sessions, a question and answer period, and practice on how to open Session I. Gradual changes in the Institute took place until the summer of 1944 when a radically different form was adopted. The Institute now requires 40 hours and has two parts. In the first part, which takes a day and a half, the Institute Conductor drills the members on the three fundamentals of Job Instruction - the timetable, the job breakdown, and instruction according to the four steps. When the Institute is set up properly, all members have had the 10 hours before coming to the Institute. Accordingly for them this is a review and further drill. By the end of this first part of the Institute the Institute Conductor knows whether each man has himself mastered the fundamentals well enough to be considered good trainer material. Some men may be dropped at this stage. The second part of the Institute, or three and one-half days, is made up of drill in handling the outlines for the five 2-hour sessions.

III. SUPERVISORY NEEDS

The first impact of expanding production for defense was in the field of breaking-in the millions of new men and women who had to learn new work, or who had never been in manufacturing at all—and many who had never worked at all. But early recognition was given to other important supervisory problems and, as soon as the Job Instruction Program was launched T.W.I. began to give attention to other ways to improve supervisory ability. The Job Methods and Job Relations Programs for supervisors and Program Development (for plant men with functional responsibility for training) were developed and launched. These additions necessitated the growth of the field staff and the addition of more men to the headquarters staff in order to have specialized supervision of the programs. Although the new programs filled the gaps in the picture of the universal supervisory needs, the end result of this stage of T.W.I. effort was the conviction that no lasting results would occur unless plants themselves took more responsibility.

The Next Need - Skill of Working with People

In January, 1941 Sidney Hillman asked the National Academy of Sciences for its guidance on the most useful service T.W.I. might perform. The reply was that new supervisors were going to need a great deal of help "in the human relations problems of handling men." This assignment was turned over to Walter Dietz and the resulting program, Job Relations, was developed under his leadership (the technical details of the development of this program are given in the history of the Job Relations Program which is included in the exhibits.) 25/

25/ Training Within Industry Service, Bureau of Training, War Manpower Commission, "The Job Relations Training Program," October 1, 1943 (see Exhibit 20 in Appendix).

Through the spring and summer of 1941 industrial suggestions and help were solicited, both from management and from supervisors. All the suggestions were in the vein of the traditional conference on accepted principles - none proposed a method, considered a skill, or involved any practice. Accordingly the development group - made up of Mr. Dietz, Mr. Kane, Mr. Conover, and Frances Kirkpatrick of T.W.I. Headquarters, and F. J. Roethlisberger and John B. Fox of the Harvard Graduate School's Department of Industrial Research - began to search for something specific, but broad and fundamental.

It was learned during this time that some of the general rules to which personnel directors clung so tenaciously were valuable - a few were truly foundations of good relations. While those rules would not solve problems, they would often prevent many problems. Four had such universal value that they were named the "Foundations for Good Relations":

Let each worker know how he is getting along.

Give credit when due.

Tell people in advance about changes that will affect them.

Make best use of each person's ability.

In a slightly different vein the following general warning was adopted:

People Must Be Treated As Individuals.

The 4-step Job Relations method of handling a human relations problem is not new - it had long existed as "the scientific method" or "the engineering method". It is followed in legal and military practice, but its application to the personnel field was unique. The steps seem so reasonable and its intuitive use by successful leaders so evident that it is hard to understand why it had never been formulated in the personnel field before this time.

The method, in Job Relations terms is, following the determination of the supervisor's objective, in terms of what he is trying to accomplish:

1. Get the facts.

2. Weigh and decide.

3. Take action.

4. Check results.

Experience with the Job Instruction program was very valuable to the Job Relations development group. For example, the "pattern" of five, 2-hour sessions for 10 supervisors led by a Trainer who had been prepared by T.W.I. in an Institute was followed. A demonstration of the results of poor handling of a problem was used to convince the supervisors on the necessity of developing skill in working with people. The 4-step method was then presented to the group.

In the remaining sessions each Supervisor handled a problem of his own, using the Job Relations 4-step method. The trainer gave emphasis to special points by presenting three more problems.

The development of the Job Relations program was a long, slow job. There were no precedents, and there were many prejudices based on current personnel practice. Personnel experts had rules to use in situations - they were not accustomed to using a skill method of solving a problem. The first trial group was run during the week of December 8, 1941 - the program was not released nationally until February, 1943. John Convery, W. S. Cooper, and Herbert Kessel were appointed as Headquarters Representatives to guide the launching and quality control of the program.

Helping Industry to Help Itself

Although by the beginning of 1942 T.W.I. had already provided industry with one tool - the Job Instruction Program - and work had been started on Job Relations - there had been no lessening of the conviction that industry should help itself, that it must accept its responsibility for the use of training as an everyday operating tool. But it was evident that some additional steps would have to be taken before industry could accept this responsibility.

The Detroit T.W.I. district had successfully been holding discussions for war contractors during the winter of 1940-41 at which various training needs and solutions were considered. These meetings had been instigated and organized by Major Albert Sobey of the General Motors Institute, a member of the Detroit district panel.

In February, 1942 T.W.I. and G.M.I. jointly put on a one-week session for 15 industrial men at the Institute in Flint, Michigan. In addition to the consideration of training needs and solutions, each training director who attended was required to develop a training plan for his own plant. Martin Firth, of G.M.I., assisted Walter Dietz in conducting this meeting.

For the next year meetings, ranging from those more nearly like the original Detroit groups to work sessions like the Flint experience, were held across the country and much interest generated. By early 1943 it was felt that there was a skill need in this field of designing training plans and programs to meet specific plant needs. A 4-step method was applied, and the name "Program Development" adopted in April, 1943.

In 1944, the need for further revisions were found, and revisions were made to give the members more practice in use of the method. At this time the emphasis was placed very strongly on "How to Meet a Production Problem through Training." The four steps were established as:

1. Spot a production problem.
2. Develop a specific plan.
3. Get plan into action.
4. Check results.

It will be noted that these four steps are simply a re-statement of the "engineering" method - this time in training terms as contrasted to the personnel emphasis of Job Relations. P.D. training follows the "J" pattern - demonstration of a 4-step method followed by individual practice of the

4-step method on the member's own problem. (The specific details of the technical evolution are outlined in the history of Program Development which is included in the exhibits.) 26/

Although Program Development has not had Headquarters Representatives to specialize in launching and control, Walter Dietz has had working with him a development group made up of W. S. Cooper, V. K. Rowland, Frances Kirkpatrick, R. S. Driver, J. H. Kohlerman, and Gilbert Cooper.

The Five Needs Concept

While the Job Relations program was being developed, Walter Dietz discovered a way of talking about supervisory needs that proved very useful in outlining what T.W.I. was prepared to do and ruling out the fields in which the plant had to start on its own. The statement, which has become a standard part of T.W.I. thinking and publications, is:

EVERY SUPERVISOR HAS FIVE NEEDS:

1. Knowledge of the Work - materials, tools, processes, operations, products and how they are made and used.

2. Knowledge of Responsibilities - policies, agreements, rules, regulations, schedules, interdepartmental relationships.

   These two knowledge needs must be met currently and locally by each plant or company.

   Such knowledge must be provided if each supervisor is to know his job and is to have a clear understanding of his authority and responsibilities as a part of management.

3. Skill in Instructing - increasing production by helping supervisors to develop a well trained work force which will get into production quicker; have less scrap, rework and rejects, fewer accidents, and less tool and equipment damage.

26/ Training Within Industry Service, Bureau of Training, War Manpower Commission, "The Development of the Training Within Industry Program Development Institute," December 15, 1944 (see Exhibit 24 in Appendix).

4. Skill in Improving Methods - utilizing materials, machines, and manpower more effectively by having supervisors study each operation in order to eliminate, combine, rearrange, and simplify details of the job.

5. Skill in Leading - increasing production by helping supervisors to improve their understanding of individuals, their ability to size up situations, and their ways of working with people.

These three skills must be acquired individually. Practice and experience in using them enable both new and experienced supervisors to recognize and solve daily problems promptly.

Training Within Industry Service assists companies in giving their supervisors a start in acquiring these skills through three 10-hour programs: Job Instruction Training, Job Methods Training, Job Relations Training.

These skills, acquired through this training, must become a part of day-to-day OPERATIONS. In no other way can production be so quickly influenced and manpower conserved.

Confidence and resourcefulness in how to proceed, not standardized solutions and rules, are developed. These enable supervisors to get good teamwork, to give better service, and to get out more production.

The Need for Improvements

In the fall of 1941 the T.W.I. district heads had decided that something was needed in "production supervision." 27/ From this rather vague statement stemmed the Job Methods Program, again growing out of work by Mr. Gardiner in New Jersey, assisted by C. R. Cox. Established principles of work simplification were cleared of engineering terms, and techniques were clarified so that they could be applied by average supervisors. This program was presented to the T.W.I. district heads and approved by them in May, 1942 and was launched nationally in September, 1942. It followed the "package" principle - 10 hours, 10 men, a 4-step method, demonstration, and individual practice. During the next three months a number of people from T.W.I. Headquarters were concerned with the development of Job Methods as a standard

27/ Training Within Industry, Labor Division, Office of Production Management, "Conference of District Representatives," November 11-12, 1941 (see Exhibit 15 in Appendix).

national program. This group was made up of William Conover, M. J. Kane, and Leonard Gappa from T.W.I. Headquarters and the two men who were chosen along with Mr. Cox to serve as Headquarters Representatives and launch the Job Methods program - A. G. Blake and Glenn McNeilly.

The program at this time was designed to develop in supervisors a constructively critical attitude toward their work. Although this has now grown into drill in a specific method of making improvements, there has been no change in the objective: to help the supervisor produce greater quantities of quality products in less time, by making the best use of the manpower, machines, and materials now available. The four steps of Job Methods, which have remained unchanged, are:

1. Break down the job.
2. Question every detail.
3. Develop the new method.
4. Apply the new method.

In both the Job Instruction program, which had been under way for a year when Job Methods was launched, and in Job Relations, which was released shortly after Job Methods, experience through national use or try-outs had shown that an individual supervisor could use these new skills if he wished to do so. A different problem was faced in Job Methods. Improvements are changes, and most changes extend outside the supervisor's immediate department or authority. Also, labor relations were involved in changed work procedures.

Accordingly, very specific launching procedures were worked out, and arrangements made for informing both management and labor of the specific details of the program before it was launched in a plant. It had been feared that proposals would get "lost" - accordingly T.W.I. recommended to plants a specific way to keep proposals moving through the approval machinery.

It was realised that two changes were needed:

1. Management must be shown that Job Methods was not an attempt to make professional engineers out of their supervisors. Job Methods will help supervisors to make many small improvements on the jobs they are closest to. T.W.I. needed to stress this point to management, and trainers needed to steer supervisors toward the improvements that were closest to them, which could be made without wholesale re-design of machines or tools.
2. Management was going to have to show supervisors that they were interested in the making of improvements. This would have to be done by first encouraging supervisors to make improvements, and then improving the handling of proposals that were made.

T.W.I. made these changes in its approach to management, and also stressed the by-products of Job Methods - the development of thinking among supervisors, the identification of supervisors who were thinking, and the increased attention given to safety as a result of the development of better methods.

Recommendations made to management at this time included the appointment of a line executive to clear and expedite proposals for improvements.

Results of the T.W.I. Programs

As soon as the Job Instruction Program was launched plants began to say "this does reduce break-in time" and "we are having less scrap." Some such statements were concrete, others were a matter of impression.

When the Job Methods program came along it was something entirely different. The results were not a matter of impression - they were very concrete.

Either supervisors made improvements or they didn't. If they made improvements, results were not only obtainable but apparent.

This difference - the fact that it is very easy to tell whether the Job Methods program is being used - was a major factor in a drive for known use and results of Job Instruction and Job Relations in order that results could move from the impression stage to what could be concretely measured.

IV. SUPERVISORY SKILLS

Just as industry had often let people learn the hard way - by making mistakes - so T.W.I. learned by experience that training was only the beginning. Proven training techniques had been supplied by T.W.I., trainers had been carefully prepared so that they put on effective training sessions, they were quality controlled in order to maintain standards - it still was not enough. They needed a stimulus, even pressure, from their own bosses so that they used what they had learned and really developed the skills of supervision. With Job Instruction and Job Relations it had largely been assumed that use was being made, but in Job Methods, it was very easy to tell whether a program was or was not being used. From stating that management must accept its responsibility for training, T.W.I. moved to insistence that service be given only to those plants where management agreed to use training as an everyday operating tool and demand results from it. This required the training of the T.W.I. staff in a new way of working with plant management, as well as the development of specific techniques for management contact work and for line organization coaching to continue the results of supervisory improvement.

Continuing Use of Job Instruction

By the summer of 1942, it had been realized that T.W.I. help on 10 hours of instruction alone was not enough and work on Follow-Through began. The first work in this field was set up in the pattern of an Institute. Four industrial men, each one accompanied by a supervisor from his plant, came to a T.W.I. district office for a one-day session called a Follow-Through Institute. They practiced on their own supervisors in drilling on the fundamentals of Job Instruction.

A number of districts reported that this kind of drill was more effective in the plant, that its scheduling as a formal Institute made it seem like an

additional program, and that they were having more success coaching the trainer in his own plant. Through the winter and spring of 1944 there was extensive experimentation not only with the Follow-Through of Job Instruction, but of all the "J" programs. In brief, the result was that T.W.I. determined that no rigid procedure was necessary but that each plant must, at the time it made the original commitment, agree to embody these procedures:

Assignment of responsibility for results

Adequate coverage

Provision for coaching

Reporting of results and

Credit for results

No specific procedures were recommended - management was urged to follow its usual practice in keeping any other production measure active, but (again largely as a result of Job Methods experience) to make it a line organization responsibility.

In order to assist plants with the coaching, T.W.I. now provides a guide for each of the "J" programs. The same five points appear in each one of these guides.

1. Give reasons and advantages
2. Get understanding of the principles
3. Select a problem and work on it together
4. Ask him to work another problem alone
5. Give credit for good results and good effort.

Coaching is not a purely technical job - in fact, the importance of "influencing" a supervisor to want to give good instruction, to search for improved methods, to strive to improve his ways of working with people, is increasingly apparent.

The Management Contact Concept

The background of T.W.I. people in one way put up a handicap which was not recognized for a long time - it was too easy to get into plants and get a "yes". Management did not take the trouble to find out the details of what T.W.I. would do for production and accepted the word of their old industrial friends that "this is good stuff" and did not demand production results. When results are not demanded, they dwindle after the first enthusiasm generated in basic training cools. T.W.I. people were presenting the programs according to many different methods, based on their own backgrounds. They tended to make their approach on the basis of what a program was, not what it would accomplish. Often they approached the wrong people in the plant.

Reports of Job Methods improvements were logically presented in terms of hours or money saved. This led to more concrete measurement of the results of Job Instruction and Job Relations. Thus, the expectation of getting measureable results became a very concrete part of the approach to management.

In 1943 A. C. Blake and, John Mollers of the T.W.I. staff, and C. L. Bowman, a special consultant made a preliminary study. As a result, Mr. Blake was appointed the head of a national Management Contact program, and in 1944 T.W.I. put into action what had been discussed for some time. Since early 1944, T.W.I. work has proceeded on a more realistic basis. The far-reaching results of this new approach show that this is one of the most important steps T.W.I. has taken. No T.W.I. service is given unless top management really understands what is involved, realizes what it must do to make the programs produce dividends for the investment the plant will make, and accepts the program on the basis of making it pay in the solution of individually identified production problems such as scrap losses, broken tools, and turnover.

The basis for service now is:

1. agreement by top executives to sponsor the program
2. agreement by top executive to coordinate the program (or designate responsibility for that function)
3. agreement by top executive to approve plan developed by coordinator, covering basic training and continuing use
4. agreement by top executive to check results.

It was necessary for T.W.I. to develop a specific Management Contact approach and to add to its district staffing patterns the position of head of Management Contact. This district man had to be trained in how to get complete management support and in helping a company to draw up an operating plan. Mr. Blake held four Management Contact conferences and completed the training of a Management Contact head in each district in two months. The district head, in turn, trained other district staff members to follow these principles.

V. T.W.I. RELATIONSHIPS

The Training Within Industry Service is different, and probably takes too much pride in its peculiarities. But these characteristics must be recognized because they have determined the course of the organization.

T.W.I.'s leaders and its staff members are not career government employees - they are largely from private, competitive business. They as a rule feel "temporary" and are planning to get back to their usual business. They are not accustomed to government regulations and have found it hard and tedious to conform. The T.W.I. staff is held together by personal loyalty to its leaders whom many of them have long known and respected for their industrial work.

T.W.I. was set up under N.D.A.C., transferred to O.P.M., then to W.P.B., then to F.S.A., then to W.M.C., and, with the setting-up of the Bureau of Training in W.M.C., made a member of that group. 28/ Through all these changes, T.W.I. has maintained its entity, although during the popularity of extreme decentralization in 1943, it took a large proportion of the time of the headquarters staff to defend the position that quality requires standards, and national quality demands national quality control of standards. During the stage when T.W.I. was adding new programs and new staff members, there were differences in the programs in different localities. These had to be brought under control through exacting national standards. Decentralized technical work was

28/ Office of Production Management, Regulation No. 5, "Establishing a Labor Division in the Office of Production Management and Prescribing Its Duties and Functions," March 17, 1941; War Production Board, General Administrative Order No. 2, "Organization of the War Production Board," January 26, 1942; War Manpower Commission, Executive Order No. 9139, "Establishing the War Manpower Commission in the Executive Office of the President and Transferring and Coordinating Certain Functions to Facilitate the Mobilization and Utilization of Manpower," April 18, 1942; War Manpower Commission, Executive Order No. 9247, "Transferring Certain Employment Service and Training Functions to the War Manpower Commission," September 17, 1942; War Manpower Commission General Order No. 1, December 10, 1942 (see Exhibit 29 in Appendix).

never permitted - when it happened, it was treated as a deviation and the work brought in line with national standards.

When the position of training chief was established, there was much misunderstanding as to the scope of his activity. Eventually it was determined that "when" and "where" training service should be given are proper parts of overall manpower planning, but that the "how" is technical and therefore properly a matter for T.W.I. control. Actually, as P. S. Van Wyck, Director of the Bureau of Training puts it, T.W.I. never has waited to be pulled someplace - there has always been a pusher locomotive. The arguments over receiving direction from W.M.C. were largely theoretical. In 1945, a year after priority referral began, the "when" and "where" directions are important but the volume is relatively not large. It is increasing in importance because of urgency of specific war products. Such referrals are given priority, but in general T.W.I. plans its own work in accordance with Production Urgency.

Throughout the times when W.M.C. was getting its organization and programs set up, T.W.I. maintained its pattern. T.W.I. was organized as a decentralized service in administrative matters. However, on technical matters, T.W.I. Headquarters successfully defended its opposition to decentralized responsibility. From the very beginning T.W.I. has had a large number of people, full or part time, who remain on industrial payrolls - they serve the government without compensation on the basis that they will make highest use of their skills. It is a matter of pride to T.W.I. that faith has been kept with the managements who lend them.

While T.W.I. started out as a dollar-a-year organization, paid staff members have been added until there are in 1945 nearly 400 in headquarters, the 21 United States districts, and in Hawaii. The staff has been recruited

from industry and business. Many of them, while on the government payroll, are actually on loan from their companies, which are giving up their services for the war and planning to make full use of their new knowledge and skills when they return.

The T.W.I. staff has grown in accordance with the addition of specific programs and growing pressure for war production:

Oct. 1940 - 13	Jan. 1942 - 108	Apr. 1943 - 255	July 1944 - 415
Jan. 1941 - 20	Apr. 1942 - 141	July 1943 - 343	Oct. 1944 - 382
Apr. 1941 - 32	July 1942 - 163	Oct. 1943 - 324	Jan. 1945 - 378
July 1941 - 53	Oct. 1942 - 177	Jan. 1944 - 319	Apr. 1945 - 378
Oct. 1941 - 84	Jan. 1943 - 222	Apr. 1944 - 384	

The standard organization of a T.W.I. district involves operation of a complete unit made up of the District Representative and five technical specialists - one for each of the supervisory programs, Job Instruction, Job Methods, and Job Relations; one for Program Development, the service offered to plant men with functional responsibility for training; and one to head Management Contacts.

Depending upon the volume of war contracts any or all of these men may have one or more assistants. In more than fifty industrial areas outside the city where the T.W.I. district offices are located, T.W.I. has a resident representative who is responsible for spearheading the T.W.I. program in that area. He calls on the district staff for technical assistance.

Although T.W.I. staff members all brought something to T.W.I., still they all had to be trained. At first, in order to get into production quickly, T.W.I. did what it recommended to industry - developed specialists. Later, in order to have a flexible organization to meet imperative rush needs and to serve contractors in isolated locations, individual staff members were "rounded out." T.W.I. accepted its own decision that training isn't all technical, that it involves a lot of influencing. Accordingly, T.W.I. men sell managements,

train plant representatives to put on the basic programs, and do a service engineering job in their continuing contacts with the plant.

T.W.I. and Labor

T.W.I. has worked with representatives of organized labor from the beginning. There has at all times been on the paid headquarters staff at least one man chosen because of his background in organized labor. T.W.I. has always had labor advisers as well as management advisers and technical consultants.

When a Job Instruction or Job Methods program is started in a plant, the union which has a contract in the plant is informed in order to avoid any misunderstanding. Before the Job Methods program was released for national use, it was discussed and previewed by national union leaders in order to prevent any feeling that it was "efficiency engineering" or a "speed-up."

The Job Relations program was approved for union stewards in 1944 and is offered to the union in the plant whenever any work begins with plant supervision. In 1945, a special Union Job Relations manual using union language and problems was developed. Leonard Gappa who was T.W.I.'s first A.F. of L. consultant, and Erling Larsen, C.I.O. consultant, assisted the usual T.W.I. development group in adapting the program for union groups.

VI. THE CURRENT PICTURE

T.W.I.'s four programs are now established and its staff trained. However, needs are increasing, there is turnover in the staff. The present organization and personnel are shown in the chart included in the exhibits. 29/ There are new demands for special services - the application of the Job Relations technique to problems connected with returning veterans, and use of Job Instruction on safety problems for example.

To date, T.W.I. has said what it has said to industry so many times before - "You have the tools, go ahead and use them." It may be necessary, again, to show them how. Again and again, T.W.I. has had to translate the application of its programs to new points of emphasis.

In looking at the simplicity of T.W.I. programs it would seem that, since they only represent common sense, their development should have been possible without too much trouble. But it must be remembered that a lot of non-essentials had to be sheared away. One real job was streamlining and intensification. Another problem was standardization - it was felt that the T.W.I. tools must be uniform. Therefore they had to be tried out in a variety of situations - in plants new and old, well-run and poorly run; with supervisors who were old-hands and those who were green; by trainers who were already experts and those who were scarcely competent to handle a group.

The T.W.I. programs have been developed under opportunities never before available - the nation's war plants have been the laboratory, the experimental shop, and the proving ground. They will continue to be as long as T.W.I. exists - no program is ever perfect, and no program is any good unless it meets needs.

29/ Training Within Industry Service, Bureau of Training, War Manpower Commission, Office Letter No. 5, "T.W.I. Headquarters Organization," February 28, 1945 (see Exhibit 26 in Appendix).

For the calendar year 1945, T.W.I. has re-stated its objectives and outlined its program as follows: