

202

THE ARMY INDUSTRIAL COLLEGE
Washington, D.C.

Course 1936-1937

THE PROBLEMS AND TRENDS OF THE WOOLEN INDUSTRY

by

Lieut. Colonel Arthur Besse, President
National Association of Wool Manufacturers

November 4, 1936

IC 73 (12/3/36)23

THE PROBLEMS AND TRENDS OF THE WOOLEN INDUSTRY

Colonel Jorcan and Gentlemen:

You have gotten quite a little ahead of the story - you have a picture of all I was going to tell you about, so I can shorten the lecture very materially. This (indicating circular which had been distributed to the group) was going to supplement my remarks

In order to make it as simple for you as possible, in trying to give you a picture of the wool industry I am going to follow the outline with which Colonel Jordan furnished me for the analysis of basic industries. I will follow the outline quite closely because you are probably used to it and in that way you will be better able to get the drift of the picture that I would like to paint for you - and it is only a picture. I am not a textile school graduate. I am one of these people who know a little about everything and really nothing about anything.

The industry as I will refer to it this morning (and I am referring wholly to the wool industry and not to the cotton industry) consists, broadly speaking, of the weaving or knitting of piecegoods, wholly or in chief value of wool, together with the preparatory processes necessary for making the yarn that goes into those piecegoods and blankets. We exclude in our industry, and they are excluded in both the Bureau of Census figures and the Code which covered our industry in 1933-1934, carpets and rugs and the yarns that go into them. We exclude the manufacture (knitting) of hosiery, underwear, and outerwear but not the yarns that go into those products. In other words, the industry as I refer to it corresponds to the two divisions in the Bureau of Census in the Census of Manufactures. "wool scouring" and "woolen and worsted goods." Those two classifications cover the industry as now constituted.

The industry is entirely self contained. It is unnecessary to point out to you the necessity of the industry from the standpoint of national defense. Any line officer who has tried to get along without a woolen overcoat knows how essential it is.

The manufacture of the product is carried on under two systems: that which we call the "American System," and the English System. The American System, broadly speaking, is that type of

manufacturing where a single organization, or a single factory, takes the raw material and carries it through all the processes until the finished piece of goods or the finished blanket is turned out. The English System, as distinguished from that, consists of a group of specialists. In the English System there is a plant that scours the wool, another plant that handles the spinning, and another plant that buys the yarn and either weaves or knits the goods. In this country we have both systems. The larger units are predominantly integrated units on the American System. There are, however, a good many specialists, particularly in the scouring of wool and also in the production of yarn. I cannot give you an exact break down of how those compare but in volume the integrated units produce a great deal more than the special units.

The number of units in the industry is subject to frequent change. According to the last Census of Manufactures there were five hundred and ninety-one separate units in the industry, a smaller figure than in either 1929 or 1931, the number having gone down from seven hundred and forty-five in 1929 to five hundred and ninety-one in 1933. The number has been still further reduced.

There is no standard of size in the industry. I have divided the industry on a basis of the number of looms owned by individual units. We cannot use the figure of five hundred and ninety-one units given above since that includes firms that do not do weaving. We have record of four hundred and ninety-three mills that do weaving. Of these there are seven mills with a thousand or more looms each which account for thirty-four per cent of the total production. We only have to drop to concerns having four hundred looms and over - there are only twenty-one of those concerns - and those concerns account for fifty per cent of the weaving of the entire industry. Twenty-one firms out of four hundred and ninety-three account for fifty per cent of the entire production of the industry. The smaller firms divide the remainder of the business and as there is no standard unit they vary very materially in size. There is one single unit in the industry that accounts for about eighteen per cent of the production. That unit is the American Woolen Company. However, in no sense does this company dominate the industry. The American Woolen Company has to seek such a tremendously wide market that, with the condition with which the industry has been faced for the last few years, if such an organization tries to lead the industry they are more or less holding the umbrella for the smaller units in the industry. There has not been sufficient business to go around since the war. In an industry where there is a sellers' market

a concern of that size would dominate the field in many respects In the wool textile industry it does not dominate in spite of its very substantial size, because we have had a buyers' market for a considerable period.

It is very difficult to give you any real idea of the capital structure of the industry. We have figures from the Federal Trade Commission which are quite unsatisfactory but which are probably as good as could be obtained. We can speak of the industry as having a capitalization of five hundred million dollars. That is a very rough figure. Different units keep their books on a different basis but to give you a general idea of the size of the industry we can use that figure, which is probably as accurate as any one can get.

The value of the product was given by the Census of Manufactures in 1933 as four hundred and sixty-two million dollars. That again is a very approximate figure. At the present time it is somewhat higher, whether it is five hundred million or more I do not know, but that is a figure that can be used to give you some approximate idea of the size of the product sold by the industry. The reason it is very difficult to obtain an accurate figure on this is because there is a good deal of duplication. These mills that do scouring sell to some one else in the industry who makes yarn, who resells to some one who either processes the yarn by the knitting or weaving process, and if you take the sales of all the members of the industry and add them together you do not get a proper figure

The Federal Trade Commission report gives the percentage of value added by manufacture as approximately a third. That also is a very approximate figure and varies considerably from season to season, especially because of the relatively high percentage represented by the cost of raw material

The number employed also varies quite substantially. The low point in employment in the industry was reached in June, 1932, when there were only seventy-eight thousand so-called factory employees in the industry. The high point was reached in August of the succeeding year - 1933 - with one hundred and sixty-nine thousand. Our present employment consists of about one hundred and fifty thousand employees, not including foremen, supervisors, the administrative staffs, or the selling staffs. We have no accurate figures on the people in those classifications but including them the figure might amount to eighteen or twenty thousand additional.

The geographical distribution of the industry is quite interesting. It shows the same type of concentration that was illustrated in the division of the industry by size which I gave you. The Massachusetts mills alone - I am speaking now in terms of loom capacity - represent thirty-five per cent of the loom capacity of the entire industry, Rhode Island another thirteen per cent, so you see that two states alone represent forty-eight per cent of the entire loom capacity of the industry. If we take one more state, which would be Pennsylvania, we are up to fifty-seven per cent. Approximately the same situation pertains in connection with the spinning capacity of the industry. Massachusetts accounts for thirty-seven per cent, if we add Rhode Island we have fifty-nine per cent in two states, and Pennsylvania brings it up to seventy per cent in three states. The industry is quite concentrated in the New England States. There is a very small amount of wool manufacture in the South, approximately six to seven per cent of the total is in what we call the "Southern States," which were defined in our code as "south of the Mason-Dixon Line." The largest single concentration is in Lawrence, Massachusetts, next would come Passaic, New Jersey, then the district around Woonsocket and Providence, with a substantial number of units located in the Blackstone Valley in Massachusetts and also in the Philadelphia district.

The factors which bear on location are not especially controlling. The industry grew up in New England and has remained there. The biggest market for the raw material is in Boston and, as I have explained to you, the largest concentration of mills is in the New England district. Transportation is not a particularly vital factor. The wool market is in Boston but it would be moved if there was any particular reason for so doing. The wool has to be transported before it is sold into consumption because the clip has to be handled and financed - it does not go directly to the mills - and Boston has remained the wool center because so many mills are situated near by. I think that is more nearly correct than to say the mills are there because Boston is the raw material center. The principal factor in location is the question of water supply. **A woollen mill uses a very substantial amount of water and must be where it can obtain reasonably good water in quantity.** Practically every mill in the country is located either on a river or on a stream, or they have an artificial mill pond which gives them the supply they need.

As to the location of individual units, there is a factor which is perhaps interesting and that is that the worsted mills which are in the main larger scale operators are located

largely in the big centers, or near the big centers, where they have access to a reservoir of labor. The woolen mills, as a general thing, are smaller and are more apt to be located in what we call "the country districts."

The question of the tariff is very important to the industry. I speak at the moment of the tariff as it affects the raw material. There are two very distinct parts to the wool tariff which are not generally understood. There is a specific tariff of the raw wool which carries over and becomes a specific tariff on the theoretical content of wool in a fabric, and there is an ad valorem rate on the foreign cost of the goods. The specific rate is designed to protect the domestic wool grower, the ad valorem rate is to protect the manufacturer in his high labor cost for the labor that has gone into the processing of that wool. The present tariff on the raw material is on the basis of thirty-four cents a clean pound. If you do not know what a "clean pound" is perhaps I can explain that here as well as anywhere. The shrinkage in wool (and by that we do not mean the type of shrinkage that you have in a woolen garment) is the difference between a pound of grease wool and a pound of scoured wool. The shrinkage comes in the removal of dirt and grease and other foreign material from the wool. To a layman the shrinkage seems extraordinarily high, the average being about sixty per cent. That is, out of ten pounds of grease wool we get only about four pounds of clean wool. The tariff is based on the scoured wool content and amounts to thirty-four cents a pound. When the wool is carbonized the rate becomes thirty-seven cents, on the theory that it takes one and one-tenth pounds of wool to equal a pound of carbonized wool. When it becomes yarn the rate is forty cents a pound, on the theory that it takes one and one-tenth pounds of scoured wool to make a pound of yarn. When it becomes a piece of goods the rate is fifty cents a pound, on the theory that it takes a pound and a half of scoured wool to make a pound of woven or knitted fabric. The tariff, of course, is not effective as far as price is concerned unless we use more than the domestic clip. If the domestic clip is greater than the amount of domestic consumption the tariff is effective in keeping out foreign wools but it is not effective in a raise in the price to the domestic grower. If, however, we use more than the domestic clip the price that the domestic grower receives is substantially the world price plus the thirty-four cents per pound duty. That is the condition today.

There is an item here in the outline concerned with the relations with the Federal, State, and Municipal Governments. I do not know just what you have in mind, Colonel Jordan, in that respect. We do have relations with a good many different parts

of the Government. We naturally like to sell the Army, and to a lesser extent the Navy, material. The Army last year was a very heavy purchaser of material, largely for the Civilian Conservation Corps. Relations have always been very pleasant, although they are confined to perhaps a comparatively few mills. There are twenty to thirty mills that customarily bid on Army contracts - generally the larger mills. We have had a long history of relations with the Tariff Commission. We are still continuing those at the present time and feel somewhat concerned about the tariff situation. We have a good many relations with the Department of Commerce, with the Bureau of Census, and with the Department of Labor.

The products of the industry can be roughly divided into three parts. First, the products for the wearing field, which leave our industry in the form of piecegoods, consisting of perhaps sixty per cent women's, with ten per cent boy's and miscellaneous, second, blankets, and third, yarns. Yarns, of course, are not the last process but they are the smallest in value, which is the reason I put them last. Those yarns are used for knitted outerwear, bathing, suits, underwear, hosiery, and similar articles for which wool is used. The blankets are of two types - all wool blankets and blankets containing a mixture of wool and cotton. The same thing is true to an extent of piecegoods. These are primarily an all wool product but there are a good many manipulated goods that are used by reason of price. The products, of course, are all classified as consumer goods. There is a very small amount of material such as wool felts which are used in manufacturing, but ninety-eight per cent of the product of the industry is classified as consumer goods.

Bulk is not important, although I understand the Army had something of a problem in storing some surplus CCC material last year. The question of perishability is largely a question of protection against moths. There is substantially no obsolescence except as respects the style factor. That, of course, applies to material made for women's wear very much more particularly than it does to material for men's wear. While clothiers and retailers want new styles every season, it is probably a fact that the customer would buy last year's pattern for a man's suit just as quickly as he would buy next year's. The style element, however, is very important in the women's wear and rather important in sports wear for men but of less importance in connection with the staple and semi-staple suitings for the men's wear trade.

There is no standardization in the industry. There is an infinite variation both in the type of manufacture and in the product. There is infinite variety in the kinds of wool utilized, in the blends of wool, in the preliminary processes that make the yarn, and in the weaving processes, both as respects the way the material is handled and the design of fabrication. That was very well illustrated during the World War when plants that were not accustomed to making material suitable for uniforms and overcoats were asked to go on Government work. The material was accepted because it was needed but there was, as all of you probably remember, a very great variation in the type of goods which were turned out for war purposes. It is almost impossible for mills in a short time to substantially change the type of their product without running into a very great expense and without slowing down their production very materially while they become accustomed to handling a different type of product than usual through their mill. I had no contact with the industry from 1922 to 1933, approximately eleven years, but even after that eleven year interval I was able to identify a number of fabrics which in the main were designed for the same purpose but had characteristics that identified them with certain mills which had for years worked on that general type of material. A single mill generally continues to manufacture products of a certain fairly limited type.

The principal raw material, of course, is wool. You have probably heard various discussions about the use of reworked wool. We have had some well-intentioned friends in Congress who frequently in the past have introduced bills in connection with the labeling of virgin wool. Some types of reworked wool are more expensive than other types of virgin wool. There is, furthermore, no possible way of definitely determining in a laboratory whether material has been used before or has not been used before. As near as we can approximate it the industry uses approximately sixty per cent new wool and twenty-five per cent reworked material, with possibly fifteen per cent consisting of specialty fibres such as camel hair, vicuna, and fibres of cotton, and rayon. The introduction of spun rayon in the woolen field is a new development. I have two very small but interesting samples here that you might like to see a little later. One of them has approximately fifty per cent spun rayon in it. It is, to the best of my knowledge, not possible to distinguish those fabrics by feeling them. They can be distinguished by microscopic examination but the presence of rayon, if it is properly blended with wool, cannot be detected by the feel. We are somewhat concerned with two things in connection with the use of rayon: first, how the spun rayon fabrics will wear and whether they will give the satisfaction that they should, and secondly, whether they will be honestly sold. I know of no mill that will misrepresent their goods when they sell them,

but there are a good many of our customers who sell their goods on the basis of the fellow who bought the horse with a spavin -- the fellow who sold the horse to him did not say anything about it so he thought it was a secret and he said nothing to the fellow to whom he sold the horse. There is a great deal of this material now being distributed with a very suspicious lack of information as to what the material is. I think it is fair to say that there is a field for mixtures of wool and spun rayon but that it is probably not as satisfactory as an all wool fabric and there will be a great deal of deception practiced in the merchandising of that type of fabric.

The source of our wool is primarily domestic. From 1930 to 1937 (we are thinking in terms of 1937 now in connection with the raw material) approximately ninety per cent of the consumption has been of domestic wools with about ten per cent imported. The imported wool comes largely from Australia, with a certain amount from New Zealand. That is a considerably smaller percentage than we used to import. From 1890 to the time of the war we imported varying amounts, averaging between about fifteen and forty per cent. The foreign clip, of course, supplements the domestic clip. The tariff operates to make the industry use the domestic clip first and supplement any additional requirements needed by the importation of foreign supplies. During the war we imported fully fifty per cent of what we utilized in this country. The domestic supply is dependable. It does not vary a great deal although there are certain weather conditions that may increase or decrease the percentage of shrinkage -- in other words, make a larger or smaller amount of wool actually available.

There is some variation in the size of the stocks but not a great deal. The carry over of wool, the domestic stock of wool, is largely a seasonal proposition. Wool customarily is clipped in the spring and is sent to the principal markets. The main market, as I said, is Boston, with some handled in Philadelphia. Pulled wool, which is wool taken off the slaughtered sheep at the slaughter house, is handled in Chicago. Those are the three markets for raw wool. It is shipped to those markets in the spring, and is financed and held by dealers who sell it to the mills as it is needed. There is not customarily a carry over because of the fact, as I have already pointed out, that the domestic supply is supplemented by the foreign supply, unless there is a very unusual decline in domestic consumption so that we use less than the domestic clip.

The domestic clip for the last seven years has been running in the vicinity of four hundred million pounds, which is the extent of the transportation problem by and large. The greater part of that is raised in the Western States - Texas, California, Wyoming, Arizona, Utah, Colorado, and the other grazing states. It is usually a one season crop - we call it a clip - except in Texas where there is more than one shearing, and where they clip shorter wools at certain seasons of the year.

The variation in the price of wool has been substantial. The price is, as I have explained, dictated by the world price of wool except in those years when we use a much smaller amount than the domestic clip. In 1850 (as we have to use a certain type of wool I will use Ohio fine delaine as an example) wool sold at seventy cents a clean pound, in 1865, after the Civil War, it was one dollar and fifty-five cents, it climbed in 1870 to one dollar and seventy-five cents with a brief rise after that for a few years and then declined almost steadily to 1893 when it sold at forty-eight cents. We had free wool from 1894 to 1897. The tariff was removed in 1894 and wool sold as low as thirty-five cents a pound, with an average through that period of perhaps forty-five to forty-eight cents. From 1900 to 1912 it fluctuated between sixty and eighty cents. From 1913 until 1921 wool was again on the free list. It started at about sixty cents but the effect of the tariff on the wool price was not apparent because of the World War which put the price up to one dollar and eighty-seven cents, the high point that it has reached during the time of which we have any record. Since the war the high price has been one dollar and forty-two cents, going down again in 1932 to under fifty cents. It is now up to about ninety cents. I (displaying chart) etched this chart in red and blue so you could see this price tabulation. The red figures show the period of free wool and you can see that the tariff was not effective. This is the war period here (indicating) where there was a shortage of wool, not only in this country but in foreign countries as well. You can see the very great variation in the price of our raw material, which normally may be considered as a third of our cost, varying from less than fifty cents to one dollar and eighty-seven cents. That is a very wide variation in raw material cost.

The total world supply is apparently roughly equal to the requirements. Countries that do not have wool seem to be getting along without it. Italy and Germany are making certain substitutes, which are not very satisfactory but which apparently are enabling them to get by without importing raw material which

themselves do not have in any substantial amount. During the World War every country wanted all the wool they could get. Our consumption in this country, of course, was not all for our own requirements. We made a very substantial amount of woolen material for the Allies, particularly for Great Britain.

The production processes are set forth in a very general way in this little photostat that has been distributed. I am sorry it is so small. The large charts, besides being very expensive are very awkward to handle and I did not bring them down. This does not show the raw materials, that is the grease wool and the scoured wool and the wool noils as it should. The first process is the sorting of the wool. That is, sorting a single fleece into different grades or sorting different fleeces, according to how fine a distinction they want to make between different kinds of wool. That is illustrated as No. 11. Then the wool is scoured. That is a chemical process to remove dirt and grease. The wool is then "combed" by a machine, which is illustrated as No. 12. It is then carded, as illustrated in No. 13. The carding consists in revolving on cylinders with teeth that comb out certain impurities and get a parallelism of the fibres to some extent. It then goes through a gill box (that is not a "jill" box, it is a "gill" box) - No. 14 - where these are combined to make what is known as a "sliver," which then goes to the spinning mules or frames. Wool to be made into a worsted yarn is distinguished from that to be made into a wool yarn. I will ask you to look at Nos. 22 and 27, which are right at the bottom of the little diagram in the center. A worsted yarn is shown as Nos. 21 and 22. The fibres are parallel, they are combed so that they are all running in the same direction. A wool yarn, as illustrated in Nos. 26 and 27, is coarser and the fibres are not parallel. This wool yarn is rough and is sometimes referred to as a "wooly" yarn. If the wool is to be spun on the worsted system it goes through a combing operation. There are two different types of combs. One, called the Bradford comb and illustrated in No. 15, and the other the French comb. The real difference in wool and worsted, of course, is not alone in the fibres, but also in the way the yarn is spun. A worsted yarn has a heavy twist. It is stronger and it is very much finer. A wool yarn is loose and open and is designed for a different type of material. Flannel shirting, which is used in both the Army and the CCC Corps, is made on the worsted system. Overcoating, which is heavy and is fulled after it is manufactured, is designed to have a certain felting effect, and is, of course, a woolen product. I shall not go further into the distinction

between those, but there are a good many different things that require worsted products and there are a good many in which either wool or worsted yarns can be used. If the wool is to be spun on the worsted system it goes through a drawing frame, illustrated in No. 18, which is similar to a gill box except it is a refinement of that process. The yarn is then spun on one of two systems, either a frame spinning equipment, shown in No. 19 and again in the inside of this little square (indicating), or on mule spinning equipment, which is illustrated in No. 25. In either system of spinning the roving - a rather loose bundle of fibres - is pulled out to a certain degree but without a twist. The spinning process pulls the "roving" out and puts a twist in it at the same time, which gives it its strength and the particular characteristics that is sought in the finished goods.

Next comes the weaving process. The yarn, after being spun, is wound on beams. A beam is a large cylinder on which are wound countless numbers of yarns which form what we call the system of yarns for the warp. From the beam those are threaded through the loom according to a predetermined arrangement, different threads being controlled by different harnesses. In a diagrammatic way we show in No. 30 what those harnesses are like. Alternate threads go on one harness, the other threads on a second harness. One harness is lifted, raising each alternate thread, and the shuttle goes through. Then the harness that was up goes down, the harness that was down comes up, raising the alternate threads, and the shuttle goes back again. That produces a plain fabric, which is shown on the right hand side as No. 1 under No. 32. No. 3 shows a twill fabric where the alternation of the harness is varied. No. 4 is a basket weave, where two adjacent threads are moved together. The fabrics themselves, I am afraid, are too small and do not come out sufficiently clear photographically to waste any time on them. Of course, on our large chart they are actual fabrics that can be seen and handled.

The principal machine types in the industry are the comb, the spindle, the loom, and the knitting machine. They can be adapted mechanically quite quickly to certain changes in construction and design - it is much more difficult to adapt them to use different kinds of wools or to adapt the people who work on them to different kinds of materials. The mechanical changes can be made rapidly but there is a limit particularly in time to the degree of change that can be made in any well run manufacturing establishment. They are equipped, both by reason of experience and by type of labor, to continue the manufacture of a certain type of material and it is very difficult to train the

labor and to get the proper handling of material so that they can quickly change to a different type of product, even though they can change the machine itself and the attachments without any undue delay and without too great an expense.

The question of power is not important. A great many of the larger mills have their own power. Most of the modern mills have individual electric drives, although there is a good deal of machinery that is operated by belt-driven power. One reason that they use their own power is because of the necessity of having steam, which they have to have in any case, and it makes their power cost them less than it would if they did not credit against the cost of power a certain expense for providing steam.

The patent situation in the industry is not important. There are, of course, patents on machines, but we do not make the machines, we buy them. There have been patents on types of fabrics - design patents. In my opinion they have a nuisance value only. There is very little new in the industry in the way of a weaving design that can be patented. The Patent Office is granting certain design patents but I do not think they would hold up if they were really fought in the Patent Court. They have, as I said, a nuisance value only. One manufacturer says "This fabric is patented and you use a similar pattern made by a competitor at your own risk." This has caused some feeling. Personally, I do not think such patents are any good.

The seasonal aspect is complicated by reason of the overlapping of seasons. In the men's wear field we have three seasons - fall, (the fall season includes overcoatings) spring, and another season that is growing larger - that is the tropical worsted season. This is a rather short season, for the summer months only, but a substantial amount of material is now being used for garments designed purely for hot weather use. The women's wear seasons overlap. There are, of course, two seasons in women's wear. There is one season in the blanket industry. The peak, of course, comes in the supplying of material for the fall season.

Cycles in the industry are largely cycles caused by an excess of enthusiasm either on the part of the industry or on the part of the customers. We had that illustrated very plainly just before and after the introduction of the NRA codes. The industry customarily makes up a void from a preceding year where the production is low, generally overdoes it and borrows a bit from the succeeding year, so that if you try to relate the production to

the actual consumption of material in any one year you must take that into consideration 1935 was something of an example The actual production in 1935 filled up a void that was created in 1934 and also produced a certain amount of surplus that had to be used up in 1936. The actual fluctuations are substantial. (Displaying chart) I outlined in red two sets of figures which give some idea of the fluctuation by seasons This (indicating) shows fluctuations in spindle hours. It covers a period of four years This chart does not start from ten, it starts from zero and shows that the consumption of raw wool in one month of 1934 was down to about a million and three quarters and ran toward the end of 1935 to over seven and a quarter millions. This very severe fluctuation has an important effect on merchandising and also on labor policy. It is far from a stable industry from the standpoint of the percentage of manufacturing capacity utilized at various periods

The labor in the industry is divided between common, semi-skilled and skilled. There is at the present time ample labor available Good help can be trained in a reasonable time if there is no particular urge to hurry production. The average age of the people in the industry is somewhat high. Ours has not been an industry which has attracted new workers, therefore, the more highly skilled people in the industry are rather older, in my estimation, than they are in a good many industries that you might study. The wages are, from the standpoint of theoretical wages, reasonably satisfactory From an annual standpoint they are much less satisfactory because of the fluctuation in operations, as I have already pointed out. There is a differential between the North and the South, due in the main to the difference in living costs. This is not very important in our industry because only a small amount of the industry is in the South The difference in average wages between the North and the South is about ten cents an hour or four dollars a week on a forty hour basis. Average wages in the North are around nineteen dollars and fifty cents a week for a forty hour week It is considerably larger in the big cities - the average is somewhat brought down by the units in the smaller country districts

The industry is not by and large unionized The union that operates in the textile industry in all branches, including the wool industry, is the United Textile Workers They have never had more than twelve per cent of the employees in the wool textile industry enrolled as union members. Their dues-paying members were considerably smaller than that at the time when they had the greatest number enrolled. The union is badly led. They have lost members recently, and they have instigated many strikes which were

largely called for the sole purpose of increasing the membership. They have an unfortunate psychology. They have never concentrated on the mills in which conditions might be said to be less satisfactory, they have called strikes in the mills where it was easiest to call them. In other words, they have placed no premium whatever in the industry on proper treatment of the employees. They have been purely opportunists and have in no sense been constructive. This union, parenthetically, is a member of Mr. Lewis's group - the industrial union. It is largely an industrial union although within the union there are certain craft unions. There is, for example, a union for wool sorters and there is a union for loom fixers. Loom fixers are perhaps the smallest group in the industry but they are a bottle neck because we cannot get along without them. The union does not cooperate with the industry, they have strikes periodically for their own purposes. They have, in my estimation, damaged the welfare of their workers by their ill-advised procedure. There have been times in the industry when I think the industry was disposed to take certain steps to assure a higher wage to the employees but they have been blocked by the demands of the union which were so ridiculous that we simply could not consider them. We had a demand from the union some two years ago based on average wages. We were considering a more extensive system of minimum wages. We had under the code a single minimum for every one in the industry, and we were considering a system where certain occupations would carry a special minimum, but the union demands were based on average wages and it was obvious that if we even discussed the matter with them they would be talking about an average wage of twenty-eight dollars while we would be talking about a minimum wage of twenty dollars. We had no common ground whatever. Of course, whenever the union, which represents a very small minority of the employees, makes a demand for an increase the manufacturers are less inclined to grant it than they would be otherwise. I know the union people personally, I realize they have a problem but I think they are going at it in a very unintelligent manner. They sponsored last year a bill in Congress called the "Ellenbogen Bill" to regulate the textile industry. Hearings were held for some months on the bill and it was very definitely pointed out to them that if they formulated a bill that did not try to do too much, that did not give the manufacturers all kinds of ammunition with which to oppose it, the bill would stand some chance of passage. The bills that they propose are so extreme - they amount to a regimentation of the industry that the industry simply cannot submit to, and the bills are bound to be defeated. The last legislative proposal the Ellenbogen Bill proposed a thirty-five hour week and minimum wages for every occupation - a regimentation that the industry could not live under. If the union would devote

its energies to correcting abuses if and where they exist in individual plants instead of trying to formulate bills to apply to the entire industry and making accusations against the industry which are not justified, it would get further as a union and would do a great deal more for the employees that they pretend to represent.

The difficulty with employment in our industry is the fact that it is not steady for many people. The variations that I pointed out in employment fall entirely on those people who are not steadily employed. There are a certain number of employees who probably keep their jobs regardless of the production of the mill but the fact that the mill has to provide two or more different lines a season means, except in some few staple operations, that the mill has to shut down while those samples are being prepared, while they are being sold to the trade. The cost of the product is such that the mills cannot make the product first and sell it afterward. They have to prepare their sample lines, take orders on those lines from their customers, and then put the goods into manufacture. That means that during that time, for one or two periods in the year, there is a slack period when a good many men are laid off. Mills have tried to find some way to bridge that gap in employment but it is extremely difficult in view of the merchandising existing in the industry today. A man who gets the average wage in the industry of nineteen dollars and fifty cents per week does not have anything to spend for luxuries, and if on top of that he is out of employment for part of the time, it makes it extremely difficult. The greatest improvement that we could make in the industry from the standpoint of labor would be to give the men more constant employment, and when we are able to give them constant employment by reason of continued active business there is practically no unrest in the industry. It is not the actual wage that is so important as it is the continuity of employment.

The type of customers is interesting and has a real bearing on the operation of the industry. Except for the Government and for the automobile people the customers of the industry are relatively small and numerous. There are no large customers as individuals who dictate the policy of the market. The piece-goods and the yarns produced by the industry are sold to manufacturers who further process those materials. Substantially the only product that we make that goes to the public in the form in which it leaves our industry are blankets. Blankets are sold direct to the retailer and reach the public in the form in which they leave the mills.

The marketing methods of the industry are not such that we can be proud of them. They are lacking in originality, they are stereotyped, and there is a discouraging emphasis on price.

The industry has been declining in volume for a number of years. It did not share in the general business activity in 1926 to 1929 and the result has been that by and large there has not been enough business to go around. Goods are sold far too much on the basis of price and not enough on the basis of quality. But I do not think you are particularly interested in that phase of our industry and I will not stop longer on it.

The financing of the industry is interesting. Except for the larger units a great many of the mills have their accounts factored. Factors are individuals or firms and there are a number of them in New York, who handle the account, collections and credits, and advance the mill money on goods shipped. The customary terms in the industry are 1/10 net 60, which means that in ordinary instances the bill is not paid until sixty days. In a number of cases further dating is given. Certain classifications of men's wear delivered ahead of the season carry anywhere from two to three months' dating. The same is true of bathrobe material, and to an extent it is true of blankets, which means that the mills have paid for raw material, labor, and overhead a substantial time before they get paid by their customers. The factor has grown as an important part of the industry in recent years. It is because he can perform this service of collecting, credits, and handling of accounts more efficiently than the mill in many cases, and because in many instances the mill needs his financial assistance to carry on its business.

The effect of price on demand in our industry is reversed. I mean this that a decrease in price does not customarily result in any great increase in consumption. Price has a real effect on the use of substitutes. If the price of wool goes too high more manipulated goods are used but a reduction in price does not have a very real and direct effect on increased consumption. On the other hand, increased consumption has a direct effect on price. The industry has had such a difficult time disposing of its products that generally when a mill starts to show its line it is so interested in getting a minimum amount of business, which it regards as a back-log, that it starts the season's level of price too low. Also, they always sell to the Government at too low a figure. I have yet to find a mill that can make any money selling to the Army.

A woollen mill making a fabric that sells at one dollar and fifty cents will have a production cost varying by twenty cents a yard, which is several times their greatest expectation of profit, as between a fifty per cent operation and an eighty-five or ninety per cent operation. The difference in cost is so tremendous if they can manufacture to eighty or ninety per cent of their capacity as against a smaller degree of operation that the mill is driven to get as much initial business as it can and the result is that the opening prices are generally too low. If, however, there is a demand the mill takes advantage of it and increases its prices. The difference between a successful season and an unsuccessful season in the apparel field is very apt to be determined entirely by the business on duplicates. The original lines that are put out are neither sufficiently large in volume or sufficiently high in price to get a dollar back for the mill - a new dollar for an old dollar - but if the business increases in volume and there is a substantial amount of duplicate business the mill not only gets a better price on duplicates but it gets an increased volume which enables it to make a substantial manufacturing saving in making the goods. That, of course, is why the Government is sold material at such a low price - it is volume merchandise and enables a continuity of operation which produces a real saving to the mill.

Competition with other industries is largely a matter of the prevailing price level. We compete in the women's wear field with cotton, with silk, and with rayon. In the men's wear, except in the summer clothing fields, there is little competition with other branches of the textile industry although there are many materials that are made for work clothing which use some cotton and some wool. These may be made either in the wool textile industry or in the cotton textile industry. As the price of wool goes up the percentage and the number of those materials increase and our industry may get that business or it may go to the cotton mill that is equipped to handle a certain amount of wool in its mixtures.

Competition within the industry is very severe. International competition does not exist abroad but does exist as respects the American market. We have no export business. During the two years that the code operated we had one shipment of material, which was to South America. We know that because special terms were required and we had to get authority for those terms. There was only one shipment in almost two years. The imports have varied considerably. Time is getting short so I will not go into this phase too thoroughly but I would like to give you a picture of it. From 1849 to 1859 or 1860 we imported

almost a third of what we used in this country in the way of piecegoods and blankets. That percentage decreased up to perhaps 1890. Since that time it has been markedly less, as the industry has grown and has acquired the facilities for making a better product. We had a new tariff in 1930, which did not substantially change the old tariff although it increased it on some items. We expected a substantial increase in importations when England went off the gold standard in 1930. There was reason to expect an increase when we raised our hourly wages at the time the NRA Code became effective in 1933. We raised our hourly wages by something like twenty-five or thirty per cent. That did not mean more for the workers because they worked a fewer number of hours, but it increased the cost of the product. But every time during the last five years when we have expected an increase in imports there have been offsetting circumstances - which I will not go into at the moment - which resulted in smaller importations than we expected. But at the present time there are no such offsets. Wages in this industry in America are two and one-half times what they are in Great Britain, and ten times what they are in Japan, and imports are increasing at the present time quite substantially. The situation as respects Japan is less serious than we expected. Japan has had some trouble with her raw material which was bought from Australia. Relations between the two countries are somewhat strained commercially and Japan is not now as big a factor in our market as we expected. They have made remarkable strides in Japan in the production of wool textiles, however, as well as cotton, and I am convinced that it is only a question of time when we are going to feel severely the competition of Japanese fabrics. We expected a year ago that by this time it would be a serious matter but the Japanese so far have missed our market. I think they have their domestic troubles, and they have not been able to develop this market and study it in a way which would provide opportunity for them to exploit it with their own goods. But unquestionably with a wage schedule one-tenth of what ours is, no matter what the tariff is we have a problem to face in the future as respects Japan. The principal competitor now competing in this market is Great Britain. Imports of overcoats and suitings from Great Britain have increased somewhat, the imports of blankets have increased very substantially. The general feeling in Washington is that this country should move toward the lowering of tariff barriers. Without expressing any personal opinion, I think it is quite obvious that if we are to maintain our wage schedules and if we are to maintain the industry at its present level we have either got to have an embargo or tariff protection of some kind. We can stand more imports perhaps than we are getting today, but there is a very distinct limit to it if we are to maintain wages two and one-half times our principal competitor and ten times another competitor who may well become a very serious, if not the principal, competitor in the future.

It is very difficult to give you a reliable break down of the cost of the product. The Federal Trade Commission provided figures and I quote the Commission because I would not care to suggest figures myself. The Commission took a certain number of integrated mills and it is probably a fair sample, although we do not know which the mills were. At the time of their report, which covered the period from January to June, 1935, they gave the direct labor cost in an integrated mill (which is a mill that takes the raw material through the various processes and turns out the finished product) as thirty-two and one-half per cent of the total cost. The material was forty-eight per cent, almost half the entire cost. Other costs were nineteen and one-half per cent. The Commission gives a break down of these other costs, which is perhaps not important. I will give you three items: power, two and one-half per cent, chemicals, slightly over three per cent, and selling expense, four and three-quarters per cent. Incidentally, the profit percentage was practically nothing.

I am skipping several items of the outline here because it is getting extremely late.

There is important legislation affecting the industry: the Social Security Act, several State Acts - Massachusetts, Rhode Island, Pennsylvania, and other states limiting the work week (in most cases it is forty-eight hours against a forty hour week in the code), the Walsh-Healey Bill which makes the Department of Labor a party to contracts with the Army, and various other legislation. These restrictions are common to all industry and I do not want to take your time to go into them.

The ownership of the industry is largely private. There are only two companies that I recall at the moment that have their stock listed on the New York Stock Exchange. These two are the American Woolen Company and Collins and Aikman. The balance are pretty much privately owned. They do not have bonds outstanding - their capitalization consists of preferred and common stock in most instances.

The earning record of the industry is discouraging. The American Woolen Company might be taken as a fair cross section of the industry. They made a profit of six and one-half million dollars in 1923 and lost somewhat more than that in 1924. They made a profit of less than a million in 1925 and lost four million in 1926. They made a profit of six hundred thousand in 1927 and lost a million and two hundred thousand in 1928. In the period from 1928 to 1932 which included two years



when industry is supposed to have been profitable, they lost over nineteen million dollars, an average of four million eight hundred thousand a year. In 1933 they made a profit of seven million dollars but they lost five million and a half the succeeding year. It seems to alternate between a profit and a loss. In 1935 they made two million seven hundred thousand dollars on a seventy million dollar business. I hesitate to make the prediction as to whether they will make or lose this year but they will not make much if anything. I think it is fair to say that the American Woolen Company represents a cross section of the industry. There are a number of mills that have made money constantly but by and large if the American Woolen Company does not make money the aggregate of the industry does not make money. The industry has been curtailing for a number of years. The styles in women's wear require a good deal less material than they did. I recall when I was about eleven or twelve years old my father sent me to Boston to buy some material, of which I had a sample, for a suit for my sister. It took seven and one-half yards. The maximum today is less than two. It would surprise you to know that in prosperous years recently the average man in this country has bought six-tenths of a suit a year, in the depression he has bought four-tenths of a suit. We spent last year, and we are spending this year, something over a hundred thousand dollars to try to promote the products of the industry, and we have been reasonably successful in doing it. That again is something I would like to talk to you about for an hour but there isn't time. However, the industry has been declining as respects its potential market. It has been extremely difficult to make money. The World War is responsible in one respect for the difficulty. Prior to the World War multiple shift operations was not usual. During the war mills very generally worked three shifts. Some of them have continued that. The code cut the working week down to two shifts, and that has been generally observed since the code went out of existence. We have our own rules of procedure and we do not prohibit the third shift but the Board of Directors of our Association have done what they could to discourage it. We do not need the capacity of a third shift, we do not even need the capacity of a second shift. It is the potential capacity of the industry to over-produce that has made it so difficult to make a profit. Rather than cut down the potential capacity we want to increase the consumption if we can find out how to do it.

The trade organization in the industry is the National Association of Wool Manufacturers, which was established in 1864. I think it has the honor of being the oldest trade association in the country by one year. It represents now approximately ninety per cent, or a little higher, of the capacity of the industry,

about seventy-five per cent of the individual plants in the industry. In other words, there are twenty-five per cent of the people in the industry who are not members, but that twenty-five per cent controls less than ten per cent of the manufacturing capacity.

We have no price regulation. We could not carry it on in our industry if we wanted to. There is too much competition for the available business. They are accused sometimes of having a single price on Government contracts because there is a limit to what they can give away, but that is the only reason the prices have any correspondence one with the other.

The trade statistics of our industry are extremely complete. We have always cooperated with the various Government bureaus in this connection. At the time of the NRA we very largely expanded our statistical work, and while the NRA was still in existence we worked with the Bureau of Census and the Bureau of Labor Statistics to enlarge their reports to include certain information that we had been collecting and which we wanted to continue. At the present time the Bureau of Census gets out, with our cooperation, a monthly report on machine activity and on wool consumption, and a quarterly report on wool stocks in which the wool dealer also helps, so we have very complete and up-to-date information on the situation in the industry regarding its raw material and its current operations. We did the same with the Bureau of Labor Statistics which collects figures on employment and payrolls. We have continued our own statistics, supplementing those mentioned above, our own reports showing production and stocks of yarns, piecegoods and blankets, these reports being on a weekly basis.

The trade practices in the industry are reasonably good. Members of the industry have continued to observe the general principles laid down by the code. They probably are not unlike any other industry where if certain trade practices are corrected the industry gets up on this higher level and gradually works down until things get bad enough and then start all over again. It is a more or less continual chiseling away at standards periodically improved by agreement. Up to the present I think the industry has done a very constructive job in trying to observe and continue the gains made under the NRA Code. The NRA was a help to our industry. It raised wages, it limited hours to forty a week for labor and to eighty a week for machinery, and in general put the industry on a basis where the potential capacity was somewhat limited so that there was less of a buyers' market. Of course, the limitation of machinery is largely a temporary matter. If you limit machinery too much you simply find

some way of utilizing the machinery to better advantage or you buy more machinery, so the expected effect of scarcity at the best is only temporary, if you are foolish enough to try to obtain it. However, the NRA was advantageous to our industry, our complaint with it being that they tried to do too much, that they were not satisfied with an original code but wanted to control the details of the industry through Washington, which seemed to us impractical and unwise. Nevertheless, I am happy to say that I believe the NRA was a good thing for our industry and certain features of it we would like back today.

There is one other subject I would like to cover - and I do not know how much importance you have attached to it - in connection with the determining of costs. It is practically impossible to provide for any standard cost basis in our industry. There are too many variables of product and too many variables of machinery. The equipment varies considerably in different mills, both as to the type and the age of the equipment and the kinds of material they are accustomed to handle. I think if the Government needs large quantities of wool textiles they can be bought only on one of two bases - either on a basis of competitive bidding or on a cost-plus basis, with a determination of what it actually costs to produce the fabric in the various mills. If bought on the latter basis you will find that there is a very substantial difference in cost in the different units.

I have only one other remark I would like to make. I do not know whether there is any one here who has had or will have anything to do with the inspection of Government materials. I could not find a place for this in your outline, Colonel Jordan. The customary procedure is to advertise for bids and then have the successful bidders submit samples. An approved sample is then selected and sent to the bidder. The material must match the sample within reasonable limits. The question always arises as to what reasonable limits are. It is a matter of personal judgment of the examiner, a matter of possibly the kind of dye the goods were finished on - it is certainly affected very largely by the type of dye and the time of day at which the goods are examined. The mill never knows in advance what leeway they are going to have as respects the matching of that sample. It has seemed to us it would be very much more satisfactory (and we have this same problem with the automobile manufacturers who have had considerable to say about variation in shade) if we could be provided with two samples, one which had the greatest amount of green in it that the Government was willing to accept and the other which had the greatest amount of yellow in it that would be accepted. The samples could be as close or as far apart as you choose to make them, but anything

between those two samples would be satisfactory - anything greener than this sample would be out and anything yellower than that sample would be out. In that way the mill would know before they shipped the goods whether or not they would be acceptable. Any mill can tell whether a certain delivery is greener than a standard sample, but they cannot tell whether a certain examiner on a certain day will say that that piece of goods is "reasonably comparable" to the standard sample he has

Colonel Jordan, I am very sorry to have talked so long. Probably it is a protection to me because the gentlemen will not have much time to ask me questions.

DISCUSSION FOLLOWING LECTURE BY LT. COL. ARTHUR BESSE

"The Problems and Trends of the Woollen Industry"

Q. - We have in our wool plan a question of the amount of wool stocks that we can figure on to start in any emergency. That figure, which consists of the wool itself, yarns, noils, rags, etc., is about four hundred and seventy-five million pounds. Incidentally, the date on which that was taken was June 30. Was that a good thing to do, to consider the availability of stocks, and do you think that that is a reasonable amount or is it too high - four hundred and seventy-five million pounds available at any one time?

A. - The amount of wool varies very substantially according to the time of year. We have four quarterly reports. The report of June 30 will show the highest amount of wool available generally. Then it goes down constantly for the next succeeding reports. The new clip comes in between the April report and the June report so that we have on the June report the highest figure reported for the year. The domestic clip is somewhat more than four hundred million pounds on the average, but it is very difficult to know in advance what kind of a figure you could take. You will always have a figure as of the quarter preceding the time that you want the figure but what it may be in 1939 or 1941 I cannot possibly tell you.

Q. - What do your figures show? Is the average amount available throughout the year that high - almost five hundred million pounds?

A. - No. - It is very much lower.

Q. - Then you think that possibly December 31 would be a proper date to inventory your stocks and use that figure as the average rather than the June 30 date?

A. - I should not think so. I should say that where you have these quarterly reports (and they are Government reports) that you could keep up to date with those reports and know at any time just what was available, whether you had any interest in it or not. In other words, if you take an upset figure it would not be right. We will have a very much lower carry-over this year in December than we had last year. That will be made up ultimately by the importation of a certain amount of wool unless our consumption figures go off and our activity declines, but there isn't any definite amount. There is a definite relation between the amount and the price but there is no definite amount at any certain time. However, these figures are constantly kept up to date and you can get the figure for the last quarter at any time.

Q. - How important is the selling agent? Is he as important in the woollen industry as he is in the cotton industry?

A. - He is very important, except for the larger companies. A large percentage of piecegoods are sold through selling agents. The selling agent as such has no interest in the mill, which is somewhat unfortunate. His interest is in volume. He is interested in

selling all the material he can because he gets a percentage on what is sold but he is not as interested as he should be in getting a profit for the mill. The larger mills, of course, maintain their own selling agency, the agency being paid on the basis of expense and where individuals are concerned generally on a salary basis. But the usual sales agent has no interest in the mill and works entirely on commissions based on the price per yard of the goods which he sells.

Q. - Is there a tendency toward vertical integration within the woolen industry such as we find in the cotton industry? For example, the Carter mills and the Pacific mills have integrated vertically - that is, they have absorbed the selling agent.

A. - The Textile Foundation is now engaged in a study to determine the factors which would appear to make vertical integration advantageous. That covers all the different textile industries. My personal opinion is that there is a trend in the woolen industry toward vertical integration. The spinner is today largely dependent on the knitting trade, both hand knitting and machine knitting. There is a comparatively small market for the spinner who makes weaving yarns because there are today comparatively few mills that weave only and it looks as though he might be superseded by the integrated unit.

Q. - Could you arrive at a typical capitalization of the average size woolen mill? Would you say it would be around a million dollars in the ones the Government deals with? For instance, we may not deal

with the small companies of two hundred thousand or a hundred thousand dollar capitalization. I tried to get their financial figures but could not get them.

A. - There are only about three or four that are published. You see it is awfully difficult to picture an average mill with twenty-one mills accounting for fifty per cent of the capacity of the industry out of four hundred and ninety-some-odd mills. There simply is not any typical unit.

Q. - Could you class a mill with a million dollar capitalization as a typical mill that would be a working case for the Government in an emergency?

A. - I refuse to be caught in your trap of the word "typical." Probably the Government will continue to deal largely with the larger mills and the mills that it deals with will be up in that class, but not all of them.

Q. - I would like to ask about the use of rayon and wool. Do they use that in combination for blankets? If so, with what success?

A. - There has been no rayon used for blankets that I know of. It has been used in the women's wear as a rather cheap substitute. It is now appearing in men's wear as a substitute but it does not have the effect of cheapening the product in price and in quality as much as it does in the women's wear. If you will come up later, I have two small samples here of men's wear material and I question your ability to tell them apart. The spun rayon which is being used

in the men's wear is mixed with the wool before the first process. It is all spun together and generally the filling threads are the same mixtures as the warp threads so that the two are exactly alike in their fibre composition. I have some reservations about how satisfactory those materials may be, but the amount is growing and they are experimenting with rayon to make a fibre which will look like wool even when the woven fabric is entirely composed of rayon. I saw last week some new acetate rayon that is designed to be used without being mixed with wool to look like wool, and I understand they are making some experiments with blankets. How satisfactory they may be I do not know, but it seems to me that quite obviously they will not have the thermal qualities that a woolen blanket has.

Q. - In a recent article in "Fortune" reference was made to the City of Manchester, N. H. taking over and operating the Amoskeag Mill which failed to operate successfully. I was wondering if you knew the result of the experiment as to what they would possibly do to get the market which the management of the previous company had failed to get.

A. - I haven't any information on that, but I believe that they do not expect to operate the plant as a textile mill. The Amoskeag Mill used both cotton and wool, with cotton predominating.

Q. - Would a development of the South American trade help in

flattening out seasonal fluctuations and would that help the money end of the industry?

A. - I do not know the slightest thing about the South American trade. I do not know whether it would help or not.

Q. - The woolen industry seems to be peculiarly seasonal - it is winter here and summer in South America.

A. - It is seasonal but the industry does not sit back and do no business during the lightweight season. The men wear lightweight clothes, and while the amount of wool utilized in the spring season is not as big the yardage is very substantial. I question if this country can ever be a substantial factor in foreign markets. With the protection on raw wool which is given to the domestic woolgrower we start at a high level. As far as our industry is concerned, if wool were free we would be at a level substantially lower. The wool-growers would suffer, of course, but the textile industry would be able to make the same product and put it out at a very much lesser cost. Starting with the higher raw material level and adding to that the increased cost of labor per yard that goes into the goods, we have not, as I see it, any opportunity of competing with other countries in foreign markets.