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Lecture by Lt. Colonel W. A. McCain, Q.M.C.,
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THE ARMY INDUSTRIAL COLLEGE - ITS SCOPE AND PURPOSE.

In discussing the Army Industrial College I will undertake it under the following heads:

1. What is the place of the College in the War Department organization? That can be stated in about two sentences.
2. What is the mission of the College? That will require some clarification.
3. What are the steps and functions necessary to the performance of the mission? That will require as much discussion of the course as time will permit.
4. The organization set up for carrying out the mission.
5. The methods of instruction.
6. A few fundamental general policies governing the operation of the school.

PLACE IN THE WAR DEPARTMENT ORGANIZATION.

Now, where does the college set in the organization? Coming on down from the Secretary of War we have, on the military side, the Chief of Staff, the General Staff and the Army War College. The analogy on the procurement and industrial side is: the Assistant Secretary of War, corresponding to the Chief of Staff; the Planning Branch, corresponding to the General Staff and the Army Industrial College to the Army War College. The duties and functions of the several parallel agencies in these two columns (military and industrial) naturally overlap in many respects or rather, I should say, dovetail.

THE MISSION OF THE COLLEGE.

This is found in the order establishing the school, General Order No. 7, dated February 25, 1924, which gives as its mission-

* * * "The training of Army officers in the useful knowledge pertaining to the supervision of procurement of all military supplies in time of war and the assurance of adequate provision for the mobilization of material and industrial organizations essential to war-time needs."

Observe this is all war planning - no current matters at all.

So we see there are two things in the useful knowledge of which officers are to be trained. First, the supervision of the procurement of all military supplies in time of war, from which it follows that in time of peace they must be trained in the preparation of plans for war time procurement. In other words, in the preparation of specific procurement plans in all their ramifications. A specific procurement plan is one made by a Chief of Supply Branch for a specific item to meet a specific war plan, e.g., Q.M.C. for shoes, the O.D. for caliber 30 ammunition to meet the general mobilization plan of 1928, we'll say. Second, in the assurance of adequate provision for the mobilization of materiel and industrial organizations essential to war-time needs. Now one cannot assure himself of adequate provision for anything in the future unless he makes a plan for it himself or studies and approves a plan made by someone else. So this clause means that we have to train officers in preparing plans for the mobilization of materiel and industrial organizations essential to war-time needs.

Here two questions arise: First, what materiel and industrial organizations are essential to war-time needs? The answer is that, due to the increasing complexity of our civilization, wherein everything interlocks in some way with everything else, practically all materiel and industrial organizations are, directly or indirectly, essential to war-time needs. The thing to determine is their relative essentiality and to proceed accordingly. Second question, war-time needs of whom? In the narrowest interpretation the answer is, war-time needs of the Army. In its broadest war-time needs of the Nation - Army, Navy and other departments of the Government and the civilian population. Manifestly, The Assistant Secretary of War has no control whatever over Navy plans, for example. He has not now nor will he ever have any control over industry.

As a practical proposition The Assistant Secretary of War will have enough to do in carrying out his own duties in supervision of Army procurement without trying to control industry also. And it is absurd to think that a situation would be permitted to exist where one man would be in supervision of both parties to a contract. The President would not stand for it, nor would any Government Department, nor would Congress, nor would the people of the country stand for any comprehensive control of their affairs by military authority. However, a plan for the mobilization of any financial or industrial element essential to the national defense must be national in scope. To illustrate; take the problem of labor in war. Labor is not an industrial matter only. It is a political matter. It is a problem in sociology and due to the heterogeneous nature of our population it is a problem of race and of racial psychology. It is obviously tied in with the problem of the selective draft. In fact it is tied in with every element of our national structure. To say, therefore, that the problem can be broken down, the parts isolated and a plan made only for that part

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pertaining to the industrial effort required in the procurement of items for the Army in war is absurd. To solve the big problem in all its important ramifications will require the best brains in the O.A.S.W., in the General Staff, in the Navy, and in civil life. In short, the plan for Labor in War must be national in scope, and The Assistant Secretary of War is the only agency that I know of that has a legal mandate to make it. Boiled down, therefore, the mission of the College is to train officers in the preparation of specific procurement plans and industrial mobilization plans. They are not the same. The former rests upon the latter and the smoothness and dispatch with which the one may be executed will depend upon the soundness of the other. The procurement plans are prepared by the Supply Arms and Services under the supervision of The Assistant Secretary of War. The industrial mobilization plans are prepared in the Planning Branch of The Assistant Secretary's office.

As I see the problem as a whole, I think of a bridge with a load rolling over it. The load consists of the requirements of the Army, Navy and civilian population. The beams, struts, pillars, foundations, etc., of the bridge represent labor, power, money, raw materials, production facilities, transportation, and so on. We have then, to train officers to determine that load and to make plans to keep it moving to the fighting front and to the home front, to examine the parts of the bridge and put them together so that the bridge will stand the stresses and strains of any emergency. It is therefore foolish to believe that any officer can come down there and master the problem in ten months. The smartest man in the world could not do it in a lifetime. But what we hope is that, with a turn-over of some forty-odd officers a year we will start some of them thinking to the end that in the next war there will have been assembled a mass of cold, clear-cut, up-to-date essential facts with such plans based thereon as will enable the executive and legislative departments to have things started promptly and effectively, thus avoiding the confusion and delay in the last war which cost us much valuable time, billions of dollars and some national pride.

STEPS & FUNCTIONS NECESSARY TO PERFORMANCE OF MISSION.

With this general discussion of the mission of the school I will now invite your attention to the steps and functions which we are taking to perform that mission - in other words, the course of instruction. In laying out the course what are the high points that we have to keep before us? First, of course, the mission of the school. Second, our most recent experience in procurement and industrial mobilization in the World War. What did the Supply Branches do in that war? How and why?

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How about the P. S. & T. Division of the General Staff? What lessons can we draw from those activities? What were the reasons behind the formation of those mammoth superagencies that controlled our industries? What lessons can we learn from their organization and functions? The War Industries Board; the Price Fixing Commission; Power Commission; Labor Board; Railway, Fuel and Food Administrations; Capital Issues Committee; War Trade Board, and so on.

Third, we must keep informed as to the major trends in the industrial world of today and estimate their influence on the shaping of our plans. In short, with our ultimate objective in mind, plus an analysis of the problems in the light of experience, plus a continuous study of the current situation we arrive at a sound basis for building up our course of instruction.

The course logically divides itself into four general classes: Orientation; planning for procurement; planning for industrial mobilization, and then there is a group of problems general in their nature and pertain to both procurement planning and industrial mobilization planning. I have posted here on the wall, where you can see it, a list of all the problems in the course. Time will not permit of an analysis of every one, so I will discuss briefly the high points only. Should you see anything of special interest to you as I proceed, I will be glad to have you stop me and question me about it. Please understand that this list does not show the exact sequence in which the problems are taken up, for most of them are committee problems and run concurrently with others.

Branch activities in Planning for War Procurement.

To orient the student in the mission of his own Branch in War Procurement and in the organization, plans and procedure adopted by the Branch in planning to carry out that mission.

Report Writing.

A study of the method of approach to business problems and of writing reports embodying the solution to such problems.

The Problem of War Procurement.

A historical study of munitions procurement in the U.S. during the World War for the purpose of developing the factors involved in the general subject of procurement in that national emergency.

Organization and Planning, Mechanism of Management.

To study the factors influencing organization and management as disclosed by commercial practice.

W. D. Organization and Plans for Industrial Mobilization.

To enable the student to obtain a knowledge of:

- (1) The agencies now existing for national industrial mobilization and procurement in war.
- (2) The prescribed duties of each agency and their inter-relationship.
- (3) The general content of the War Department General Mobilization Plan 1928 and of the Procurement Plans of The Assistant Secretary of War and the Supply Branches.

Integration and Horizontal Combination in Industry.

A comparison of the factors underlying integration and horizontal combination in industry with those being followed in war procurement.

Joint Army & Navy Board and Army & Navy Munitions Board.

A general study of the organization and functions of the Joint Army & Navy Board and the Army & Navy Munitions Board.

Relation of The Assistant Secretary of War to the W.D. General Staff.

To obtain an understanding of the functions or present activities of The Assistant Secretary of War, and of the War Department General Staff insofar as they are inter-related. To study and recommend desirable changes in responsibilities and related activities.

Specifications and Standardization.

To study the factors involved, and the methods which should be used in selecting types of materiel and preparing specifications for their procurement, the national activities in standardization and simplification; the reasons for, and the means of effecting changes in specifications during production.

Requirements and Statistics.

A study of the functions of the Requirements and Statistics Section, O.A.S.W.

The Procurement District.

A study of the functions and operation of the procurement district in peace and in war.

Allocation of Facilities.

A general study of the subject of allocating facilities for war procurement.

Survey of Facilities.

The determination of the utility of the survey of facilities as a prerequisite of specific procurement plans.

Factory Plans.

A study of the purpose and scope of factory plans and the extent to which they are necessary for war procurement.

New Facilities in War.

A study of how the construction of new facilities and the conversion of existing facilities were controlled during the World War and of how these activities should be controlled in another national emergency.

Specific Procurement Plans.

A study of the purpose and proper scope of Specific Procurement Plans.

Fundamentals of Business.

A brief study of the principal subjects underlying business activities.

War Reserves.

A general study of War Reserves.

Production in Early Stages of War.

A discussion of methods by which production of critical items can be expedited in the early stages of a major war.

Secondary Requirements.

A study of the problem of supplying secondary requirements to the manufacturer in a national emergency.

Personnel and Training.

A study of the methods of recruiting and training personnel for procurement of munitions in a national emergency.

Budgetary Control.

A study of budgetary control in industry, in the Navy Department and in the War Department.

Power of Eminent Domain in War.

A study of the extraordinary powers exercised in time of war by Congress or by the President with respect to procurement, either under grants of power in the Constitution or based on powers inherent in sovereignty.

War Time Contract Forms.

An analysis of the several contract forms recommended by the Board on War Time Contracts, a study of the principal provisions thereof, and the reasons for such provisions.

Steel Industry and Plans for its Mobilization in War.

A continuation of studies on basic industries in U. S. and the effect of war upon them.

Foreign Industrial Control in World War.

A study of the agencies and methods used in England, France, Italy and Germany in controlling industry during the World War.

Trade Associations.

A study of the utilization of Trade Associations in war time procurement to effect, in so far as practicable, self-control in industry.

Procurement - Peace and War.

The correlation of Methods and Purposes of Current Procurement with whatever Plans and Purposes there may be for Inter-bureau Procurement in War Time.

**Current Procurement (Purchasing Methods) of Supply Arms & Services
and Principles Governing such Methods.**

To familiarize the student with the Current Procurement
methods used in his own Arm or Service.

Progress Reports.

A study of the type of progress report which will be
of maximum usefulness in measuring war production.

Industrial War Load and Its Distribution.

A study of the degree to which normal industrial
production of the U. S. might be disturbed by an
added war load.

Foreign Strategical Areas (RUSSIA).

A study of the industrial development of Russia in
an effort to determine her future position among the
commercial nations of the world.

Legal Aspects of Procurement.

A study of statutory provisions respecting procurement
by the War Department, particularly statutory restrictions
and limitations; and proposed legislation in the Plan for
Industrial Mobilization, 1930.

Purchase, Storage & Traffic Division of the General Staff.

To discover the extent to which coordination and
consolidation of procurement actually took place in
1918-1919; the benefits attained, difficulties
encountered, and the lessons learned which may be
applicable to present and future planning.

Machine Tool Industry.

A continuation of studies on basic industries in the
U. S. and the effect of war upon them.

Exports, Imports and Munitions Possibilities of Principal Countries.

A study of the chief exports and imports of the more
important countries and the items of munitions obtainable
by the U. S. from foreign sources.

Industrial Importance of the Bridgeport Procurement District.

A study of the industrial importance of the Bridgeport War Department Procurement District in War.

Foreign Current Planning for Industrial Mobilization.

A study of the existing plans of foreign countries looking toward mobilization of industrial resources for war.

Transition, O.A.S.W. Peace to War.

A study of the steps necessary in changing the methods of procurement and procurement control from those used in peace to those necessary or contemplated in war.

Test of Mobilization Plan.

To develop ways and means for testing proposed Mobilization Plans, with respect to procurement for supply.

Priorities.

A study of the importance of the priority function in war procurement and the methods of exercising it in a national emergency.

Power.

A general study of the power situation in the U.S. as it affects planning for war time procurement.

Conservation.

A study of conservation activities during the World War and a statement of how conservation may best be planned for in another national emergency.

Food.

An analysis of the problem of food supply in a national emergency.

Control of Foreign Commerce in War.

To bring out the means of control of foreign commerce used by the U.S. during the World War, and with that experience as a guide to outline effective methods for use during a future national emergency.

Financial Control Agencies.

A study of the activities of such agencies as the War Finance Corporation, the War Credits Board and the Capital Issues Committee in War.

Publicity in War.

A study of publicity in war as far as it pertains to industrial mobilization.

Labor in a National Emergency.

A study of labor requirements and the means of meeting those requirements for the production of war supplies.

Communications Control in War.

A study of the problem of communications control as it relates to industrial mobilization.

Fuel in War.

A discussion of the general subject of fuel supply in a national emergency.

Commodity Committees.

A study of the activities of the Commodity Sections of the War Industries Board during the World War and of the functions of the Committees Division, O.A.S.W., in planning for war procurement.

Transportation.

A study of the transportation situation in the U.S. as it relates to planning for National Defense.

Shipping in War.

A general discussion of the organization and control of shipping in war.

Price Control in War.

A discussion of the necessity for and extent of government control over commodity prices in the World War, and of the planning activities which should be carried on in peace to facilitate the exercise of price control in a national emergency.

Strategic Raw Materials.

A study of the factors which should be considered in assuring a supply of strategic raw materials in war.

Industrial Readjustment after war.

A study of the means by which the ill effects of readjustment after war can be minimized.

Organization for Control of Industry in War.

The development of definite plans for initiating governmental control over the several economic activities involved in a national emergency

The Aeronautical Industry.

A continuation of Army Industrial College Studies of basic industries of the U. S.

Inspection of Industrial Plants.

A practical exercise involving visits to manufacturing plants in Washington and in Pittsburgh where opportunity is given to observe modern production methods in a variety of industries.

Special Work in Branches.

Practical work, under direction of Branch Planning Officers, on certain phases of branch planning activity such as Computation of Requirements, Specific Procurement Plans, Commodity Studies, Unit and Color Plans, Procurement District Activities and the like.

Procurement War Game.

The War Game scheduled at the end of the course is designed to review the functions of The Assistant Secretary of War in procurement and to aid in visualizing the operation of his office under war conditions.

As you know, the War Department has directed the Service Schools to permit excellent students, if they so desire, to take certain honor courses outside the regular prescribed course. So we have had during this year a class in Economics, one in Business Fundamentals, and another in the French language.

Throughout the course lectures on pertinent subjects are delivered to the students by the instructing staff, by experienced officers in the office of The Assistant Secretary and Supply Branches, and by competent civilians engaged in banking, industry, commerce, etc. The college has been very fortunate in the past in arranging for lectures by men who held important positions in the War Industries Board and other agencies during the war, by prominent industrialists, and by leading educators. Also, we avail ourselves of the courtesies extended by the Commandant of the War College; you have observed that our students are present at many of your lectures.

Once a week we have a movie in the afternoon, each of which is interesting and instructive as pertaining to some important industry. For example, rubber production, automobile manufacture, copper mining, heat treatment of steel, sulphur mining, etc.

ORGANIZATION

When the school was established its first student body consisted of nine officers from the Supply Branches of the Army who were attached to the Planning Branch for a five months' course of instruction. In other words, there was no faculty or oversight of any kind. However, as the number of students gradually increased the school was separated from the Planning Branch, was given a Director and an Executive Officer, and in September 1926 the length of the course was changed from five months to the regular ten and, in the meantime, it had been designated as a General Service School. Since the course of instruction is quite similar to the current work of the Planning Branch, the officers of that branch acted as instructors in the school. For example, the officer in charge of the Power Section of the Planning Branch was the instructor on the Power problem in the school. Same for Labor; for Commodity Committees, etc. This system worked very well but by no means perfect. No man can handle two jobs under two different chiefs and do full justice to both. It is fundamentally faulty in organization. It is just as if G-1 of one of the Department General Staff were the Director of the G-1 course of the War College. Same for G-2, G-3, and so on. You can readily see the objections to such an arrangement. So, as the full-time faculty was gradually increased as the school itself grew in size, anyhow, when it comes to the matter of organization you know the first thing you do is to analyze your mission and determine the functions essential to its successful performance. Then you select the individuals that can best perform those functions. The result is your organization. Make a chart of it if you like but the point is, you do not set up an organization and then shuffle your functions to conform to it, but, to the

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contrary, you lay out your job and then make your organization fit that. So, what have we? First, the Army Industrial College, like any other organization has to have one man at the head of it. He is designated as the Director. There is considerable administrative work connected with the school, nothing like what you have here as we have no such big overhead, but still there is a great deal. So, that means a good Executive Officer. He was selected also for some instruction duty: problems on Economics, Financial Control Agencies, Price Fixing and the like. Well, we have a live young man who is a college graduate, a graduate with high distinction of the Harvard Business School, and a member of the Harvard Board of Review.

Next, there is a most important set of problems pertaining to technical things like non-commercial military items and plans for their procurement. Problems on specifications, standardization, factory plans, etc. Who has the biggest preparedness mission along this line? The Ordnance Department. So, our next instructor is an Ordnance officer. He also is a college graduate, a graduate of the Harvard Business School with high distinction and a member of the Harvard Board of Review. So, in addition to the problems indicated he handles that part of the bag problem on business fundamentals pertaining to statistics, marketing, distribution and the like.

What have we left now? A set of problems that are of as much interest to the Navy as they are to the Army, if not more: Shipping, Exports and Imports, Control of Foreign Commerce, Strategic Raw Materials, etc., besides others that are quite important and of such a nature that they can be handled by most any superior officer of the Army, Navy or Marines, e.g., Labor, Food, etc. Further, we have student officers from the Navy and Marines. The heads of both departments have recently notified the War Department that they will double their assignments next year, making eight from the Navy and two from the Marines. So it is quite fitting that we have a Navy man on the faculty and we asked the Navy for one, by name, - a man with a fine record in the Navy and an outstanding graduate of the Army Industrial College. Our request was granted promptly. Right here I want to say that the Navy has cooperated with our school splendidly. We are hard put to it to meet it half-way.

Now, what sort of problems have we left? Well, there are those pertaining to the Joint Boards, to the war plans of the General Staff, (which are one of the bases of our work), to the relations between The Assistant Secretary of War and the General Staff, etc. There are those on power, construction and transportation. This vacancy points to an Engineer officer with the background of the War College or of the General Staff or both. We have had trouble in getting the man of the high type and qualifications required and we are doing without rather than accept any other kind. While there has been some delay, we have finally secured the man and he will report in time for the next school

year. So, the organization will consist of a Director, four full-time instructors (one of whom is also Executive Officer) with a clerical personnel of three civilian employees and one messenger.

As stated already, much of the school course covers ground similar to that of the current work of the Planning Branch. Therefore we must maintain continuous and close contact with that Branch. For instance, when the instructor on the power problem raises up his problem in the first place he does so in collaboration with the Chief of the Power Section of the Planning Branch. The latter, with his own opinions, his office records and his approved policies are at the disposal of the instructor and the student committee during the course of the problem and finally, when it is presented to the class, he is present and has full opportunity to say in open conference whatever he thinks proper. Further, the Planning Branch is the custodian of the records of the Council of National Defense and of the War Industries Board. It has the library of the office of The Assistant Secretary of War. It is located right down the hall from the College. In short, it is our heavy artillery and places the effective barrages as and where needed.

METHODS OF INSTRUCTION.

In general it is self-instruction. Problems are assigned either to individual officers or to committees. They are urged to consult any authority or source available, to establish the facts as best they can, to draw their own conclusions and make such recommendations as they may deem right and proper. For purposes of academic discussion absolute freedom of thought and expression is encouraged. Our conference room is literally an open forum, the only restrictions being, first, one must speak pertinent to the subject; second, be courteous and temperate in language and demeanor, and third, constructive in purpose. Beyond that the sky is the limit.

The main duty of the instructor is to shape up the requirements of the problem and to assist the student in locating references and sources of information, and sometimes, where necessary, to keep him from going off on a tangent. Beyond that the student will be permitted to make up his own mind and express it accordingly. The exceptions to these rules are found in problems on economics, statistics, etc., - subjects with which an Army officer is not ordinarily familiar. In those cases the instructor really instructs.

POLICE S.

The student body is made up of officers from most all branches of the Army, together with a few from the Navy, and the Marine Corps. The only activities that have fixed quotas are the Supply Corps and Services of the Army. The Quartermaster Corps and Ordnance Department have the largest quotas - 9 each. The Medical Corps has the smallest - 2.

Those who come from the combatant arms of the Army, from the Navy and Marine Corps are a matter of special arrangement between their respective chiefs and The Assistant Secretary of War.

Student officers must be within certain age limits and must have an efficiency rating of excellent or better. As a matter of fact the college was created primarily for the training of officers of the Supply activities of the Army. The Chiefs of the seven Supply Arms and Services are officially designated by The Assistant Secretary of War as his Board of Advisors on school policies. However, The Assistant Secretary is glad to have students from other War Department arms and from the Navy and Marine Corps to the limit of our office space and facilities.

Thus we see that the school has grown since the time it was organized in 1924 from an original student body of 9 officers detailed haphazardly for a 5 months' course, to a total of about 50 carefully selected from the Army, Navy and Marine Corps.

Finally, gentlemen, the Army Industrial College is the only school in existence which devotes its whole time to studying ways and means for developing the maximum utilization of resources in support of or supplementary to the military effort of the nation in war. A mission of tremendous magnitude, I submit. We have no fuss and feathers down there. We could not put on any airs if we would, and would not if we could, I hope. What we are trying to do is - saw the daily wood, pile it up in straight lines and submit the pile on its merits. Any man who is interested is welcome to come down and measure the pile and test the quality of its timber.