U. S. DEPARTMENT OF AGRICULTURE.

Report No. 66.

SHEEP AND WOOL:

A REVIEW OF THE PROGRESS OF AMERICAN SHEEP HUSBANDRY.

BY

J. R. DODGE, Special Agent.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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LETTER OF TRANSMITTAL.

DEPARTMENT OF AGRICULTURE,
OFFICE OF ASSISTANT SECRETARY,
Washington, D. C., July 5, 1900.

SIR: I have the honor to transmit for your approval, as a report for publication, a manuscript prepared by Mr. J. R. Dodge, formerly statistician of this Department, upon the sheep and wool industry in the United States. The purpose of this report, as I instructed the author, was to review the history and development of the sheep industry in this country and to trace the history of our domestic wool in particular, the variation in prices, and the nature and extent of foreign competition. It has not been possible of course in such a report to eliminate reference to tariff legislation and its general effects on this industry, nor to avoid pointing out in some degree the respective interests of wool growers and manufacturers. In doing so, however, every effort has been made to confine the discussion to the mere facts with as little of argument and theory as possible.

The author has done his work well, and I cordially recommend its publication as Report No. 66 of this Department.

Very respectfully,

J. H. BRIGHAM,
Assistant Secretary.

HON. JAMES WILSON,
Secretary.

LETTER OF SUBMITTAL.

WASHINGTON, D. C., *July 3, 1900.*

SIR: In fulfilling your commission to investigate the present condition of American sheep husbandry, with a concise and comprehensive review of past progress and its degree of success in meeting the demand for manufacture, I respectfully submit the following report. It touches lightly on the early history of the industry in the colonial period, briefly refers to the eventful era of Spanish Merino importation, and considers the tendencies of breeding to meet the wants of manufacture, the economies of woolgrowing, and the great change in enlargement of production and improvement of quality of mutton. It shows progressively the measure and quality of the domestic wool supply. It traces the periods of decline and revival, analyzes recent tariff changes, compares rates of duty, indicates partially the effects of the free wool era, and closes with a showing of present conditions.

Very respectfully,

J. R. DODGE,
Special Agent.

HON. J. H. BRIGHAM,
Assistant Secretary.

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BRIEF HISTORY OF WOOLGROWING IN COLONIAL TIMES.

The first settlers in the American colonies in Virginia, in Massachusetts, and in New York either brought sheep with them or with earliest importation of supplies from the native land. With furniture and household equipment came the loom and the spinning wheel. The matrons of the household were weavers and the daughters spinsters. The clothing of the country people was largely of domestic manufacture from wool grown on the farm.

The sheep were mainly from the countries of the settlers—England and Holland. They were of coarse-wool breeds, but not the highly improved breeds of the long and middle wools of to-day. They were of less weight, longer of limb, less compact and symmetrical of body, and of lighter fleece. Those from England were the unimproved progenitors of the mutton breeds, which have been moulded by slow degrees of patient breeding into the present forms.

It is said that the first sheep brought into the colonies landed at Jamestown, Va., in 1609. Settlement was slow and increase of sheep moderate, but in 1649 the number in Virginia was reported at 3,000. There were early importations into Massachusetts, and by 1640 the number was estimated at 3,000. The Dutch brought over sheep to New Netherlands in 1625 and again in 1630. A Swedish colony in 1663 brought 80 into Delaware. All of the colonies introduced flocks and encouraged domestic manufacture of wool.

Colonial legislatures encouraged woolgrowing and manufacture. In 1645 Massachusetts enacted a law for the encouragement of the raising of sheep; and in 1656 one was passed requiring each family to spin three pounds of wool, cotton, or flax per week for thirty weeks of the year. In the same year a skilled weaver, induced by a grant of 30 acres of land, settled in Lowell, Mass., which has since become a great center of textile industry. Virginia, a little later (1662), prohibited the exporting of wool and offered a bounty of five pounds of tobacco (Virginia currency) for every yard of cloth made in the colony. Two years later the general assembly provided for the establishment of looms and weavers in each county. The other colonies enacted laws for the encouragement of woolgrowing and manufacture.

Efforts were early made to encourage weavers and artisans to come from foreign countries and establish a germ of the later factory system by building and operating fulling mills, thus supplementing the results of domestic manufacture. They so increased in the following century that the carding, weaving, and spinning of wool and the dressing of cloth became general in all the colonies before the war of the Revolution.

As the friction between the mother country and the colonies became intense, and the colonies were ripening for the revolution, a patriotic impulse for the wearing of homespun and the discarding of English goods became general. It is said that the Harvard graduating class in 1770 appeared in black cloth of New England manufacture. Similar patriotic impulses actuated colonial officials and professional and business men, and women vied with the men in their patriotic devotion to homespun.

Societies for the promotion of agriculture sought to encourage and promote woolgrowing by essays and premiums. In 1785 a medal was offered by a South Carolina society for the first flock of Merino sheep kept in the State, but it was eight years before the first individual of that breed was imported into any of the States.

Washington was an importer of the improved English sheep. Prominent Virginians took a positive interest in the extension and improvement of sheep husbandry. There were few that were indifferent to a subject so important. Only one, as recorded in the history of the time, the eccentric John Randolph of Roanoke, was so averse to it that he expressed a willingness at any time to go out of his way a mile "to kick a sheep."

In the other colonies the public men were ever the friends of woolgrowing. It was a subject of vital interest to all, as clothing, next to food, is the greatest physical want of humanity. Cotton was scarce and high, and wool for the winter, as flax for the summer, was an ever-admitted necessity of existence. Public men, almost without exception, were favorable to the encouragement by legislation, by premium and bounty, of the manufacture of wool. Societies and a general consensus of public opinion promoted and facilitated personal effort for the extension of woolgrowing and wool manufacture. This was the situation at the time of the establishment of the National Government. There is no record of numbers of sheep, but in proportion to population they may have been nearly as numerous as at present, though not yielding as heavy fleeces. Twenty years afterwards, under the influence of the Merino excitement and a forecast of war, there were, according to the best estimates, more sheep than people, a number larger in proportion to population than at any time since; a number in 1810 as great as would be 100,000,000 for the present population; a number equal to the flocks of Australasia or those of the Plata River countries of South America at the present time.

INTRODUCTION AND IMPROVEMENT OF THE MERINO.

The Spanish Merino is the foundation of the present fine-wool flocks of all countries. This type of sheep antedates the Christian era. Sheep were held in Spain by the king, the nobles, the clergy, and others, and their exportation was prohibited. Until the nineteenth century none could be obtained except by royal favor or by smuggling, which was very difficult. In 1765 three hundred were introduced into Saxony by royal courtesy and were the origin of the Saxon improvement. They were said to be mostly of the Escurial family, assumed to bear the finest wool. Other families were the Infantados, Paulars, Negrettis, Montarcos, Guadaloupes, and Aguirres. The Infantado was a popular breed (progenitor of most American flocks), with soft, silky, and gummy wool; the Paulars were perhaps the handsomest; the Aguirres were better covered in face and legs and the wool was more crimped than that of the Paulars; the Negrettis were tall and homely with wool still more crimped; and the Guadaloupes were tall and rather ungainly with thick crimped wool.

The French Merino had its origin in the breeding of the royal sheep folds at Rambouillet, beginning with 300 imported from Spain by royal favor in 1786. A record of the average weights of their fleeces in the last years of the eighteenth century was from 7 to 9 pounds. This was only the beginning of the improvement that produced the large forms and fleeces of later days.

There is a record of three Merinos, imported in 1793 by Mr. William Foster, of Boston, who gave them to a friend who killed them for mutton. In the first year of this century a French banker, De Lessert, sent four ram lambs to this country, only one surviving, which founded some good grade flocks for his owner, Mr. E. I. Dupont, near Wilmington, Del. In the same year Seth Adams of Zanesville, Ohio, imported a pair of Spanish sheep. In 1802 the American minister to France, Mr. Livingston, sent home two pairs of French Merinos from the royal flock at Chalons and afterwards one from Rambouillet. About 1810 he sold full-blooded ram lambs at $1,000 each and grades at very high prices. He sold the wool of full bloods at $2 per pound, of three-fourths bloods at $1.25, and of half bloods at 75 cents.

Later in the same year Colonel Humphreys, the American minister to Spain, brought home 21 rams and 70 ewes, believed to be of the Infantado family, very carefully selected, and from this importation may be traced some of the finest flocks of the present day. The Atwood strain, now in high repute, originated in a flock founded by Stephen Atwood, of Woodbury, Conn., with stock from the Humphreys importation, which have been bred in great purity to the present day. His first purchase was a ewe bought for $120.

There were small importations in 1803 and 1807. In 1809 and 1810 Mr. William Jarvis, the American consul at Lisbon, Portugal, bought

of the Spanish Junta, from confiscated flocks of Spanish noblemen, and sent to various parts of this country 3,850 Merinos. Fully a third of these were Aguirres; the remainder Escurials, Montarcos, Paulars, and Negrettis. He not only mixed his large flock, but afterwards crossed with the Saxon Merino. Before the cross the average weight of his pure-bred fleeces was 4 pounds. Randall says that 3,500 to 5,000 Spanish Merinos were imported by other persons in 1809, 1810, and 1811.

There was little excitement about the earlier importations up to 1807. Then the difficulties with England and France called attention to the necessity of providing a domestic supply of wool, the embargo intensified popular interest in the matter, and the war of 1812 shut off foreign supplies. It is not strange that prices rose to the extreme of $2.50 per pound for wool and $1,000 or more for a pure-bred sheep. After peace was declared, however, and a flood of foreign goods was admitted, they became a drug in the market at a dollar a head.

The Saxon Merinos were imported in large numbers between 1824 and 1848. During that period this very fine-wool breed had the preference, and the owners of Spanish sheep hastened to obtain a Saxon cross, which reduced the weight of fleece and weakened the constitution of the sheep. The Saxons produced the finest of wool, but they lacked constitutional vigor. Fine flocks have been kept here from that day to this, though few for years past and very few at present. In that Saxon boom their good name was injured by frauds in selling grades for pure bloods. Their failure to sustain their popularity was due mainly to the fact that the price of Saxon wool was not sufficiently high to offset the light weight of fleece.

The great Jarvis flock, in which five families were mixed, was bred, unwisely, to accommodate the manufacturers, sires of a lighter color, the Escurial chiefly, being used instead of the darker-colored or yolkier families. His sheep were more compact than the average Spanish, but much like them otherwise. Some of his ewes yeilded 4 or 4½ pounds of washed wool. This flock finally lost its identity in other breeding flocks.

The Atwood flock was the first example of patient, skillful, and long-continued breeding (from 1813 to 1830). It was built up with careful selections from the Humphreys importation, and afterwards maintained and improved by selection of individuals within the flock. In 1840 the form was Spanish slightly modified, wool short, fine, well crimped, shorter on the belly, not yet fully covering legs and head. Some of the rams had pendulous dewlaps and neck folds or wrinkles. As the Spanish Merino came into especial favor, this flock became popular, and colonies were scattered through the country, especially in New York, some deteriorating, others continuing to improve. This was a

notable beginning, worthy of all praise, but not yet was the American Merino thoroughly established as a new breed of the Merino type.

Though many breeders worked together in the improvement which has developed the most notable and valuable breed of the world, Mr. Edwin Hammond, of Middlebury, Vt., is fairly entitled to be considered the founder of the American Merino breed. He made three purchases between 1844 and 1846, of average selections from the different qualities of the Atwood flock, first breeding in three lines of subfamilies, the dark, the light, and intermediate, afterwards producing his best sheep by crossing these lines with a skill and judgment which entitle him to rank with Bakewell in the long-wool improvement in England. He changed the thin, light-boned, imperfectly covered sheep into models of fine-wool beauty, large, round, low, and strong-boned. The ewes weighed, as reported in 1863, from 110 to 140 pounds, the heaviest fleece weighing 17½ pounds. The ram "Sweepstakes," 1856, sometimes referred to as the origin of the American Merino, as a breed distinct from the old Spanish, had a weight record of 140 pounds and a fleece of 27 pounds.

The extent of the improvement is indicated by measurements made by Mr. Randall in 1861 of individuals of Hammond's flock in comparison with careful measurements in Austria of Spanish sheep at the beginning of the century: American ram, 122 pounds; Austrian Infantado, 104 pounds; American ewes, 100 to 114 pounds; Austrian Infantado, 73 pounds. The Negretti weights were still lower—ram 100, ewe 70 pounds. American measurements of length were 3 feet 11 inches to 4 feet; Austrian Infantado, 5 feet 4½ inches to 5 feet 8 inches. American girth measurements were 4 feet ¾ inch to 4 feet 4½ inches; Infantado, 4 feet 11½ inches to 5 feet. Notice the decrease in length and girth with increase of weight. The neck and legs were shortened and the width of hips was increased. The increase in weight of fleece was extraordinary.

From this initial point the subsequent development and differentiation of this great breed are sketched very concisely in the following chapter.

BREEDING TENDENCIES IN WOOLGROWING AND THEIR EFFECTS.

Nothing is more noticeable in the history of our sheep breeding than the ever-existing tendencies to change. The flocks of one period perceptibly differ from those of ten years later. It is impossible that it should be otherwise, for change is inevitable, and in a country of such resources, enterprise, and ambition as our own this tendency to change is quickened. To meet the requirements of manufacturers for various kinds and qualities of wool, foreign breeds were successively introduced, and they found here a new environment, new conditions

of climate and feeding, which in themselves would induce changes appreciable in a few years. The desire of manufacturers for specific qualities of wool, stimulated by the caprice of fashion in fabrics, also promotes a tendency in breeding to meet such requirements. A further inducement is the ambition of enterprising breeders to make improvements and thus win reputations. While change is not necessarily improvement, the result of breeders' efforts is, on the whole, amid partial failures and successes, favorable to improvement. By going back to the first half of the century and making comparisons we find that great progress has been made—a doubling of the weight of fleece, a greater variety of wool, and much better adaptation to the requirements of manufacturers and consumers of woolen goods.

When the Merino began to assert its sway, to increase rapidly the weight of fleece, and to prove to the satisfaction of the grower that there was money in wool, the temptation was strong to breed to grease in order to give great weight to the fleece, 15 to 20 and even 30 pounds or more. As it was believed that wrinkles, loose folds of skin apparently intended for a larger sheep, would carry more wool on the larger surface, this breeding to wrinkles became a fad. The manufacturer in scouring such wool found its weight a delusion, two-thirds or more of its substance disappearing in the cleansing. He was obliged to discriminate in the price, and eventually the grower found excessive grease and great weights of fleece unprofitable and undesirable; hence wrinkles began to disappear, and sires with smoother though lighter fleeces became progenitors of the flock.

The dawning of the worsted era was observed early in the sixties. There was a great scarcity of English combing wool. England could not fill the demand, nor Canada, and elsewhere the supply was small. Our manufacturers urged the importation of mutton breeds. These sheep were brought in from Canada and from England and scattered through the country east of the Mississippi, giving positive direction to the tendency to increase of the distinctive combing wools of those days.

This did not suffice. There was still a great scarcity, and the quality was coarse. A new era was opening in the worsted industry. At the French exposition of 1867 conspicuous among the wools displayed were some of the Merino race, distinguished for softness and length of fiber, from France and from Australia, derived from French stock. The French Merino, the first of its race to become essentially a mutton sheep and a producer of combing wool of much finer quality than the English combing wool, made possible the fabrication of beautiful goods for women's wear, which gave France a lead in the manufacture of such goods which she has since retained. England could not obtain this wool, and did not attempt the manufacture of this class of goods until it was found that similar qualities could be obtained from Aus-

tralia. The French had already made much progress, of which Renoville wrote concerning the combing wools of France:

> It is to the admirable revolution in the raising of ovine animals that we owe the beautiful industry of spinning the merino combing wools. It is to this that we owe the splendor of the industries of weaving combing wool at Paris, at Rheims, at Amiens, and at St. Quentin.

Great Britain had a successful combing industry of her own. She had no Merino sheep. Combing wool was advancing in price; in 1855 it sold in London for 1s. 1½d.; in 1864 for 2s. 4d. Our own worsted manufacture had been initiated and was successful, but it consumed only 6,000,000 pounds of wool. The wools were grown in Kentucky, in Ohio to a small extent, and elsewhere. No wonder that the dissemination of mutton sheep was urged for the increase of our resources for manufacture and for the meat supply of cities. There was an existing tendency to increase the distribution of English sheep and the production of combing wool by our breeding with Merino grades.

In 1868 Mr. E. R. Mudge, United States wool commissioner, advised the "ingrafting of the French race on the American Merino" as a means of supplying a manufacture which was one of the most important in France and one that was a source of much of the exportation to this country. Specimens of these Rambouillet Merinos were introduced from time to time. They did not at first strike the fancy of breeders of American Merinos, and they did not at once gain favor, but afterwards they won their way and now have a register and are widely scattered throughout the country.

It is not strange that the promoters of the great American Merino improvement should stand aloof from a movement that, as they thought, would degrade the finest wool sheep in the world to a mutton sheep. Yet, feeling the necessity for combing wool, and finding considerable difference in length of fiber in pure-bred Merinos, a few farseeing breeders began to work for longer fiber and a larger carcass, in the direction of mutton and combing wool from the distinctively wool-producing Merino. And this was the starting point from which has been produced, on lines apparently parallel but with distinct and certain divergencies, the subbreeds, the Dickenson Delaine, Standard Delaine, Improved Delaine, National Delaine, Black Top Spanish, and Improved Black Top Merino, all with record books, all pure-bred Merinos, very widely disseminated and now among the most popular breeds in the United States.

Thus has our supply of combing wools been augmented in part from this modification of the American Merino, yielding a soft and lustrous fiber, 3½ to 5 inches in length, suitable for tissues which the coarse combing wools could not produce. This progress has been continuous and persistent during the past thirty years, and in results it has been the most beneficial of the breeding tendencies which have

marked the history of woolgrowing. This course of breeding has given a supply for manufacturing competition with France, in goods requiring much skilled labor in proportion to weight of material, which no dissemination of English breeds could accomplish, and demonstrates the wisdom of the patient breeders who have worked a lifetime to accomplish this result.

The other line of development of combing wools, by increase of pure and crossbred English sheep, has run parallel with the delaine improvement of the Merino. It has been steadily progressive, constantly increasing the supply of coarse combing wools, making the worsted industry nearly independent of foreign wools of class two of the customs schedule. It has also enlarged the supply of material for flannels and certain kinds of cloths from the Down breeds.

In the States east of the Mississippi the mutton breeds have gradually gained a predominance. The southern sheep are always mainly of this class. As population increased in the Ohio Valley meat became more important than wool, and all the mutton breeds were disseminated, taking the place of Merinos, and though fewer in number the average value of sheep in this district has been nearly doubled in the last thirty years from advance in size and quality.

The Southdown, Cotswold, and Leicester were the first to invade this region, followed by the newer Down breeds. The prolific character of the Dorsets later claimed attention from producers of lambs, and twelve years ago they were introduced, and have been distributed in 27 States, 9,000 being registered in the Dorset Sheep Breeders' Association of America. The wool of the Dorset is valuable, strong, white, and nicely crimped. Its scoured fleece is heavy, the loss in scouring being light. The grade Dorset is prolific and profitable in lamb production.

The largest and one of the oldest English breeds was introduced very sparingly until the other mutton breeds had been widely distributed, but in recent years it has become so numerous that a Lincoln Association has been formed to represent it and preserve its purity. The original Lincoln, like the other long wools, was improved by Leicester crossing, diminished in size, improved in form, relieved of coarseness, and increased in aptitude for flesh taking, with finer wool of the lustrous class especially adapted for use in a valuable and desirable class of worsteds. This sheep, so long popular for wool as well as mutton in New Zealand and other Australian colonies, and later in Argentina, has for similar reasons been found desirable here, not only in the farm districts but on the ranges. This breed is largely the basis of the frozen-mutton trade which, in 1897, amounted to 144,657,184 pounds from New Zealand, and 209,172,339 pounds from Australasia altogether. The Argentina frozen-mutton trade is also very large.

A note from Mr. H. A. Daniels, Elva, Mich., secretary of the

Lincoln Association, states "that Michigan contains more Lincolns than any other State—from 4,000 to 5,000." They are scattered through New York, Ohio, Virginia, Missouri, and the Rocky Mountain area. Mr. Daniels reports large numbers of cross-breds on the range, "as the Lincoln has proved the best for crossing on range ewes of Merino descent of any breed, the same as they have been in Argentina." He refers to the large flock of registered Lincolns from England established last year by Colonel Massey, of Fort Logan, Colo.; to one of several hundred purchased in Michigan and Ontario by Forbes Brothers of Boston, and other large pure-bred flocks, as showing the present popularity and rapid dissemination of this valuable breed.

As a result of these continuous tendencies toward combing wools, both fine and coarse, Merino and English, worsted wools now largely predominate in the domestic wool supply. The Merino and English types of sheep are nearly divided as to numbers, the former predominating in the range country, the latter in farming States.

At the present time the tendency of breeding is toward increase of Merinos. The relative scarcity of wools of class one has been apparent for a year or two throughout the world, and in the immediate future there will doubtless be an increase of this breed. This tendency is manifest in this country in all wool-growing districts, even in the Ohio Valley, where mutton sheep predominate and meat is a prime consideration. A letter from Professor Plumb, director of the experiment station connected with Perdue University, Lafayette, Ind., states that the tendency of breeding there is toward the Merino, though the Rambouillet has preference over the American Merino, not losing sight of the value of the carcass while aiming to increase the quantity of fine wool.

The French type will continue in popularity, and the Delaine breeds will be disseminated more generally than at present; and, while clothing wool may increase, it is evident that the value of the mutton, in connection with wool, is not likely to be lost sight of, even in the breeding of the Merino. In breeding for fine clothing wools, plumpness and symmetry will be preferred, rather than wrinkles and grease, and smoothness of outline and thrift of growth will be desirable characteristics.

Our climate is favorable to the highest ovine development. Foreign breeds have been easily acclimated and manifestly improved. It is certain that the American sheep has no superior in any woolgrowing country, in constitutional vigor and strength of wool fiber. No other wools make more durable and intrinsically valuable clothing. American wool consumption should be mainly of American production. Manufacturers know that their prosperity depends upon a full domestic wool supply, and will cooperate with the growers in encour-

aging the production of wool to meet all ordinary requirements of clothing, both cloths and worsteds.

INCREASE OF MUTTON SHEEP.

In the colonial period the sheep were all of the coarse-wool type, brought with the settlers from the countries of their nativity. They were the unimproved original stock, the progenitors of the present improved English breeds. Later Washington and other fathers of the Republic brought in individuals representing the early breeding improvement in Europe. No Merinos came in until after the organization of the National Government. The Merino importation in the present century and the establishment of the American Merino breed in a half century of breeding to build up an American wool industry so popularized that breed as to give it a largely predominating influence forty years ago. Thirty years ago more than four-fifths of all the sheep in the country were either pure-bred or grade Merinos. There were a few Downs and specimen flocks of various long-wool breeds, small in number, in the Middle States and in the Ohio Valley and scattered sheep of the old coarse-wools in the South. Kentucky had the largest number of the long-wools. There was some importation from England and more from Canada. In Texas and New Mexico there were some Mexican sheep of Spanish origin, degenerated and almost reverted to a wild state. Their fleeces, coarse and hairy, weighed only a pound or two. Possibly all these together were not more than 15 per cent of the whole. There is no exact census of the coarse-wooled sheep of that period, those having no Spanish Merino blood, yet the almost universal predominance of that type and the character of the wool appearing in the markets of those days will amply sustain this view as conservative and sufficiently accurate.

For at least thirty years there has been a tendency—strengthening as the years roll on and helped by the steady and rapid increase of population demanding meat—toward increase of coarse-wool sheep, enlargement of mutton production. Even earlier a greater need of worsted wools was felt, and the initiative was taken toward their supply. This transformation of flocks would have been more rapid but for the discovery that Merino wools of long fiber could be combed, which stimulated the adaptation of special machinery by manufacturers and the gradual lengthening of Merino fiber by breeding on the part of the growers. The writer of this as early as 1862 urged that the American farmers should seek a profit in mutton and wool rather than in wool alone; that the great want of the world was "a strong, serviceable, long-fibered combing wool, and a great deal of it." In 1866 an estimate submitted to the revenue commission made the value of the annual product of worsteds, exclusive of delaines, $10,000,000.

In 1867 Mr. Mudge, commissioner of wools and woolens at the Paris

exhibition, said to the woolgrowers of this country "that there is a field more vast than their imagination can take in in the expansion of the worsted industry." Under such inducements the flocks of mutton sheep increased in all parts of the country, though Merino improvement was still the predominant feature in sheep husbandry in Vermont, New York, Pennsylvania, Ohio, Michigan, and elsewhere, and the great flocks of the Territories became Merino grades of a high order of improvement. But the great breeding flocks were improved largely in the direction of Delaines, producing a fine combing wool of gradually increasing length of fiber.

During the past ten years the increase of mutton breeds has been more rapid than ever. They predominate in all the older States east of the Rocky Mountains. In the mountain States many have been introduced in recent years, sires of English breeds being procured to produce cross-bred mutton in place of wool alone. In this way the breeders hoped to turn their flocks into mutton sheep and obtain a profit they could not get from wool. It seemed feasible, but so many were thrown upon the markets as meat that prices fell and discouragement continued. In the central West numbers of sheep have been greatly reduced, yet they are nearly all of the mutton type.

Mr. Avery, of Mauger & Avery, Boston, than whom no dealer in wool has better facilities for knowing the character of American flocks, writes that at least 70 per cent are medium cross-bred wools, and possibly 80, and the remainder Merino or its grades. He estimates the wool of the ranges as 30 per cent medium crossbred and 70 per cent Merino. Other dealers, in Boston and Philadelphia, furnish information showing the great predominance of coarse wools east of the Mississippi.

Messrs. Hecht, Liebmann & Co. of Boston, who deal very extensively in "Territory" wools, state that most of their wool is Merino, much of it pure or nearly so; in rarer cases it is crossed once, sometimes twice, with Lincolns, Shropshire, or other coarse-fibered English stock. They say:

> The wools we receive from eastern Oregon, California, Nevada, western Idaho, southern Utah, and Texas seem to be as purely Merino as it is possible to grow them, without producing unmarketable mutton. On the other hand, wools received from certain parts of Oregon, southeastern Idaho, northern Utah, and western and northern Wyoming are distinctly crossbred, and show, from year to year, a gain in English blood. We do not receive any wool that is wholly of English blood, except an occasional ram fleece.

It appears probable, from information derived from many sources, that about half of the sheep of the country are now of English breeds or grades in which that blood predominates.

Those who have watched the great Western markets have seen abundant evidence of higher appreciation of mutton than formerly, in active markets and higher prices. During the present season the

average price of mutton in the Chicago market has ranged higher than that of beef, and at times the quotations for prime native wethers have been higher than for extra prime steers.

A noticeable feature of the mutton trade has been the demand for Colorado lambs. It was discovered that the Mexican lambs improved by crossbreeding, and fed a few months in winter with corn and alfalfa made meat of high quality, which has become so popular that it is sought as a delicacy by managers of hotels of the seaboard cities from Boston and New York to Florida. These lambs sell in Chicago for $7.50 to $7.75 per 100 pounds. The business of feeding has been very profitable, and much money has been made in it. Some feeders have had thousands in their yards at a time, and some young men with small means and a little credit with local banks have made handsome profits. Clay, Robinson & Co. of Chicago estimate the annual output of these lambs fed in Colorado at 350,000, with as many more under similar feeding at other points. At $6 per head, this would make a total of $4,200,000 for this peculiar development of mutton production. The preferable live weight of these lambs is about 80 pounds, which is not far from the average.

The mutton breeds are very prolific, and the number of lambs with proper care is 100 per cent of the number of ewes. Always a large proportion of the lamb crop of the farming districts and not a few in ranch districts are every season consumed locally as spring lambs, or appear in markets through the year, being usually known as lamb until a year old.

An indication of the rapid increase and large volume of marketing of sheep is found in the records of receipts of four principal Western markets, at different periods, as follows:

Number of mutton sheep received at principal Western markets at different periods.

	1870.	1880.	1890.	1899.
Chicago	349,853	335,810	2,182,667	3,682,832
Kansas City	.....	50,611	535,869	953,241
Omaha	.....	.....	156,186	1,086,319
St. Louis	94,477	205,969	358,496	432,566

Here is an increase in thirty years from less than 500,000 to more than 6,000,000, and over 5,000,000 were slaughtered in these four cities. Other cities in the West slaughter considerable numbers, the great seaboard cities kill large numbers, besides consuming refrigerated carcasses from the West, and every town and village in the country has a market for live sheep and lambs. On nearly a million farms and ranches where sheep are grown, mutton is a prominent resource for meat consumption.

A similar change in distribution of mutton sheep has been observed in all wool-growing countries. A strong inducement has been found

in the demand for mutton in Great Britain, which has given rise to the frozen meat trade of New Zealand and Argentina. Heavy importations of English mutton sheep have been in progress in those countries for years, until nearly half their flocks are crossbred. Messrs. Helmuth, Swartze & Co., of London, in reporting the relative proportion of crossbred and merino wools, show an increase of the former from 17.7 per cent in 1888 to 44.6 per cent in 1898 in the colonial and Plata River wools, as given in the following statement in millions of pounds of clean wool:

Relative increase and decrease of crossbred and Merino wool.

Year.	Crossbred.		Merino.		Total millions of pounds.
	Millions of pounds.	Per cent.	Millions of pounds.	Per cent.	
1888	70	17.7	325	82.3	395
1892	98	19.6	402	80.4	500
1897	232	39.6	354	60.4	586
1898	248	44.6	308	55.4	556

The result of so radical a change throughout the world has caused the relative appreciation of merino wool. There is in all markets a comparative scarcity of fine wool, and a demand for increase to which breeders are now responding.

Under present conditions, however, the production of mutton in this country will continue to be profitable, and should be, in some of its branches, one of the important rural industries of our oldest and most populous States.

The present distribution of mutton sheep is more general than ever before. They have invaded the pastures so long sacred to the development of the American Merino in Vermont, and the strongholds of Merino breeding in New York, Ohio, and Michigan. They have nearly driven out the fine-wool competition in Indiana and Illinois, and taken possession of sheep pasturage on the meat-producing prairies of the Missouri Valley. This movement has long been in progress. In the recent period of depression, when growers would fain have ceased to think of sheep as a wool-bearing animal, the mutton sheep hastened its migration to the ranges of the Rocky Mountains, and essayed the muttonizing of Merino flocks by cross-breeding. So active and persistent was this effort to get some profit from meat, where wool failed to pay the cost of shearing and growing, that in the entire range country 30 per cent of flocks were of mutton breeds, according to the estimate of Mauger & Avery, wool dealers of Boston, who are familiar with the stocks of the greatest wool markets in the country. The same authority thinks that in the farming States 70 and perhaps 80 per cent of the wool is from sheep in which the

blood of the English breeds predominates. This would indicate a nearly equal division of the Merino and English races in the United States.

THE DOMESTIC WOOL SUPPLY.

The use of wool is coincident with the use of clothing. The first white settlers of this country brought with them the domestic loom and spinning wheel. For more than a century and a half, household manufacture held universal sway. The fulling mill supplemented its operations and suggested the factory to come. This was the condition when the United States Government went into operation and for some time thereafter.

The consumption of wool in this country has always been relatively large. Prior to the beginning of the factory era, however, consumption averaged not more than 3 pounds per capita of population. Fifty years ago the requirement had risen to 4 pounds. As wealth increased and styles of fabrics multiplied, the uses of wool enlarged, until, at the present time, with velvet tapestries for the home and luxuries in worsted for its presiding genius, the requirement per head has risen to about 8 pounds. No other people use so much wool, as also none use so much cotton. The wool of the world will scarcely suffice for 2 pounds annually for each of its inhabitants. Our rate of consumption has doubled in half a century, but it has not increased in the last ten years and may not increase in the future.

About two-thirds of our present mill consumption is supplied from domestic sheep, and a larger proportion very soon will be, as numbers of sheep are rapidly increasing. Including imported manufactures, the domestic supply is now fully half the entire consumption of wool products and promises soon to be two-thirds. Between 1880 and 1890 the proportion of domestic wool was larger, being nearly six-tenths of all needed. In value the proportion was still larger, the imported wools for manufacture being mostly of a much lower quality, largely used for blankets and carpets. There should be no difficulty in so enlarging the domestic supply as to meet the requirements of consumption of nearly all the cloths, worsteds, knit goods, and at least the better class of carpets. The only practical limitation of a full supply of everything is from economic causes.

We have already nearly all the improved breeds of the world, and a great variety of the climates and grasses of the world. If we do not produce much of the finest Saxony wool it is because heavier fleeces are more profitable. Wool of this class has compared favorably with the finest ever produced in Saxony, and flocks of this class are still in existence, some of the finest being in Washington County, Pa. Our Mexican sheep yield a typical carpet wool, but crossed with the Merino a heavier fleece of more valuable wool is produced, and growers find profit in the improvement. When we produce 500,000,000

pounds or more of domestic wool, some of the coarsest fleeces and the least valuable pieces of sorted fleeces can supply the material for the better class of carpets, and the coarsest of the wools of lower civilization and unimproved agriculture may be received, under proper safeguards, to supplement the wants of the carpet industry.

For strength and durability American wools are unsurpassed, and make more durable clothing than the average product of any other nation. In this respect they are superior to Australian wools, which suffer loss of strength from the effects of a hot and dry climate. The flocks of those colonies have been recruited from American Merinos largely, and of late many are crossed with English Lincolns and other breeds to meet the demands of fashion for lustrous wools. This in part, but mainly the light shrinkage, owing to the smaller quantity of grease to be eliminated, makes the higher prices of Australian wool as compared with heavy-shrinking merino wool. The method of marketing, sorting by the skirting process, has also added much to prices of these wools for ten years past.

American sheep have long been appreciated abroad. As early as 1851, at the London World's Exhibition, four prize medals were given to American sheep, and at the Hamburg International Exhibition of 1863, in competition with representatives of the finest flocks of Europe, two first-class premiums were awarded to Merinos from Vermont. Ever since then our American Merinos have been drafted into the service of countries in wool-growing development, notably in the Australian colonies and in South America.

The enumeration of sheep was not made by the census until 1840, when the number reported was 19,311,000. For twenty years there was little increase. In 1850 the number given was 21,773,000, and only 22,471,275 in 1860. Prior to 1840 no very accurate estimates are available. There had been a great boom in sheep in the early years of the century, when Spanish Merinos began to be imported. Independence of foreign wool became an intense and pervading feeling in the years preceding the war with England, and a determined effort for a full domestic supply was made. An estimate for 1810 places the number of sheep at 10,000,000, and the value of manufactures—domestic manufactures, as only a few small factories were then in existence—was estimated at $25,000,000. If correct, it must be that prices of goods were very high. After the war of 1812 the sheep industry was nearly wiped out as the result of a deluge of cheap woolen goods, and it was several years before the numbers of 1810 were again attained.

Between 1860 and 1870 a very rapid advance was made, from about 22,000,000 to possibly 42,000,000, followed by a decline in the later years of the decade to 31,000,000. Annual estimates were made by the Department of Agriculture, not including the mountain areas till nearly the close of the decade, when statistical service was organized

in the great ranch districts. The figures were therefore not complete in those years. After this disturbed and fluctuating record the estimates became more reliable and the development more uniform. The following table presents this record, with estimates of wool produced, from 1871 to the present time:

Number, average value, and total value of sheep in the United States, and amount of wool produced, 1871–1900.

Year.	Number of sheep.	Average value.	Total value.	Pounds of wool.
1871	31,851,000	$2.32	$74,035,837	153,000,000
1872	31,679,300	2.80	88,771,197	150,000,000
1873	33,002,400	2.96	97,922,350	158,000,000
1874	33,938,200	2.61	88,690,569	170,000,000
1875	33,783,600	2.79	94,320,652	181,000,000
1876	35,935,300	2.61	93,666,318	192,000,000
1877	35,804,200	2.26	80,892,683	200,000,000
1878	35,740,500	2.26	80,603,062	208,250,000
1879	38,123,800	2.07	79,023,984	211,000,000
1880	40,765,900	2.21	90,230,537	232,500,000
1881	43,576,899	2.39	104,070,861	240,000,000
1882	45,016,224	2.37	106,595,954	272,000,000
1883	49,237,291	2.53	124,365,835	290,000,000
1884	50,626,626	2.37	119,902,706	300,000,000
1885	50,360,243	2.14	107,960,650	308,000,000
1886	48,322,331	1.91	92,443,869	302,000,000
1887	44,759,314	2.01	89,872,839	285,000,000
1888	43,544,755	2.05	89,279,926	269,000,000
1889	42,599,079	2.13	90,640,369	265,000,000
1890	44,336,072	2.27	100,659,761	276,000,000
1891	43,431,136	2.50	108,397,447	285,000,000
1892	44,938,365	2.58	116,121,270	294,000,000
1893	47,273,553	2.66	125,909,264	303,153,000
1894	45,048,017	1.98	89,186,110	298,057,384
1895	42,294,064	1.58	66,685,767	309,748,000
1896	38,298,783	1.70	65,167,735	272,474,708
1897	36,818,643	1.82	67,020,942	259,153,251
1898	37,656,960	2.46	92,721,133	266,720,684
1899	39,114,453	2.75	107,697,530	272,191,330
1900	41,883,065	2.93	122,665,913	[1] 290,000,000

[1] Estimated.

In fourteen years from 1871 the increase was about 60 per cent. From 1885 to 1889 numbers declined, increased again until 1893, then fell off again until 1897. Increase is now regular, with the likelihood of reaching a higher figure than has been heretofore attained.

Increase in numbers of sheep has not always represented the increase of the domestic wool supply. Improvement by breeding and by better care has more than doubled the weight of fleece. The census of wool is probably not so accurate as that of sheep, but a comparison of the different enumerations shows a steady and rapid increase in weight, in dividing the reported quantity of wool by the number of sheep.

The steady increase in the weight of fleeces is the result of a stronger infusion of Merino blood in clothing-wool flocks, and the improvement in Mexican and other low-grade sheep by the use of sires of English mutton breeds. Better care and feed have also increased the weight of fleece. As indicated by the census enumeration, the average weight has been 1.9 pounds in 1840, 2.4 in 1850, 2.7 in 1860, 3.5 in 1870, 4.4 in 1880, and 4.8 in 1890.

While the census returns of wool are doubtless somewhat low, the

averages indicate an increase that is well understood by woolgrowers. Expert investigation shows somewhat larger averages, which have quite regularly increased until the present average comes within a small fraction of 6 pounds per fleece. It should be understood that the fleeces shorn from the sheep on the farm do not constitute the full domestic wool supply. The millions of sheep and lambs slaughtered are either shorn before slaughtering or the pelts afterwards furnish a considerable quantity of pulled wool, so that the entire year's supply of wool is taken from a much larger number of sheep than any census or assessors' enumeration gives.

The distribution of sheep at the present time is indicated by the following estimates of numbers and average values in January, 1900:

Numbers and values of sheep, January 1, 1900, by States and Territories.

States and Territories.	Number.	Average value.	Total value.
Maine	254,027	$3.10	$787,484
New Hampshire	79,072	3.19	252,239
Vermont	169,259	3.61	611,363
Massachusetts	40,194	4.55	182,883
Rhode Island	10,608	3.86	40,974
Connecticut	31,808	3.90	124,194
New York	846,165	4.07	3,448,122
New Jersey	42,722	4.34	185,584
Pennsylvania	814,322	3.60	2,928,302
Delaware	12,592	3.67	46,269
Maryland	138,177	3.51	485,553
Virginia	376,918	3.09	1,164,676
North Carolina	235,260	1.62	379,945
South Carolina	61,217	1.70	104,069
Georgia	294,826	1.76	518,893
Florida	76,074	1.69	128,870
Alabama	171,799	1.53	262,767
Mississippi	215,748	1.56	335,490
Louisiana	113,205	1.58	179,203
Texas	2,416,721	1.92	4,634,063
Arkansas	108,957	1.67	181,795
Tennessee	251,735	2.37	596,485
West Virginia	426,814	3.19	1,363,244
Kentucky	549,832	3.01	1,656,094
Ohio	2,839,690	3.71	10,535,250
Michigan	1,389,073	3.58	4,972,882
Indiana	677,905	4.00	2,713,993
Illinois	637,719	3.97	2,532,383
Wisconsin	744,656	3.65	2,716,505
Minnesota	419,218	3.18	1,333,113
Iowa	619,476	4.02	2,487,816
Missouri	597,619	3.10	1,854,711
Kansas	275,118	3.04	835,534
Nebraska	322,057	3.39	1,090,807
South Dakota	381,882	3.29	1,257,156
North Dakota	374,110	3.16	1,183,683
Montana	3,884,179	2.84	11,017,474
Wyoming	2,840,190	3.51	9,964,806
Colorado	2,185,327	2.86	6,250,036
New Mexico	3,973,439	2.17	8,622,362
Arizona	1,024,330	2.34	2,393,581
Utah	2,370,983	2.59	6,150,330
Nevada	657,773	2.91	1,914,120
Idaho	2,658,662	2.80	7,444,254
Washington	790,217	3.13	2,470,218
Oregon	2,446,695	2.67	6,532,676
California	2,001,501	2.85	5,710,282
Oklahoma	33,094	2.52	83,380
Total	41,883,065	2.93	122,665,913

A great change has occurred in the distribution of sheep in thirty years. In 1870 the mountain range country was just emerging from

the control of the Indians, and, with the Pacific coast and Texas, contributed only 22 per cent to the Department estimates of 1871; now the above table gives to this Western range section about 65 per cent of all, or more than 27,000,000 sheep. Then Texas was beginning to make progress in sheep husbandry, which was so rapid that in 1884 the record made an aggregate of nearly 8,000,000, the highest ever made by that or any sister State. That of last January was 2,416,721, a figure exceeded by New Mexico, Montana, Wyoming, Idaho, and Oregon.

These facts indicate the relative decline of sheep husbandry in the farming States. The free pasturage of the great range country handicapped the industry on farm lands, especially the woolgrowing branch. Just as wheat growing gradually receded westward, and cattle raising declined, first east of the Alleghenies and afterwards appreciably in the Ohio Valley, woolgrowing almost disappeared from the farms, while mutton production lingered in the blue-grass section and other regions of fat pasturage, and the raising of early lambs retained a footing among farmers skilled in this branch of meat making. A few of the skilled and experienced breeders of Vermont, New York, Pennsylvania, and Ohio continued the development of pure-bred Merinos for the improvement of the flocks of the range country, and those of South America and Australia. With increasing demand for mutton, the flocks of the farming States were gradually modified by a larger infusion of the blood of the English breeds. Thus the balance of distribution was disturbed, notwithstanding some advantages in high breeding and nearness to mutton markets.

The Central West was long a stronghold of woolgrowing. It gave way to powerful far Western competition slowly, holding its position tenaciously, and yielding only as other industries and interests demanded recognition and commanded better profit. The following statement compares the present with the distribution of 1871:

Number and value of sheep in Central West in 1871 and 1900 compared.

States.	1871.			1900.		
	Number.	Average value.	Total value.	Number.	Average value.	Total value.
Kentucky	904,300	$2.53	$2,287,879	549,832	$3.01	$1,656,094
Ohio	4,641,000	2.26	10,488,660	2,839,690	3.71	10,535,250
Michigan	3,072,800	2.23	6,852,344	1,389,073	3.58	4,972,882
Indiana	2,103,000	1.82	3,822,000	677,905	4.00	2,713,993
Illinois	1,424,000	1.98	2,819,520	637,719	3.97	2,532,383
Wisconsin	1,056,000	2.44	2,576,640	744,656	3.65	2,716,505
Minnesota	140,000	2.22	310,800	419,218	3.18	1,333,113
Iowa	1,822,700	1.71	3,116,817	619,476	4.02	2,487,816
Missouri	1,578,200	1.61	2,540,902	597,619	3.10	1,854,711
Total	16,742,000	2.08	34,815,562	8,475,188	3.58	30,802,747

In 1871 the estimated number of sheep in the country was 31,851,000; in 1900, 41,883,065. The proportions of these States at the two dates

are respectively 52.6 and 20.2 per cent. And the numbers in these States were by no means highest in 1871. Ohio had 7,000,000 a few years earlier. Although there are little more than half the number now that was reported in 1871, it is noticeable that the total value is greater now than then. This is only in part because of increase in average value of sheep in the whole country from $2.32 in 1871 to $2.93 in 1900. The increased average value of the sheep in the central West is largely due to increase in the number of heavy mutton sheep and the value of pure-bred heavy Delaine Merinos. The decrease in numbers has only one exception—Minnesota, which in 1871 had very few farm animals of any kind. There is no reason why the flocks of this section should not be increased, not for wool alone, but for mutton and wool, and the tendency is now strongly in that direction.

There is no doubt of the ability of our woolgrowers to produce a full supply of clothing and worsted wools. Of this the manufacturers have long been satisfied. Thirty years ago a president of the Wool Manufacturers' Association expressed his opinion that "the consumption of American wool, now about 125,000,000 pounds, will in six years aggregate more than 300,000,000 annually." It was not accomplished in six years, but in 1884 the supply reached that figure. This desire for a full domestic supply on the part of wise and far-seeing manufacturers was founded on the superior qualities of American wool, and also on the necessity of independence of foreign wool markets. Foreign manufacturers are compelled to depend on imported wools mainly, to scramble for supplies in all the woolgrowing countries of the world. Our manufacturers realize the advantage of nonparticipation in this competitive quest on antipodal continents and the islands of distant seas for wools, none of which are better than our own, and most of which are weaker in fiber and of less durability. Thirty-four years ago, at the very beginning of the era of improvement by breeding and better care, a committee of the National Association of Wool Manufacturers, consisting of the most experienced and successful manufacturers of the United States, said in a report:

> In a class of fabrics entering more largely, perhaps, than any others into general consumption, that of flannels, their superiority, due principally to the adaptation of the common wools of this country, their strength and admirable qualities, is so marked as almost to exclude the foreign flannels. American fancy cassimeres compare favorably in finish, fineness, and strength with those imported. Our delaines, owing again in a great measure to the excellence of our Merino combing-wool, surpass the fabrics of Bradford at the same price. The excellence of American shawls was admitted at the great exhibition at London.
>
> It has been the experience of all nations that the domestic supply has been the first and always the chief dependence of its manufactures, and the peculiar character of the material has impressed itself upon the fabric which each country has produced. Thus, in the fine wools of Saxony and Silesia we have the source of German broadcloths; in the combing-wools of England the worsteds of Bradford, and in the long Merino wools of France the origin of the flannels and cassimeres. The peculiar

excellencies of Merino wools have given origin to our flannels, our cassimeres, our shawls, and delaines, and they give soundness and strength to all the fabrics into which they enter.

Since that time the delaine improvement has been remarkable, the Rambouillet, or French Merino, has become popular, the Lincolns and Cheviots have been added to the Leicesters, Cotswolds, and the Down breeds, the stocks of the mutton type have become more numerous, and even the fat-tailed Tunis has a footing among our breeds, which now include nearly all worth noting in the world, so that our wools are greater in variety than ever before. Nearly thirty years ago the writer said of the Rambouillets: "The introduction of these regenerators, which have proved so efficient in Australia and Buenos Ayres, might well again be essayed." The better care and better feed that is now bestowed on all our farm animals extends to sheep and affects favorably the character of the wool. This liberal and systematic feeding produces a uniform, sound, and healthy fiber.

Mr. E. B. Bigelow, the first president of the Manufacturers' Association, stated "that the card-wool industry constituted the larger part, probably four-fifths of the whole," and that "the principal hindrance to the rapid extension of this branch of manufacture is the limited supply of raw material," and that "there is nothing that would give such an impetus to the manufacture of worsted fabrics in this country as a full supply of home-grown long combing-wools." The introduction of the mutton breeds above mentioned and their wider dissemination has done much to remedy this deficiency; but the introduction of the French Merino and the great improvement wrought by selection and breeding of our Delaine Merinos, which are differentiated now in fixed characteristics and established as distinct breeds with books of record, has given us a wealth of home-grown material for worsteds such as no other country enjoys.

The supply of wool for consumption is made up of the domestic product and net importation, or imports minus exports. An approximate estimate for the decade between 1840 and 1851 is 60,000,000 pounds, or 3 pounds per capita; for the decade between 1850 and 1861 about 90,000,000, or about 3½ pounds per capita. For the four decades since 1860 annual estimates of sheep and wool have been made, from which the following statement of supply has been made:

Domestic and foreign wool supply of the United States, by decades, 1861–1900.

Fiscal years.	Domestic.	Foreign.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1861–1870	1,387,586,407	501,611,132	1,889,197,539
1871–1880	1,861,226,971	640,916,638	2,502,143,609
1881–1890	2,805,850,348	889,005,571	3,694,855,919
1891–1900	2,831,090,691	1,614,052,056	4,445,142,747

This table marks the progress of woolen manufacture and shows that more than twice the quantity of wool manufactured in the sixties is now required and that the mill consumption has advanced per capita from 5.4 to 6.4 pounds.

The foregoing summary gives the net importations by decades for forty years. For the last ten years more detail is desirable, and the following table gives the annual importation according to the tariff classification, showing the proportion of clothing, combing, and miscellaneous cheaper wools:

Amounts, kinds, and values of wool imported into the United States, 1891–1900.

Year ended June 30—	Clothing wools.		Combing wools.		Carpet and other similar wools.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1891	82,230,935	$6,919,913	6,667,023	$1,551,490	90,405,690	$7,759,969	129,303,648	$18,231,372
1892	50,262,796	9,523,773	5,826,574	1,368,654	92,581,282	8,795,681	148,670,652	19,688,108
1893	43,311,565	7,876,676	6,736,201	1,466,641	122,386,072	11,720,863	172,433,838	21,064,180
1894	10,685,496	1,748,359	1,548,505	399,875	42,918,584	3,959,204	55,152,585	6,107,438
1895	87,151,522	13,335,602	13,476,735	2,637,581	105,405,649	9,583,238	206,033,906	24,565,421
1896	117,233,449	19,448,471	15,756,318	3,509,736	97,921,715	9,493,035	230,911,473	32,451,242
1897	200,759,079	34,281,656	37,951,490	7,187,620	112,141,457	11,773,915	350,852,026	53,243,191
1898	45,442,987	7,969,611	4,320,873	859,599	83,031,342	7,954,482	133,795,202	16,783,692
1899	12,976,999	1,948,954	2,155,419	587,061	61,603,791	5,786,882	76,736,209	8,322,897
1900	37,404,243	8,009,985	12,631,285	2,638,721	105,882,929	9,617,230	155,918,455	20,265,936

This makes an importation in ten years of 1,659,807,994 pounds, of which about one-half was received in a little more than three years as free wool, twice as much as the usual average under the dutiable schedules. The worst aspect of this abnormal increase is the large proportion of clothing and combing wools under the law of 1894, more than two-thirds of all the receipts for ten years coming during this period. These are the wools that compete most seriously with the domestic product.

To show the amount of wools imported at the present time and the countries from which they are imported the following statement covers imports of clothing wools, or those of the Merino type, for the fiscal year ended June 30, 1900:

Amounts and values of clothing wools (class 1) imported in fiscal year ended June 30, 1900, by countries from which imported.

Countries.	Amount.	Value.
	Pounds.	
United Kingdom	13,131,387	$2,602,068
France	109,196	13,998
South America	12,035,380	2,257,710
Asia and Oceania	11,013,793	2,934,126
Other countries	1,114,487	202,083
Total	37,404,243	8,009,985

Though Great Britain makes the largest shipments the wool is not grown there, but comes mostly from Australia, with some contributions from South Africa and the Plata River region of South America.

The combing wools (class 2) are always a relatively small quantity, our various families (now recognized as breeds) of Merino Delaines producing a finer combing wool than the English breeds and furnishing much of the present supply. Class 2 includes the wool of these mutton breeds, and comes mostly from Great Britain, the home of the mutton sheep, though much of this may have been brought to London from the mother flocks of New Zealand and Argentina. Canada makes the next largest contribution to our imports of English combing wools. The following statement shows the sources of these foreign wools:

Amounts and values of combing wools (class 2) imported in fiscal year ended June 30, 1900, by countries from which imported.

Countries.	Amount.	Value.
	Pounds.	
United Kingdom	9,445,222	$1,885,529
Other Europe	779,630	271,662
British North America	2,135,929	418,503
South America	206,472	48,600
Asia and Oceania	25,840	7,102
Other countries	38,190	7,325
Total	12,631,283	2,638,721

Class 3, miscellaneous wools, sometimes miscalled carpet wools, are the product of neglected flocks and unskilled breeding throughout the world. Some of these wools can be and have been used for coarse flannels, and some can be utilized in cheap cloths. As our carpet industry is flourishing, and so far held its own in the great depression of manufactures as to supply domestic consumption and keep out all but a few fancy weaves and special orders, most of this cheap stuff, costing less than an average of 10 cents per pound, and some of it not more than 7, necessarily goes chiefly into carpets. Indeed, in the manufacture of the best grades of carpets better wool is sometimes used. The wool of class 3 comes from the following countries:

Amounts and values of wools of class 3 imported in fiscal year ended June 30, 1900, by countries from which imported.

Countries.	Amount.	Value.
	Pounds.	
United Kingdom	29,349,316	$3,199,216
France	3,784,008	375,298
Germany	2,187,716	233,117
Other Europe	21,660,166	1,988,625
British North America		
South America	10,608,902	793,982
China	30,709,966	2,157,573
Other Asia and Oceania	7,138,676	823,896
Other countries	444,179	45,523
Total	105,882,929	9,617,230

The year ended June 30, 1900, has been one of remarkable activity in manufacture. The output has been unprecedented, yet the impor-

tations of wool in the three fiscal years, 1898–1900, have been less than one-half as much as the importations of the preceding three years. There has been wool used of previous importations because the glut had to be cleared away and the destruction of sheep had caused an insufficiency of the domestic product; yet there is reason to believe that in the presence of a full domestic supply of clothing and combing wools there would be no very urgent demand for the importation of any large quantity of wools except those of class 3.

It is indicative of the high standard of living in the United States that the consumption of wool in domestic and imported goods has increased in fifty years from 4 to 8 pounds per head.

While our importations of manufactures of wool have increased in each decade for fifty years, except the last, the value per capita of imports has been diminishing with much regularity for fifty years. For the ten years ended with 1860 this value per capita was the highest in the history of our foreign trade, $1.16; in the following decades, respectively, 94, 90, 74, and 46 cents. A heavy decrease is noted in the last decade, an effect, as the writer believes, of legislation tending to restrict importation and to stimulate domestic production. This is the more notable from the fact that the average annual imports of the free-wool period were nearly double those of the other seven years, being $47,065,760, although the prices were low and quantities of low-class goods correspondingly large. There were never so many goods before imported in three years, and they never were of so base a quality. Yet the reduction in value of imports since 1890, as compared with the previous decade, is 26 per cent, while our population has been increased about 20 per cent.

This affords a guaranty of our ability to produce all the woolens required for consumption. The machinery at present in operation is deemed sufficient, without much extra speeding or increase of running time, to supply the wants of a full rate of consumption.

Value of net importations of manufactures of wool by decades, 1830–1900.

Ten years ended with—	Aggregate.	Annual average	Average value per capita.	Ten years ended with—	Aggregate.	Annual average.	Average value per capita.
1830	$82,900,615	$8,290,062	$0.75	1870	$330,465,214	$33,046,521	$0.94
1840	139,507,716	13,950,772	.94	1880	395,376,936	29,537,694	.90
1850	130,058,518	13,005,852	.65	1890	433,459,813	43,345,981	.77
1860	313,332,730	31,333,273	1.16	1900	320,134,071	32,013,407	.46

The magnitude of our woolen industry may not be appreciated fully. It has suffered from adverse legislation, but is now producing more than ever before. This is one of four great manufacturing countries, and every one of the four has built up its wool manufacturing industry by protective legislation. Great Britain alone has abandoned this policy. France stands at the head in importance of manufacture. Great Britain comes next, and Germany and the United States are

nearly equal. It will not be long, doubtless, in the absence of adverse legislation, before this country will surpass all others in the extent and value of manufactures of wool. It has one advantage possessed by none of its rivals—a domestic supply of two-thirds of the mill consumption and pastoral areas sufficient for the whole of it.

Other countries must depend mainly on foreign wool, as France, Great Britain, and Germany together only produce about as much as this country. This foreign dependence is thus indicated:

Imports and exports of wool by France, Great Britain, and Germany for 1890 and 1899.

Countries.	Year.	Imports.	Exports.	Net imports.
		Pounds.	*Pounds.*	*Pounds.*
France	1890	371,722,377	39,575,579	332,146,798
	1899	558,455,820	64,993,961	493,461,859
Great Britain	1890	629,236,219	360,006,616	269,229,603
	1899	735,627,420	410,929,012	324,698,408
Germany	1890	283,542,424	19,872,264	263,670,160
	1899	391,636,633	19,920,064	371,716,569

France in 1890 had a domestic product of 124,803,000 pounds, which has greatly declined. Great Britain had 147,475,000 at that time, and Germany 54,894,000. The numbers of sheep in Germany and France have fallen off, increasing their dependence on imports of wool.

For the past ten years the wool supply of this country, domestic and foreign, has been about 430,000,000 pounds annually, which is about the same as that of Germany now, and nearly as large as that of Great Britain, exclusive of the stocks of shoddy and wastes of all kinds. About three-fourths of all the wool of the world is manufactured in these four countries, besides the remanufacture of the renovated rags of the world, of which the people of this country would be glad to accord Europe the monopoly, and with it the doubtful reputation of having the cheapest clothing.

The question has been repeatedly asked, Can we produce all the wools required for domestic manufacture? There is no doubt of the capacity of the country to produce more wool than is now consumed in any form. There are economic reasons that will doubtless prevent the production of very low-grade wools. Yet with 100,000,000 sheep there will be a considerable number of common sheep, such as Mexicans in the early stages of improvement; also the belly, neck, and breech wools of the coarse-wooled breeds will furnish a large quantity of carpet wool; and if these are not sufficient, woolgrowers will probably not object to the admission from abroad, at the present low rate of duty, of all that is necessary to meet the deficiency. But the clothing and worsted wools required can be and should be produced in sufficent quantity to meet the requirements of increasing population for many years to come. When our population is far more dense than at present, and the very limited exportation of woolen manufactures has

acquired a far greater volume, it will be time enough to begin to question the possibility of a full domestic wool supply.

The sheep is a factor in keeping up the fertility of lands. A million farms east of the Mississippi need them in their pastures to keep down growths of plants that cattle or horses do not touch. They are kept on lands in England far more valuable than the best in New York or Ohio.

Increasing population will require more meat. Years ago, when sheep were kept almost exclusively for wool, and the aged slaughtered for market in poor condition, tough and tasteless, "sheep meat" was not popular. Those days are past; mutton is appreciated and lamb is a delicacy that brings high prices. Mutton eating is rapidly increasing. It is taking the place of pork as a more palatable and healthful meat, and even reducing the relative consumption of beef, as in England.

It should be remembered that Ohio has had three times as many sheep as at present, and could easily care for 7,000,000 again; that the central West has had twice as many as now, with abundant lands for their pasturage, and for more than were ever before kept. Texas has kept three times as many as at the present time, and with increase of feeding resources, in forage plants, oil meal, and corn, in feeding supplementary to pasturage, can keep larger stocks than ever. The increase of beet-sugar factories, to be greatly accelerated in the future, furnishes material for feeding sheep in large quantities. Mutton production in the South, an industry feebly existent hitherto, can be made one of the most profitable in the agriculture of that section.

It is not easy to limit or measure the sheep-carrying capacity of the country, of the farms as well as the ranges. Little more than a third of the land is in farms, and, of many of the farms, not a third of the area is in cultivation or full occupation.

Maine, the "down-east" State of the Atlantic coast, has only a third of its area in farms, and its forest lands are among the most fertile in the East. The States east of the Mississippi can carry, without encroachment on other lines of rural industry, more sheep than there are now in the entire country.

Will this development be made? It depends entirely on economic conditions. If good prices of wool are maintained for a period sufficiently long to give the grower confidence, if practical education in feeding is advanced, and the promise of a permanently profitable business is assured, there is likely to be a realization of such an increase of flocks.

How many sheep would be required? Estimates have heretofore been considerably exaggerated. Sometimes it has been stated that 9 pounds per capita of wool are annually required in goods of all kinds. The consumption has never been so great. Eight pounds is

an ample estimate. The annual wool supply for the last ten years has averaged 444,514,274 pounds. The annual imports of manufactures of wool are valued at $32,013,407, against an annual average of $43,345,981 for the ten years ended with 1890. And these figures include, besides wool and manufactures of wool, a large proportion of shoddy and shoddy goods. Compare the fleece wools used in Great Britain with the quantity or value of manufactured goods, and an analysis will show how large a proportion of shoddy, flocks, mungo, and wastes of all kinds enter into the composition of this mass of manufacture. American shoddy itself makes an appreciable addition to the wools of the country, and always will, and they should be included in reckoning the wool requirements of our manufacture, appreciably reducing the amount required. In these high estimates of requirement every form of shoddy and waste, cotton and linen, that enters into the goods imported as woolens is counted as wool. It may be wool to the manufacturer, but it is not to the woolgrower.

A total of 60,000,000 sheep, producing 360,000,000 pounds of fleece and 60,000,000 pounds of butchers' wool, would have furnished very close to the supply for manufacture during the last ten years, without considering shoddy or substitutes. Should we reach a total of 80,000,000 sheep in a decade or two, a volume of 550,000,000 pounds of wool would be produced—more real wool than any nation in the world, except possibly France, has ever manufactured in a single year. When we reach 100,000,000, if we should, with 700,000,000 pounds of wool, fleece and pulled, with the substitutes that must be counted in manufacture, there would be a liberal and ample supply for a population of 100,000,000. This does not make allowance for a considerable quantity of carpet wools that are quite certain to be imported, and any other imports that manufacturers might fancy in their quest for novelties or preferences in wools, which must always reduce domestic requirements.

The present duties are not prohibitory. They will admit a large quantity of the third class, and more or less of the other two, no matter how large the domestic supply, but they will suffice to prevent an avalanche, maintain fair prices, and admit of gradual enlargement of wool production.

The fleece of the Angora goat, known as mohair, is one of the elements, however small, included with our foreign wool supply, and should be reckoned with the domestic. A few words regarding the Angora goat industry in this country are in order here. In 1849 Dr. Davis imported two bucks and six does of good quality. Colonel Peters followed with several importations. Diehl & Brown, in 1869, imported 135 animals; Mr. Israel Diehl had a commission from the Department of Agriculture to facilitate his work of selection. Maurice Brothers, of Texas, made importations in 1869, 1871, 1872, and 1873. Mr. John L. Harris went from California, in 1875, to Asia Minor to

investigate Angora breeding, and in California, Oregon, and Nevada has been engaged in breeding ever since, establishing large flocks and distributing to other States.

They are not confined to range districts, but have been held in many of the farming States from the Missouri to the seaboard. Recently there has been an active demand for them at advanced prices. In the agricultural exhibit of the Paris Commission there are 24 samples of mohair from a few of the prominent flocks, most of them collected by William R. Payne & Co., New York dealers in mohair and wools. They estimate the annual product of mohair at about 700,000 pounds, grown mostly in Texas, California, Oregon, and Nevada, and the number of goats at about 240,000.

THE CLASSIFICATION AND HANDLING OF AMERICAN WOOLS.

Early in the spring of each year, at the shearing of the annual clip, the principal woolgrowing sections swarm with buyers representing woolen mills and dealers in wools. Many of these are residents of the country, buying on commission, sometimes on speculation on their own account. All the conditions and influences tending to lower prices are of course urged to depress values at this time; and if the tendencies are sharply toward a higher level, as in the spring of 1899, the buyers are careful not to give them publicity. Yet intelligent growers are alert to ascertain promptly and accurately the drift of prices. Others are sometimes caught napping and part with their wool at prices which leave too large a margin to the speculative middleman.

The merino wools, or clothing wools, are commonly classified as Picklock, XXX, XX, X, one-half blood, three-eighths blood, and one-fourth blood, according to quantity and fineness. Picklock is an extremely fine fiber, of which a very little is found in the remaining Saxony flocks of breeders in western Pennsylvania. Most of these breeders have modified their flocks to obtain heavier fleeces of longer fiber, bringing much more money. There is also very little of the XXX grade, which is only exceeded in fineness by the purest breeding of Saxony Merinos. The mass of high-grade clothing wool is of the XX and X grades. The lower grades are made by dealers according to fineness and quality, without a knowledge (which would be impossible to attain) of the precise fraction of Merino blood of the sheep producing them.

The combing wools are of two classes. Formerly they were exclusively of the English mutton breeds, or at least were not of Merino origin. The exigencies of wool manufacture, the insufficiency of supply of true combing wool, made it necessary to adapt machinery for combing the merino carding or felting wools. This rendered necessary a fiber longer than 2½ inches, which is about the length of the finer qualities. A considerable difference always existed in length of fiber

of different families under different climatic and nutritive conditions; it was easy, by selection and breeding, to increase the length, a process of modification which has been in progress for many years. This merino division of combing wools is classified in three grades—fine, the finest of long staple; medium, not quite so fine; and low, of combing length and a little finer than the combing wool of mutton breeds. These are classed as three-eighths blood, one-fourth blood, common, and braid, the last being the long and lustrous wools of the Lincolns, and also of Leicesters and Cotswolds.

The condition of wool is an important element of value and of profit in sheep husbandry. It is a matter that demands the attention of growers, who could readily obtain a few million dollars more for the annual clip, mostly additional profit, by greater care in management and better methods of handling.

Neglect of flocks in winter, insufficient supply of feed, the great difference between the succulent spring pasture and dry winter feed, perhaps scarcely more liberal than the run of straw stacks, will cause uneven quality, reduction of strength, and decrease in price. Lands allowed to be overrun with weeds will fill fleeces with seeds and burs, and what is saved in labor is doubly lost in lower price. A great deal of dust and chaff in fleeces can be obviated by a little attention to methods of feeding. Care in shearing is also important, resulting in saving of wool and in better condition of the fleece.

In the putting up of wool for market there has long been a cause of variance and friction between grower and buyer in all parts of the country. The buyer complains of filthy tags and dirt in the fleeces, and of the use of unnecessary quantities of unreasonably large twine of a quality that injures the fabric in the manufacture. On the other hand growers say that when they exercise the greatest care in all these respects the buyers will allow no discrimination in price. There is doubtless some truth in these countercharges, yet a lot of fleeces carefully handled, of even quality, would claim some consideration from a practical buyer, or they could be sent to a reliable commission house and command a price that would pay well for the extra care. There is evidently room for much improvement on the part of seller and buyer, and the subject is worthy of the thoughtful consideration of both.

The advisability of washing sheep before shearing has long been a subject for discussion. Its purpose is the better condition and higher price of the wool. The difficulty presented, which appears to be insuperable, is in obtaining a uniform condition of cleanness. Necessarily some flocks have more foreign matter in their fleeces than others; there is always great difference in the amount of yolk or grease which the ordinary washing does not affect. Facilities for washing are very poor on many farms and ranges, and different methods of washing are

very unequal in their results. If a grower is not inclined to be exactly square in his dealings, or if his perceptions of strict honesty are a little confused by the unfairness of buyers in making no discrimination as to degrees of cleanness in buying, he may slight the process or drive the flock through muddy water. As a rule the grower evidently intends to be honest, but in the warfare of trade, where Greek meets Greek in a contest for self-preservation, ethical views are apt to become confused. With all these obstacles, it seems to be impossible to assure any great degree of uniformity in the cleansing of fleeces by farm washing. Then it is desirable to shear early, to give the flock a better chance for comfort and growth in the warmth of later spring, and also to obtain an opportunity of choice of time in selling, prices often being better in the early spring; but very early shearing involves a risk of injury from exposure. Altogether, most flock raisers prefer not to wash, and nearly all dealers unite in a preference for unwashed wools. They find so much unevenness that, in buying washed wool, they usually make some deduction from established washed rates, and in some cases pay little more than for unwashed. It is said that much of the country washing is a positive disadvantage in scouring the wool. Therefore the practice of washing is declining; in many districts it has been almost abandoned. The practice is in vogue in Michigan only to a limited extent, 9,696,446 pounds being unwashed of 12,025,802 pounds purchased by dealers last year, as reported by Prof. Herbert W. Mumford, in Bulletin No. 178 of the Michigan State Agricultural College, a very thorough inquiry into the reasons why Michigan wools sell at a lower price than those of Ohio and Pennsylvania.

In some parts of the country where climatic causes interfere to prevent evenness of fiber, as in Texas, New Mexico, Arizona, and southern California, the practice of shearing twice annually is adopted, the winter fleece being stronger and of greater value than the brash fiber grown in summer. It is a saving of wool and a great saving in annual proceeds of flocks. The summer and winter growth do not work well together, reducing both qualities to a low level.

The use of sheep-shearing machines is increasing. They shear closer, secure more wool than hand shearing, leave the fleece in evener condition, and are not so liable to cut the skin of the sheep. Yet their use is confined mainly to large flocks beyond the Missouri River. Small flocks do not warrant the expense of these machines and the trouble of keeping their knives in order, which are returned to the factory to be sharpened.

Unquestionably it will be in the interest of the grower to reform the awkward and unseemly methods of tying up for market, avoiding unseemly packages, the use of heavy twine of unnecessary quantity, and the inclusion of tags and other rubbish. These defects are so easily seen and so repulsive in the sight of the buyer that they must

influence his offer. There is great objection to using hemp twine, which injures the fabric with which it is mixed, and anyone who has attempted to free a fleece of the interminable tangle of much of the elaborate tying in vogue will acknowledge the task a practical impossibility. A small linen twine is recommended, and as it costs nearly as much per pound as the wool, there is no inducement to use a large quantity, and little will be required, once around the fleece each way being ample for a light fleece, and twice for a heavy merino fleece.

Neatness and honesty in putting up all products for market are yearly becoming more important in wool, cotton, fruits, everything. In the long run they will materially increase the profit of the production. It will not pay to sacrifice the profit of production by awkward and distasteful packing. There are millions of dollars in this practical idea.

An avoidance of these knotty and troublesome causes of difference between seller and buyer may be secured by making general the scouring of wool. Now that prices are fixed as nearly as possible on a scoured basis, the advantage to the grower is all the greater. There are many of these scouring-mill plants, even as far west as New Mexico, and one heavy flock master says he saved $1,668 on his clip by scouring. The saving of the freight on the grease and dirt is alone a large item.

THE COURSE OF PRICES.

The wool prices in the table following are for fine, medium, and coarse wools during a period of seventy years. They show frequent and sometimes sharp fluctuations, due to the influence of relative supply and demand, speculative operations in home and foreign markets, tariff changes, and other causes. Influences affecting prices are always operative, and analysis of their proportionate effect would require a volume. All that is deemed necessary here is to show what marked and more or less permanent changes in value have occurred.

One noticeable point is the cheapening of wool during the century. Near its beginning, in the period of war with Great Britain, the extreme quotation for the finest wool reached $2.50 per pound, but even then the lower grades were only a third as much. In 1824, when this record commences, the range of values by grades was from 68 to 40 cents, and higher values were reported in 1831, 1834, and 1837, with fluctuations down to 33 cents for fine in 1849. Later the requirements of the civil war period and the currency inflation made quotations higher, touching $1.02 for fine in 1865, when gold premiums were very high. In 1868, the time of sharp reaction in everything relating to wool, there was a fall to 48, and to 47 in 1871. When the flurry was over, in 1872, fine wool was up to 70 cents again. Then followed a long period of growth in the industries of woolgrowing and manufacture in this and all other woolgrowing countries. A gradual decline in the price of fine wool followed year by year, till

the price of 34 cents was reached in that ever-to-be-remembered year of culminating depression in prices, 1879, reacting to 50 cents in the following year, to decline gradually to 29 cents in 1893.

But this decline in fine wool does not give an accurate view of the fall in wool prices in the course of seventy years. While more than half was taken from the value of fine wool, medium fell from 53 to 33 cents, and coarse only from 40 to 29. It will be observed that these two grades in the beginning were 68 and 40, at the end 29 and 29. Fashion in fabrics ran to coarse weaves, to worsteds rather than to smooth cloths.

A reference to the table will show in several instances very marked fluctuations in price between January and July of the same year, as in 1824, fine falling from 68 to 55, and in 1831 rising from 70 to 75, and in 1836 again from 65 to 70 cents. In coarse wool in 1893, between January and July, there was a fall from 29 to 25, as in a similiar period in 1824 it fell from 40 to 30 cents, and in 1827 from 28 to 25 cents. At several dates in seventy years did coarse wool touch 25 cents, and in 1849 a lower figure, 23 cents. It can not be said that the record of prices of coarse wool has been marked by any serious or permanent decline.

Wool prices of seventy years, 1824–1893.

[Mauger & Avery's annual wool circular.]

Year.	January.			July.			Year.	January.			July.		
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1824	68	53	40	55	40	30	1859	60	52	45	56	40	35
1825	60	43	32	50	41	32	1860	60	50	42	55	50	40
1826	55	43	38	37	30	26	1861	45	40	37	38	30	22
1827	36	32	28	37	31	25	1862	48	50	50	48	47	45
1828	42	30	25	48	38	33	1863	75	68	70	75	70	65
1829	54	45	35	46	36	32	1864	80	78	76	1.00	1.00	90
1830	40	35	30	60	50	40	1865	1.02	1.00	96	75	73	65
1831	70	60	48	75	65	50	1866	70	65	50	70	67	60
1832	65	55	44	50	42	30	1867	68	53	50	55	49	45
1833	55	41	33	61	54	40	1868	48	43	38	46	45	43
1834	70	60	48	60	50	40	1869	50	50	48	48	48	47
1835	63	50	40	63	56	42	1870	48	46	44	46	45	43
1836	65	60	45	70	60	50	1871	47	46	43	62	60	55
1837	72	63	48	52	52	36	1872	70	72	66	72	70	65
1838	50	42	35	46	36	30	1873	70	68	65	50	48	44
1839	56	48	38	57	48	40	1874	58	54	47	53	53	46
1840	50	45	38	45	39	33	1875	55	56	47	52	49	46
1841	52	45	35	50	44	34	1876	48	52	42	38	35	31
1842	48	42	35	43	37	30	1877	46	43	36	50	44	37
1843	35	30	25	35	30	26	1878	44	45	38	36	36	32
1844	37	30	26	45	37	32	1879	34	35	32	37	38	34
1845	47	40	31	40	36	30	1880	50	55	48	46	48	42
1846	40	35	30	38	32	27	1881	47	49	43	42	44	36
1847	45	40	30	46	40	31	1882	44	46	47	42	45	34
1848	45	38	30	38	32	28	1883	40	43	33	39	41	33
1849	33	30	23	40	35	28	1884	40	40	34	35	34	30
1850	47	40	33	45	37	30	1885	34	33	29	32	31	28
1851	46	40	33	47	42	37	1886	35	36	32	33	33	29
1852	43	38	34	45	38	33	1887	33	38	34	34	37	34
1853	58	56	50	60	53	48	1888	31	35	33	29	33	31
1854	53	47	42	45	37	30	1889	34	38	33	35	39	32
1855	40	35	32	50	40	33	1890	33	37	29	33	37	29
1856	50	38	35	55	42	36	1891	33	37	31	31	35	29
1857	58	50	42	56	50	40	1892	30	35	31	28	34	30
1858	40	33	27	43	37	30	1893	29	33	29	24	26	25

Philadelphia wool prices, 1885–1892.

[Circular of Coates Brothers.]

Kinds of Wool.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA WASHED.								
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
XX and above	32–35	34–35	34–36	29–31	34–37	33–35	31–33	28–30
X	30–31	31–33	32–34	28–29	33–34	31–33	29–31	27–28
Medium	30–31	34–35	38–40	32–35	38–40	37–39	36–37	33–35
Quarter blood	28–29	33–34	38–39	31–34	37–38	36–37	34–35	33–34
Common and cotted	22–25	27–30	30–35	28–30	30–33	28–30	28–31	28–31
NEW YORK, MICHIGAN, AND INDIANA WASHED.								
XX	28–29	31–33	31–33	27–29	32–34	30–32	29–30	27–28
X	27–28	30–31	30–32	25–27	31–32	29–30	27–29	25–27
Medium	30–30	33–35	37–40	31–34	37–39	36–38	35–36	33–34
Quarter blood	27–28	32–33	37–39	30–33	36–37	35–36	33–35	32–33
Common and cotted	22–23	27–29	30–35	28–30	30–33	28–30	28–30	28–30
COMBING AND DELAINE FLEECE.								
Washed fine delaine	33–35	33–35	36–38	31–33	36–38	35–37	34–36	31–33
Washed medium	32–35	35–36	38–40	34–36	38–41	38–41	38–39	35–37
Washed low	30–31	34–36	37–39	32–35	37–38	36–38	35–37	34–35
Washed coarse	27–29	32–34	35–37	30–33	33–36	32–33	32–35	30–33
Unwashed, medium	24–26	27–28	32–35	25–28	30–33	30–32	30–31	26–28
Unwashed, low and coarse	21–24	25–27	30–32	23–25	27–29	25–27	25–27	26–27
LIGHT AND BRIGHT, UNWASHED.								
Fine	20–21	21–22	22–25	17–20	23–25	20–23	19–21	18–20
Medium	22–24	27–28	30–34	24–27	29–32	27–30	26–29	25–27
Low medium	20–22	25–26	28–30	23–25	28–29	25–27	24–26	24–26
Coarse	15–17	20–22	22–25	20–23	22–25	20–23	18–22	18–22
DARK COLORED, UNWASHED.								
Light fine	17–20	19–21	19–22	15–17	20–22	17–20	16–18	16–18
Heavy fine	.....	.....	19–22	12–14	16–19	14–16	14–16	14–15
Medium	18–20	22–25	25–28	16–20	23–26	22–24	20–22	19–22
Fine medium	16–18	22–23	.....	15–17	20–23	18–22	17–19	16–18
Coarse	15–16	17–19	22–24	15–16	18–22	16–18	18–20	17–20
COLORADO, UNWASHED.								
Medium and fine, choice	17–20	23–26	25–28	20–23	24–27	22–25	22–24	21–23
Medium and fine, heavy	17–18	21–23	22–24	18–20	18–22	16–20	15–18	15–17
Common and quarter blood	16–17	20–21	20–22	16–18	19–22	18–20	18–20	17–19
Coarse, carpet	15–16	17–18	17–18	14–16	17–18	16–17	16–17	16–17
NEW MEXICAN, UNWASHED.								
Choice improved	16–20	22–25	23–26	19–22	24–26	22–24	20–22	21–22
Partly improved	15–16	19–21	21–23	16–18	21–23	19–21	18–20	17–19
Coarse, carpet, light	14–15	17–18	16–18	14–16	17–18	16–17	16–17	15–16
Coarse, carpet, heavy	13–14	15–17	15–16	13–14	15–17	14–16	14–16	13–15
Black	12–13	15–16	15–16	12–15	16–18	15–17	14–16	12–15
TEXAS, UNWASHED.								
Fine, 12 months	18–22	21–24	20–23	16–18	20–24	20–22	20–22	18–20
Medium, 12 months	20–25	25–27	25–28	18–24	24–28	24–26	23–24	20–24
Coarse, 12 months	14–15	17–18	18–20	14–15	18–22	18–20	17–19	17–19
MONTANA, UNWASHED.								
Fine bright	20–22	20–23	21–23	16–18	20–24	20–22	17–21	17–20
Medium bright	20–22	24–27	26–28	18–22	24–28	24–26	21–24	20–24
Coarse bright	16–18	20–23	20–23	16–18	20–22	18–20	18–20	17–20
Dark colored, heavy	16–18	18–20	18–20	14–16	17–22	16–20	16–20	15–18
UTAH AND WYOMING, UNWASHED.								
Light fine	18–19	20–22	20–23	14–16	19–22	18–20	17–20	17–20
Heavy fine	16–17	18–20	18–20	12–14	16–19	14–16	14–16	14–16
Fine medium	17–18	21–23	22–24	15–17	20–24	18–21	18–21	18–20
Selected medium	19–20	24–26	26–28	18–22	24–27	21–24	22–24	22–24
Low	15–16	17–19	22–24	16–18	20–22	19–21	18–21	18–20

Philadelphia wool prices, 1885–1892—Continued.

[Circular of Coates Brothers.]

Kinds of wool.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA, WASHED.								
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
XX and above	25–26	20–21	17–19	17–19	21–23	28–30	28–30	28–30
X	24–25	18–20	16–17	16–17	20–21	26–28	26–28	27–28
Medium	27–28	20–22	19–20	18–19	22–23	28–30	29–30	30–32
Quarter blood	26–27	20–23	21–22	18–19	22–23	28–30	28–30	30–32
Common	24–25	18–19	18–19	17–18	20–22	24–25	25–27	27–28
NEW YORK, MICHIGAN, AND INDIANA, WASHED.								
XX	23–25	18–20	16–17	16–17	19–20	25–26	23–25	24–25
X	22–23	16–18	15–16	15–16	18–19	23–25	22–23	23–24
Medium	27–27	20–21	18–20	17–19	21–22	27–29	28–30	30–31
Quarter blood	25–26	20–22	20–22	17–19	21–22	27–29	28–29	30–31
Common	24–25	18–19	17–18	16–18	20–21	23–25	25–26	27–28
COMBING AND DELAINE FLEECE.								
Washed fine delaine	25–27	20–22	18–20	18–20	22–23	29–30	30–32	30–32
Washed medium	28–30	21–23	20–22	19–20	23–24	29–30	30–31	31–33
Washed low	27–28	22–23	22–23	19–20	23–24	28–30	29–30	31–33
Washed coarse	25–26	20–21	19–20	18–19	22–23	25–27	26–28	28–30
Unwashed medium	21–23	17–18	16–18	15–16	18–19	22–23	23–24	24–25
Unwashed quarter blood	20–21	17–19	17–19	15–16	19–20	22–23	22–24	24–25
Unwashed braid	18–20	16–17	16–17	14–15	18–19	20–21	20–21	20–21
LIGHT AND BRIGHT, UNWASHED.								
Fine	15–18	10–13	11–13	10–12	13–15	18–20	17–20	17–19
Medium	20–22	14–16	15–17	14–15	17–18	21–23	22–23	23–24
Quarter blood	19–20	15–17	16–18	14–15	18–19	21–22	21–23	23–24
Coarse	17–18	14–16	15–16	13–14	17–18	19–20	19–20	17–20
DARK COLORED, UNWASHED.								
Light fine	13–15	8–10	9–10	8–10	11–12	14–15	14–16	15–17
Heavy fine	11–12	6– 8	6– 8	6– 8	10–11	12–13	12–15	.....
Medium	16–18	11–13	12–13	11–13	13–15	17–18	17–19	20–22
Fine medium	14–16	10–12	10–12	10–12	13–14	14–16	15–17	16–20
Coarse	14–17	11–12	11–12	11–13	13–15	14–15	15–16	16–18
COLORADO, UNWASHED.								
Medium and fine, choice	16–19	11–13	11–13	11–13	12–15	15–16	16–17	16–20
Medium and fine, heavy	12–14	7–10	8–10	8–10	9–11	12–13	12–13	12–14
Common	14–16	12–13	10–12	10–12	12–15	14–15	13–15	15–16
Coarse, carpet	13–14	11–12	10–11	10–11	10–13	12–13	12–13	14–15
NEW MEXICAN, UNWASHED.								
Choice improved, light	15–18	12–13	12–13	11–13	13–15	15–16	16–17	16–19
Partly improved, light	14–15	11–12	11–12	10–12	12–14	14–16	14–15	15–17
Coarse, carpet, light	12–13	10–12	9–10	10–11	11–13	12–13	12–13	14–15
Coarse, carpet, heavy	11–12	8–10	8– 9	7– 9	9–11	10–12	10–12	12–14
Black	10–12	9–10	8–10	7– 9	10–12	12–13	12–13	13–15
TEXAS, UNWASHED.								
Fine, 12 months	15–17	10–12	10–12	9–11	11–13	12–13	13–15	15–17
Medium, 12 months	17–20	11–13	12–14	11–12	13–15	14–15	15–17	15–20
Coarse, 12 months	13–15	10–11	10–12	10–11	11–13	13–14	14–15	14–16
MONTANA AND DAKOTA, UNWASHED.								
Fine bright	14–16	8–10	9–11	8–10	11–13	12–13	12–14	16–18
Medium bright	17–20	10–12	11–14	10–12	13–15	15–16	17–18	18–20
Coarse bright	15–17	10–12	11–13	9–10	12–14	14–15	15–16	16–18
Dark colored, heavy	12–14	6– 8	8–10	6– 8	9–11	11–13	11–13	14–16
UTAH AND WYOMING, UNWASHED.								
Light fine	12–14	7– 9	9–10	8–10	11–12	12–13	14–15	16–17
Heavy fine	10–12	6– 8	8– 9	6– 8	9–10	10–11	12–13	14–15
Fine medium	14–15	8–10	10–12	9–11	12–14	14–15	15–17	17–20
Selected medium	16–18	10–12	12–14	11–13	13–15	16–17	17–18	20–21
Low	14–16	10–12	10–12	9–10	12–13	13–14	14–15	16–18

The decline in the wholesale price of Texas medium from 24–26 in 1890 to 11–12 in 1896 was a discouraging fall, but the drop in farm prices of this highest quality of Texas wool from 23 to 9 cents was ruinous. The farm prices of the lowest grades, not given in this table, were scarcely half as much.

The Montana wools, at the lowest point, are quoted in the lower grades at 6–8 cents, and the new Mexican at 7–9. These figures meant 4 to 5 cents to the growers.

In these quotations Ohio medium is recorded at 38–40 cents in 1887 and 1889, with somewhat lower prices in other years, feeling the competition with Australian skirted wools after 1890, and quoted in 1892 at 33–35. Then, owing, doubtless, to the expectation of free wool, the price fell to 27–28 in 1893, 20–22 in 1894, 19–20 in 1895, and 18–19 in 1896. In 1897 it rose to 22–23, in 1898 to 28–30, in 1899 to 29–30, reaching the highest point of recovery in January, 1900—35–38 cents. It required three years to clear away the accumulation of foreign wool.

Prices recently have been temporarily depressed by the slow sales and low prices in London, in consequence of accumulations of stocks drawn from all parts of the world by the high prices of last autumn and winter. There is great activity in manufacture in all manufacturing countries, and while the production of wool is increasing, there is an admitted scarcity of fine wools, which must tell favorably on future prices.

PERIODS OF DECLINE AND REVIVAL.

Sheep husbandry is an industry peculiarly sensitive to influences either adverse or favorable. Early in the present century, when importations of the Spanish Merino elicited general interest, and in the period of the war of 1812, when clothing supplies were dependent on domestic manufactures, speculation was rife and prices were high, record being made up to $1,000 for a single individual for breeding purposes. Woolgrowing became a craze in New York, Massachusetts, and Vermont, and excited much attention in other States as far south as Maryland and Virginia.

The manufactures of those days were mostly domestic or household products. England furnished nearly all of the supplies that were not homespun. At the beginning of the war of 1812 duties were necessarily raised. The effect was a prompt and potent stimulus to home manufactures. But in 1816, after the war, duties were reduced without foreseeing the disastrous results which followed. The market was soon overburdened with foreign goods, prices fell heavily, and the manufacture of wool nearly ceased. It was at this time that Lord Brougham is reported as saying that "it is well worth while to incur a loss upon the first importations, in order by the glut to stifle in the

cradle those rising manufactures in the United States which the war has forced into existence contrary to the natural course of things."

For eight years there was little progress in manufacture and small encouragement to woolgrowing. Sheep were few and neglected. Business was paralyzed, distress general and severe. Under the tariff of 1816 not only was wool manufacture stranded, but earthenware making disappeared, glass factories were blown out, and iron manufacture diminished yearly. Losses greater than those of the war were impoverishing the country. Henry Clay referred to this period as the time of the most widespread dismay and desolation since the adoption of the Constitution.

After the tariff of 1824 woolgrowing and its manufacture revived, sheep increased, and in 1830 a promising start had been made and the value of manufactured goods was $14,528,166. During this decade only 8,000,000 pounds of foreign, added to the domestic, wool was manufactured annually. The wool manufacture continued to increase until 1833, the woolgrowers prospered, and the gloom and distress of the former period were followed by industrial activity and great prosperity.

Then came another period of discouragement to woolgrowers. The compromise act of 1833 provided for a gradual reduction of duties till 1842, to be succeeded by a uniform duty of 20 per cent. In four years of decline, intensified each year, wool manufacture was again prostrated, and with it the industries of the country, in a financial panic the severest in some respects ever known in the history of the country.

When 1842 came in, instead of the proposed moderate revenue duty, a protective enactment insured a new era of prosperity to both branches of the wool interest, to be again prostrated by a reduction in 1846, which caused the closing of many factories within the next two years and further discouragement to woolgrowing. In the years following, a period of stirring events, the finding of gold in California, the great development of gold and silver mining, the Crimean war, the growing demand for cotton throughout the world, were boom elements, causing activity and growth in many lines; yet wool manufacture languished, growing feebly with the demands of a rapidly increasing population, till the enactment of the Morrill tariff in 1861 and the era of enormous war demand, which in four years doubled the manufacture, increasing the wool consumption in factories from 80,000,000 to 160,000,000 pounds. Partial mill returns in 1864 made a total of 120,000,000 pounds, and further investigation gave a reasonable assurance of 40,000,000 more. For the four years there is a statistical showing of the Department of Agriculture of an average wool supply of 145,000,000 pounds per annum.

In eight years the number of sheep was almost and the amount of

wool fully doubled. This showed the marvelous possibilities of American woolgrowing under favorable circumstances.

It was a very remarkable exhibit of these possibilities that under the unusual exigencies of that period creating an extraordinary demand for woolens, which was greatly increased by the wastes of war, these demands were met by home manufacture with a smaller importation per capita than in the preceding decade of low prices and universal peace. Wool imports increased from 31,638,000 pounds in 1861 to 67,917,031 in 1865. The average price advanced from 13.7 cents in the former year to 17.6 in 1865, but fell in 1867 to 13.8, causing a marked increase in quantity imported. Flocks were enlarged as rapidly as possible, but the increase in wool was relatively larger than in sheep, resulting from the use of heavy wooled Merino sires in the flocks of Texas, New Mexico, California, and the Rocky Mountain range country.

In the war period new branches of textile fabrication were introduced or greatly extended, including the manufacture of fine worsted goods for ladies, new styles of fancy cassimeres, carpets, and other textiles, and the prices of some were actually cheapened by the home competition with what had been a foreign monopoly. Greater progress was made in respect to quality and variety of goods than for twenty years prior to 1860.

This period was one of remarkable development of woolgrowing and wool manufacture throughout the world. It was not alone the demand for goods caused by the civil war in this country, but the arrest of cotton growing and the blockade which hindered the shipment of the little that was grown, which caused a dearth of cotton, that alarmed the commercial world and stimulated the production of woolen goods to take the place of cotton. The increase in the average price of wool imports, 28 per cent in five years, indicates the sudden enlargement of woolen manufacture throughout the world. The exports of British manufactures of wool increased in these five years from £14,444,774 to £25,251,889, a total greater than that of the exports twenty years later. The wool imports of Great Britain nearly doubled in the same time. The industry in France, Germany, and other countries was similarly stimulated, and prices of the raw material and of the goods were similarly advanced.

After the close of the war, as cotton growing began to assume importance again, the boom in wool showed signs of decline. The wool supply, which had been so greatly enlarged in Australia, South Africa, South America, and North America, and even in Europe, was now in excess of the demand, and in 1865 the average price of our wool imports was reduced to the level of 1861. Abroad prices were falling in the expectation that cotton growing would promptly occupy its former position; in this country they were further reduced by the

decline of the gold premium. Our woolgrowers, who had been elated by the unaccustomed prosperity of the recent past, began to succumb to despondency, which affected first the flock owners east of the Missouri, inducing migration to the great ranges and a free movement to city markets. This discouragement gradually deepened until 1868, when panic seized the woolgrowers, and the slaughter of the flocks, especially the culls and lower grades, for the pelts and tallow, commenced in the great woolgrowing centers at improvised slaughtering and rendering establishments, which paid 75 cents to $1.50 each. The "hams" of the best were saved and salted for use as mutton. This destruction was more general in Ohio than elsewhere. In the principal woolgrowing counties the reductions were from 10,000 to 40,000; in Michigan and other States slaughtering was also active. The assessors' returns in Ohio in 1868 showed a reduction of 1,349,855, and in the two following years a loss of 1,969,736 more. The total decrease in Ohio in three years, from 7,622,495 to 4,309,904, was 43 per cent. The total reduction in the United States in 1868 was 4,500,000, according to published estimates of the Department of Agriculture.

The Department's review of the condition of farm animals in April, 1869, reflected the demoralization which had befallen the industry. It shows the great injury from neglect and disease which invariably results from discouragement at such a time of panic, as follows: "The wool business has been comparatively unprofitable of late, and the inevitable result is neglect, short commons, a supply of moldy hay, and the roughest treatment, in too many instances resulting in leanness, weakness, and insidious approaches of disease. Where they have been suitably cared for they are healthy, and as Merinos are in present disfavor, disease is mainly among flocks of that breed. Were it not for the cutting process by which millions of the poorest have been remorselessly slaughtered for their pelts and the small modicum of fat that could be drained by hydraulic pressure from their juiceless carcasses, the ravages of disease would have proved far greater."

One of the "last straws" that burdened the markets and helped to break them down was the sale by Q. M. Gen. M. C. Meigs, in the fiscal years 1866 to 1871, inclusive, of an immense surplus of military clothing. It included 2,218,917 overcoats, 802,419 blankets, 353,887 pantaloons, 359,253 sack coats, 427,729 jackets, 639,569 felt and other hats, 404,006 flannel and other shirts, 104,903 yards flannel, 152,951 yards kersey, 60,791 yards dark blue cloth, 216,380 pairs stockings, and other clothing material. There were overcoats alone enough to supply a third of all the voters in the country. This, in addition to the glut of commercial stocks of woolens, could not fail to produce a very disastrous result.

The estimates of sheep and wool, as stated approximately in round numbers in response to a resolution of the United States Senate, for

ten years commencing with the first enumeration after the commencement of the war, with the fleece wool, not including the pulled wool from sheep slaughtered which was considerable in the later years of this period, are as follows:

Estimated number of sheep and product of wool in the United States, 1862–1871.

Year.	Sheep.	Wool.	Year.	Sheep.	Wool.
		Pounds.			*Pounds.*
1862	24,000,000	67,000,000	1867	42,000,000	147,000,000
1863	28,000,000	82,000,000	1868	41,500,000	155,000,000
1864	31,000,000	95,000,000	1869	37,000,000	143,000,000
1865	35,000,000	115,000,000	1870	34,000,000	135,000,000
1866	38,000,000	135,000,000	1871	32,000,000	128,000,000

These figures cover the fluctuations of periods of prosperity and adversity in wool production which affected profoundly this industry in all parts of the world, and the causes had their origin mainly in conditions prevailing in this country.

TARIFF CHANGES AND THEIR EFFECTS.

It was during this period of depression, before its culmination, that the tariff of 1867 was enacted. The question has been asked, why it did not avert the disaster. The fact is that it was too late. The mischief had been already done. As early as 1865 the imports of manufactured wools, more than double the requirements of demand, began to glut the markets. Prices were falling throughout the world. But that enactment opened a new era of prosperity for woolgrowing, after the glut of goods had been absorbed, in which flocks increased 60 per cent in thirteen years and the wool product 100 per cent—the number of sheep, 50,626,626 in 1884, being larger than at any other time in the history of American woolgrowing.

In 1883 there was a slight change in the tariff, and in years following revenue decisions liberal to importers, which tended to discouragement of woolgrowers and a decrease of flocks, reducing the numbers in five years about eight millions, from 50,626,626 to 42,579,079. Values were highest in 1883, before the tariff enactment, $2.57, and lowest in January, 1886, but not increasing materially until the enactment of the McKinley law. The decrease in numbers was 16 per cent, and in price 24 per cent. An expectation of tariff revision prevented further sacrifice of flocks.

A new era of prosperity commenced in 1890. In four years the number of sheep increased to 47,851,000, or 11 per cent, from 1889, and the farm value advanced in January, 1893, to $2.66, the highest value for eighteen years, since 1875.

In 1894 was enacted a law making wool absolutely free, as well as all forms of shoddy and waste materials used in adulteration. The

effect was instantaneous. Prices of wool and of sheep declined, resulting in destruction of flocks and indifference and neglect in their care.

The law of 1897 followed, restoring customs duties on wool. The effect of this act has been to restore confidence in the future of woolgrowing and a larger degree of prosperity, though the enormous accumulation of foreign wool has retarded manufacture and sale until quite recently. For two years the mill stocks and wool markets were weighted down with foreign wool. Estimates of the trade authorities made the supply in January, 1900, 250,000,000 pounds less than in the preceding January. Consumption has been unprecedented and manufacture extremely active.

The value of sheep is nearly doubled. The Department estimate of average value in January, 1895, was $1.58 per head, and last January, $2.93. The increase in the price of wool is strikingly indicated by a diagram (fig. 1) prepared by Justice, Bateman & Co., showing the London value of American wool, with American prices of the same grade, and London value of similar Australian wool, from 1892 to 1900, the depression of the free-trade period, and the subsequent recovery under present law.

It appears that XX Ohio, which was worth 18 cents in London in 1897, when the Dingley bill was passed, rose to 23½ cents in the United States, though our markets were burdened with an enormous supply of foreign wool bought on a free-wool basis; and the next year, when a relief from this handicap had barely commenced, it was worth 29 cents here and 19½ cents in London. Since then there has been a great boom in foreign wool, which sent prices up temporarily, and in 1899 XX Ohio ran in London to 25½ cents and was 29½ cents here; but the collapse of the London boom has brought the price down to 22½, while it is here 31 cents, or 5 per cent above the average of last year. The London decline, both of XX Ohio and of scoured Botany Tops, is 12 per cent below the average of last year's prices.

The diagram shows in XX Ohio a comparatively slight fluctuation in London between 1892 and 1897, but in this country a fearful fall, 29½ to 17½ cents, where it remained with slight change for three fateful years, at the bottom of a depression which was a veritable slough of despond to the American woolgrower. The recovery under the present law, shown in a line almost vertical, is as sudden as the fall was precipitate.

The effect of the law of 1894 on manufacturers was scarcely less injurious than upon woolgrowers. They were not subjected to free goods, but were exposed to a competition, under a reduced rate of duty, which they could not withstand, flooding the country, stopping sales, first exhausting profits, then reducing wages, and finally shutting down mills.

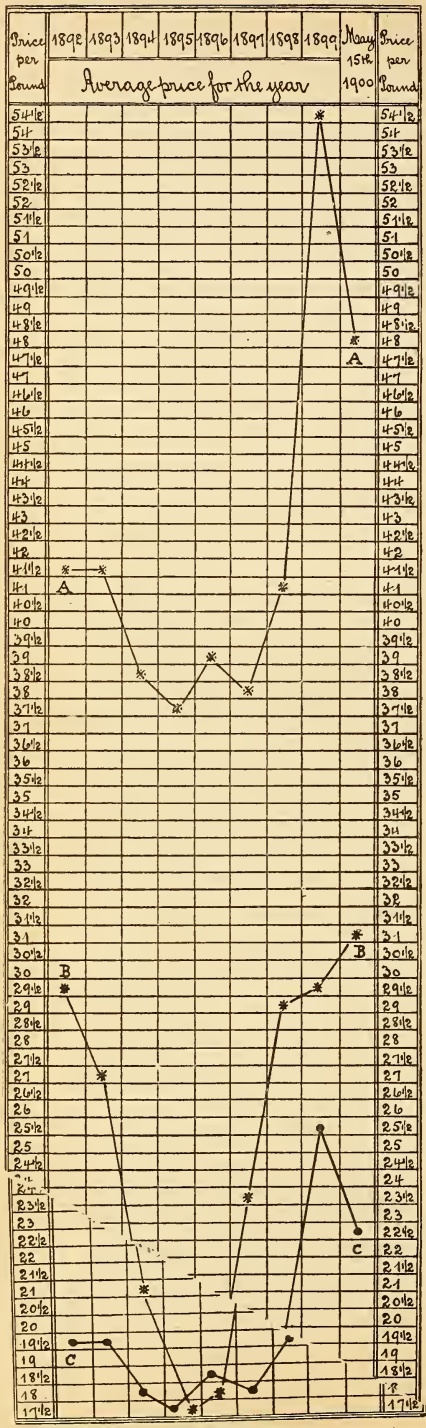

FIG. 1.—Diagram showing fluctuations in the price of wool, 1892–1900.

LINE A TO A represents London values of Merino wool scoured, carded, and combed into No. 60's Botany Tops, wool similar to XX Ohio. On May 15, 1900, the decline from the average of 1899 was 12 per cent.

LINE B TO B represents American prices for XX Ohio. On May 15, 1900, the advance from the average of 1899 was 5 per cent.

LINE C TO C represents London values of XX Ohio. On May 15 the price had fallen 12 per cent below the average of 1899.

Most of the manufacturers knew that free wool, under existing conditions, would prove inimical to their prosperity, though a few desired it. One of those, after a sad experience with the law of 1894, says:

> We as well as others thought this Wilson bill would be a godsend to all interested in the woolen line, but we have had the experience, and a good lesson it has been to us, and one that we are not likely to forget as long as we live.

Those who favored free wool and woolens have claimed that manufacturers, with the markets of the world in which to select their raw material, could make better goods, supply the country, export freely to other nations, and achieve a wonderful prosperity. Every one of these claims has been signally disproved by the experiences of 1894–1897.

It is no boast to say that there are no stronger or more serviceable wools in the world than those of the United States. They are wools of a temperate climate and of a progressive agriculture, and not from flocks of the torrid zones, neglected in breeding and care; they are from sheep bred toward the most approved types of clothing and combing wools. All the families of Merinos and all the improved English mutton breeds are represented. No European country has such a variety of wools as America, and none a superior average quality. Excepting Europe, the British colonies, and the Plata River region, all other countries grow wools distinctly and greatly inferior to ours. If we must depend on the wools of foreign countries we must be subject to competitive buying by England and other countries, under a serious handicap of trade and transportation advantages; must take what we can get; and a large portion must be the harsh and weak fiber of hot climates and that of neglected and poorly fed flocks—kempy, burry, and dirty. Is this a condition for securing better wool or better cloth?

Australian wools are popular, but their Merino blood came from Germany and America (Vermont and New York), and their Lincolnshire crosses furnish a lustrous article, very desirable for certain fabrics. The climate, with its torrid seasons of drought and destruction, is unfavorable for evenness and strength of fiber, and such wools are not equal in integrity and durability to our Merino.

While admitting the preference of fashion in certain fabrics, it is undeniable that the riddance of dirt and inferior portions of the fleece by skirting, and the smaller shrinkage resulting in part from this practice, gives most of the superior selling price of this wool in the markets. It is true that the manufacturer naturally likes unlimited range for selection, and truer still that price advantage—cheapness—is a factor of more controlling influence than any other in the selection and blending of material and fabric modification. Under the exigency

of scarcity and dearness, even a carding wool has been made a combing wool, requiring invention and adaptation of machinery to aid in the transposition, so that now a considerable portion of the worsted manufacture is from the Merino instead of the mutton breeds. In all the kaleidoscopic changes of style and admixture of material, it is by no means fashion that is the only or main consideration, but relative economy.

The law of 1894, instead of bettering the quality of the supply of woolens, degraded it to a condition never before existing, precipitating an era of shoddy. Mr. S. N. D. North, the secretary of the Wool Manufacturers' Association, testified before the Ways and Means Committee, in January, 1897:

> There has been more shoddy used in American goods in the year just passed than ever before, and more shoddy, mungo, and miscellaneous refuse contained in the goods imported in that year than have come into the United States in any previous twenty-five years.

And he said further, that nothing could be more certain, if conditions which introduced them should continue, than that the American manufacturer must meet them by the use of similar materials. He showed a piece of cloth, ingeniously fabricated to look like honest goods, in which there was not a particle of new wool, but which was made from the vilest of shoddy, and sold at a profit at less per yard than the market price of a pound of clean wool. In the testimony of one of the dealers in "woolen rags" it was admitted that some of this stuff was imported in a "condition decidedly offensive, and a great menace to the health of the community."

American shoddy from tailors' clippings and clean rags is a decent article compared with the lowest class of European material, known as mungo, which comes from cloth which may be first worn by a fastidious gentleman, who sells it to a secondhand dealer, to be next worn by a clerk or mechanic, then by a laborer, a tramp, or beggar, in its descent to the gutter, saturated with filth and germs of diseases and half rotten, thence to be resurrected, washed, treated with chemicals, and run through disintegrating machinery to appear as "mungo," selling at less than a cent per pound, and put into goods selling at a shilling per yard, and offered to American citizens as a boon to the poor man and a blessing to the clothing buyer of small means.

The figures of the United States Treasury record of imports are eloquent in portraying the inundation of foreign shoddy and shoddy goods, during the period covered by the law of 1894. The rags and various wastes imported under the two laws are thus compared:

Amount and value of woolen rags, shoddy, mungo, etc., imported into the United States, 1892–1900, by three-year periods.

Year ended June 30—	Law of 1890.		Law of 1894.		Law of 1897.	
	Amount.	Value.	Amount.	Value.	Amount.	Value.
	Pounds.		*Pounds.*		*Pounds.*	
1892	262,992	$87,825				
1893	333,376	106,596				
1894	143,002	47,522				
1895			14,066,054	$1,980,464		
1896			18,761,109	2,651,237		
1897			49,413,642	6,935,658		
1898					3,298,751	$697,622
1899					314,540	70,224
1900					435,854	86,887
Average	246,456	80,647	27,550,268	3,855,786	1,349,715	284,911

The law of 1894 went into effect August 1 of that year, so there were only eleven months of imports of the fiscal year ended June 30, 1895; and as the law of 1897 went into effect as to shoddy January 1, 1898, the record of 3,298,751 pounds of shoddy included nearly six months' imports under the law of 1894, nearly all of it.

The figures of the Treasury show an importation of shoddy of about 118,000,000 pounds in thirty years, nearly three-fourths of which, or about 85,000,000 pounds, was received in this period of a little more than three years. Thus an annual average of nearly twenty times as much was received in the free-shoddy period. In addition to the figures given above those of the two preceding decades should go into this record to facilitate comparison. As manufacturers reckon 1 pound of cloth equivalent to 4 pounds of wool in the grease, and 1 pound of shoddy or waste (cleaned with very small loss in manufacture) equivalent to 3 pounds of wool in the grease, it will be seen that this 85,000,000 pounds of shoddy took the place of 255,000,000 pounds of domestic wool, or nearly one year's product.

Amount and value of woolen rags, shoddy, mungo, waste, and flocks imported into the United States, 1871–1890.

Year ended June 30—	Amount.	Value.	Year ended June 30—	Amount.	Value.
	Pounds.			*Pounds.*	
1871	1,277,495	$87,667	1882	1,097,641	$358,386
1872	2,719,246	232,211	1883	974,963	438,750
1873	1,989,123	199,687	1884	1,316,083	564,694
1874	1,783,677	151,156	1885	700,231	287,254
1875	1,387,731	149,109	1886	3,059,214	1,036,869
1876	243,527	45,322	1887	4,834,636	1,843,823
1877	169,925	33,265	1888	4,483,325	1,719,154
1878	95,886	19,071	1889	8,662,209	3,447,201
1879	92,614	22,121	1890	4,980,327	2,052,078
1880	1,388,233	297,196			
1881	470,873	138,363	Total	30,579,502	11,886,572

The theory that dear wool compelled manufacturers to use shoddy and that free wool would obviate its use, has been forever destroyed in this

deluge of material for cloth adulteration. It was a surprise to the theorists, but it is thus explained in the bulletin of the wool manufacturers:

So long as our manufacturers did not have to compete with foreign shoddy-made goods the tendency was rather away from its increased use, for every man's goods found and held a market on their merits. Those who used shoddy did so at their own risk, and their goods passed for what they were. When the Wilson tariff removed the barrier against the importation of shoddy and shoddy goods the situation changed in the twinkling of an eye. More shoddy goods are made in England than in all the rest of the world put together. They have learned there, by long experience, the art of utilizing to the best advantage every kind of refuse that comes from rags and wastes. Let it have but two ends, they will find a way to spin it. These were the goods, among other varieties, which began to pour into the United States when the bars were let down. These were the goods with which American mills had at once to compete. In order to compete it was necessary to use the same kind of materials they use at Batley and Dewsbury. Cheap as wool was, it was not cheap enough to compete with English and continental rags. Deterioration in quality has been the distinguishing result, both as to imported and domestic woolens, of the tariff of 1894.

There was no material change under the law of 1894 in the quantity of carpets, ready-made clothing, or yarns imported. The sophistication and adulteration of our clothing supplies naturally came through cloths, and the abnormal increase was in this class and in women's dress goods. The following is a statement of the number of square yards and value of cloths imported in three-year periods under different tariffs:

Amount and value of woolen cloths imported, 1892–1900, showing effect of tariff laws.

Year ended June 30—	Law of 1890.		Law of 1894.		Law of 1897.	
	Amount.	Value.	Amount.	Value.	Amount.	Value.
	Yards.		*Yards.*		*Yards.*	
1892	13,813,276	$12,765,044				
1893	18,206,001	15,117,564				
1894	7,456,417	6,256,321				
1895			23,917,011	$16,298,169		
1896			36,781,572	21,886,528		
1897			27,859,311	17,007,273		
1898					5,062,261	$3,965,577
1899					4,092,898	3,909,466
1900					5,154,674	5,129,831
Average	13,158,564	11,546,309	29,519,298	18,397,323	4,769,944	4,334,958

This shows that the average annual importation of 13,158,564 pounds was increased to 29,519,298 pounds, an increase of about 123 per cent. This is not all, nor the worst. It shows the degradation of quality; that a large part of these goods were mixtures of the lowest order of waste, for notwithstanding the considerable requirement of fine cloths for the higher grades of fashionable tailoring, the mass of importation for the wants of plain people was of so low a character as to reduce the average price per pound for good and bad cloths from about 88 cents to 62 cents, a decrease of 30 per cent. These are the prices abroad, and they indicate the degeneration of

quality of the clothing supply. Added to this flood of foreign goods, the enormous quantities of "wastes" above mentioned kept the shoddy mills in activity day and night, swelling the stocks of worthless goods and forcing the manufacturers of honest cloths into retirement. In the last three fiscal years, not only have imports of woolen cloths fallen to one-third of the amounts imported under the act of 1890, but the increase in value per yard shows the improved quality of the goods imported.

The dress goods of women were greatly increased in quantity, but they were reported in pounds, while under the law of 1890 quantities were stated in square yards, so that comparison of quantities can not be made, but the annual average value of dress goods imports was increased from $13,846,250 to $17,039,070, a large increase, but not at all proportionate to that of cloths, the shoddy element not being so available for women's dress goods.

The total value of imported manufactures of wool was increased under the law of 1894, notwithstanding the lower value of inferior cloths, from an average of $31,017,922 per annum to $47,065,760.

These facts effectually refute the prophecy of a better clothing supply from free wool, and disclose a demoralization of manufactures and deterioration of goods such as never were known in the previous history of the country.

The prophecy that the law of 1894 would result in a full domestic supply of American manufacture, and an export trade in the surplus, was not only discredited but all our markets were glutted with foreign goods. The value of annual exports of all domestic manufactures of wool never rose to $1,000,000 until 1898, under the Dingley tariff. The predicted prosperity of the woolen manufacturing industry as the result of the tariff revision of 1894 failed to materialize, and instead an era of discouragement and disaster set in unparalleled in its history. Secretary North testified of it:

> During a great part of this period the bulk of the woolen and worsted machinery of the country has been wholly or partially idle; much of the remainder has made goods that have either been marketed at a loss or are still in stock. The domestic market for woolen goods has since been in a state of absolute demoralization.

He also declared that "we have in the United States enough woolen machinery, when in operation, to supply all the goods our people can consume."

He further stated:

> The removal of the weight duties of previous tariffs let down the bars to the importation of kinds and grades of cloth hitherto practically excluded from this country, an exclusion greatly to the advantage of our own people, as we now know. The ad valorem basis of the tariff has allowed the importation of the lowest and meanest descriptions of goods made in the world—the peculiar products of the Batley and Dewsbury districts in England, where they have reduced to an exact science the business of making woolens out of shoddy, mungo, wastes, cows' hair, and other

rubbish, in the spinning and weaving of which our American manufacturers have not yet learned the rudiments, although it is clear they will have to learn them if they have got to fight these goods in the home market. Immense quantities of these goods have been thrust upon this market under the present law. They are admirably manufactured, considering the material employed, and while worthless for wear are particularly attractive and deceptive in finish and appearance.

There never was a more total failure of fulfillment of prophecy, or a more complete refutation of an industrial fallacy, than that furnished by American experience with free wool.

As a result of the act of 1894, instead of 50,000 more operatives, half of all were out of employment in 1896, with a great and disastrous loss of wages. The demand for domestic wool was reduced as never before, and prices fell more than half, as stacks of foreign wool were piled up in importing warehouses. Wages, instead of increasing, were not merely reduced, but cut off totally for the multitudes unemployed, to whom employment at half pay was better than starvation.

The losses inflicted upon capital and labor during the industrial depression of these three years were enormous. Capital lost its profit first, and afterwards principal, with shrinkage of values, inability to sell products, and deterioration of idle machinery. Labor lost wages, means of living, comfort, and health. It is not easy to calculate the magnitude of these losses in an industry which by the census of 1890 had attained a production valued at over $300,000,000 per annum. It not only affected the factory population, but indirectly every industry of the country, and was the largest factor in intensifying the depression which reduced all values of real and personal estate, and, with few exceptions, all incomes and means of living. In the full measure of their extent these losses were incalculable and irreparable.

The total losses of this period of three years in the matter of wool and its manufacture alone were probably greater than those of the Spanish war and Philippine rebellion of the last two years; but its consequences were more far-reaching "in destroying confidence and markets," as stated in 1896, in the Bulletin of Wool Manufacturers, so that "other industries, at which the tariff of 1894 struck less vindictively, have suffered and are suffering."

THE PRESENT CONDITION OF SHEEP HUSBANDRY.

The flocks of the United States do not aggregate so large a number of sheep as in 1893, or in 1884, but they are increasing rapidly, and bid fair to exceed before many seasons the highest former figures. They include a greater variety than at any former period. If manufacturers desire a selection from all the wools in the world, they can get all varieties of much value without going out of the country. That this is no idle boast can readily be proved in our principal wool

markets. A glance at the registry and other breed associations shown in the appendix to the Yearbook of the Department of Agriculture for 1899, will go far to substantiate the same fact. There are the Standard Merino Registry Association, the Vermont Atwood Club Registry, the United States Merino Sheep Breeding Registry Association, the Dickinson Merino Sheep Record Company, the American Merino Sheep Registry, and the American Shropshire Registry Association. Then there are the Vermont Merino Sheep Breeding Association, the New York State American Merino Sheep Breeders' Association, the Ohio Spanish Merino Sheep Breeders' Association, the Michigan Merino Breeders' Association, the National Improved Saxony Merino Sheep Breeders' Association, the Black-Top Spanish Merino Sheep Breeders' Association, the Improved Black-Top Merino Sheep Breeders' Association, the Delaine Merino Sheep Breeding Association, the Improved Delaine Merino Sheep Breeders' Association, the Pennsylvania and Ohio Improved Delaine Sheep Breeders' Association, and the American Rambouillet Sheep Breeders' Association; of the long wools, the American Cotswold Association, the American Leicester Breeders' Association, the American Lincoln Breeders' Association, the National Lincoln Sheep Breeders' Association, and the National Cheviot Sheep Association; of the middle and short wools the various Downs, the Southdown Association, the Oxford Down Association, the Suffolk Association, the Dorset Horn Sheep Breeders' Association of America, and the Continental Dorset Club. And there are others, including an association of breeders of the fat-tailed Tunis sheep.

In collecting the wool exhibit for the Paris Exposition of 1900, the writer was impressed with the wonderful progress that has been made in diversification of breeds and qualities of wool. The same skillful and patient work that resulted in the differentiation of the old Spanish Merino, giving the world the French, Saxon, Silesian, and American Merinoes, has been continued with the latter in the Delaine and Black-Top families (or breeds), with heavier bodies, longer fiber, and more valuable fleece for the finer combing fabrics so much in demand for the fashionable tissues for ladies' and children's wear. The Lincolns, that have played so important a part in the recent breeding of Australia and South America, are here in force and can be produced in any quantity desired, answering the demand for lustrous combing wools.

The wool exhibits now on exhibition at Paris include samples of nearly all breeds and grades of our domestic wool. They fill twenty-one sections, each covered with a plate glass 5 feet in height by 3 in width. Thirteen of these show whole fleeces, twelve in each, from the wool dealers in the two great markets, Boston and Philadelphia, illustrating the various qualities and commercial classifications of

American wools. Seven section cases are filled with samples from breeders of nearly all the breeds, samples of eighty-four fleeces from the farming States, the mountain ranges, and the Pacific coast. More than half are Merino, but the several Delaine breeds outnumber the original American Merinos, illustrating the present popularity and general distribution of the long-fiber combing-wool types, of which the Standard Delaines are the most numerous, representing breeding flocks in Ohio and Texas, one of the latter a fleece from a 2-year-old, weighing 24½ pounds, from W. S. Beck, of Coleman, Tex. The National Delaine exhibits are from Pennsylvania and Ohio, the fleeces being quite uniform in weight—from 15 to 17 pounds—one fleece, from Mr. James S. McNary, of Canonsburg, Pa., weighing 17 pounds. The National Dickinson Delaines are from Ohio breeders, the extreme weight of fleece being 16 pounds. Pennsylvania and Ohio also furnish the Black-Top Delaines, of which one fleece weighs 18 pounds, from Mr. M. M. Keener, of Plaingrove, Pa. There are also Delaines from Missouri, Iowa, and California. The American Rambouillets, with fleeces up to 16 pounds, are from New York, Ohio, and Michigan. The fine Saxony fleeces are from the veteran breeder, Mr. John G. Clarke, of Washington, Pa., one fleece from a yearling weighing 5¼ pounds. Another Saxon exhibit is from Virginia. The larger proportion of Merino fleeces come from California, others from Texas, Indiana, Michigan, Ohio, and New York.

Among the Downs the Shropshires are the most numerous, coming from breeders in Missouri, Iowa, South Dakota, and Oregon, with fleeces up to 12 pounds. Southdowns are from Vermont, Ohio, and Illinois, the heaviest fleece 10 pounds. Oxfords represent Ohio and Illinois, one fleece weighing 14 pounds. Dorset Horn fleeces come from New York, New Jersey, Pennsylvania, and Ohio, and weigh from 7 to 14 pounds. Lincolns, very popular in range districts, are unrepresented. Other exhibits are Cotswold from Oregon, one from the Agricultural College weighing 19 pounds, Leicester and Cheviot from Indiana. There are four samples of the North Star breed from Minnesota, evidently from crossing of fine and long wools, weighing 16 pounds per fleece. As a curiosity a sample of very long fiber from Alaska is included. There is also a case of twenty-four samples of Angora goat fleece, mostly selected by William R. Payne & Co., wool dealers of New York, and coming from W. G. Hughes of Hastings, Tex., John S. Harris of Oakley, Idaho, and George S. Houk of Oregon.

These exhibits will give the people of other countries an idea of the great variety and high character of American wools, and illustrate attainments in breeding that leave little necessity for importing either sheep or wool. There are very few of the breeds of the world worth importing that are not already here, and being improved rather than

deteriorating. Our climates and grasses furnish sufficient diversity and variety to meet all requirements.

From Maine to Texas, from Alaska to Arizona, are found conditions of temperature, humidity, and pasturage, comparatively free from extremes of drought such as have destroyed sheep by thousands in Australia and Argentina, and favorable to great variety and high quality of American wools.

The general feeling at the present time as to the condition and prospects of sheep husbandry is one of relative content and satisfaction, and of confidence and hopefulness for the future. If all growers are not equally suited and satisfied, they are at least measurably content with the situation. The one thing that they dread is a violent change of conditions. In a country that is continental in extent, conditions can not be equally favorable in all sections. There are differences in climate, some districts requiring feed and shelter all winter; others needing neither at any time, except in severe storms that may or may not occur during an entire winter. Some sections have limited pasturage, required imperatively for other kinds of stock; others have broad prairies, or wide stretches of free range.

Western competition has borne heavily on the seaboard States in this as in other branches of animal industry. The effect has been the movement of live-stock industries westward for the past fifty years. As the farm dairy of the Alleghanian slope has existed for the supply of fresh milk to dense neighboring populations, so have sheep been maintained to a limited extent for the production of early lambs, though this industry has suffered from competition since the advent of refrigerator cars.

The decline of flocks has been steady in New England for fifty years. Not only has every decade witnessed a diminution in numbers, as a whole, but in every State the progressive decline has been without a break, with a single exception, Maine having shown an increase in 1880, and a very slight gain in 1860, although there were nearly four times as many sheep in 1850 as in 1900. Vermont in 1850 had nearly half of all the sheep enumerated in the New England States, and while her American Merinos have taken European medals, and have gone to Australia and South America in exchange for generous sums in gold, her flocks declined from 1,014,122 in 1850 to 752,201 in 1860, and 580,347 in 1870, in an era of popularity in which $5,000 was offered and refused for a single sire. This means simply that while there was profit in breeding flocks of high repute, the larger numbers suffered from the general tendency to decline of common flocks. There is a feeling now, among those having former experience, that there may be profit in sheep again for the production of fat lambs, but whether it will lead to increase of flocks is uncertain. With skill and enterprise it might prove so. Few farmers there will be likely to give the requisite attention, and few have pasturage sufficient to support a paying business. If a few get Shrop-

shire or Dorset sires, raise a few crossbred lambs, and sell them for the prices local butchers pay for the common stock, the profit will not prove alluring. There are some, however, who find a profit in such lambs, and more can do the same with the enterprise and energy put into other business in this region.

The conditions in the Middle States are essentially the same as those of the Eastern. The decline in numbers of sheep has been progressive, decade by decade, without a break, except in Pennsylvania, where in 1870 and 1880 increase was shown, owing to prominence of the Panhandle counties in woolgrowing in that period of general prosperity. The decline from 1850 to 1890 was small in Pennsylvania; it was continuous in New Jersey, though there were only 160,488 in 1850; but in New York the falling off was from 3,453,241 in 1850 to 1,528,979 in 1890, and in the last ten years the reduction has been almost half the figures for 1890. Now there are only about a third as many in the Middle States as in 1850—a few breeding flocks, some held for raising spring lambs, and scattered farm flocks. A few can now find a profit under present conditions in pure-bred flocks for fortifying the blood of the mountain-range flocks. The history of the past is no guaranty of future increase, though it may be possible, dependent upon the comparative profit of dairying and other lines of eastern rural industries. The only item of advantage enjoyed by this Atlantic seaboard region in woolgrowing over the far West is in lower transportation charges, and this by no means offsets the advantages of that region.

A letter from the secretary of the New York State American Merino Sheep Breeders' Association, Mr. J. H. Earll, states that flock owners are generally well satisfied with present conditions, as wool at 20 cents and lambs at $4 in July "pay very well." Most of the sheep are of the mutton breeds, the tendency having been in that direction for ten years past. He states that the Shropshire leads all other breeds. In 1888 there were 150 registered fine-wool flocks in the State; now there are about 50. But owners have taken courage from increase of price—from 7 and 8 cents in 1895 to 20 cents in December last, though now temporarily a little lower. They are confident of good prices later.

The Southern States, exclusive of Texas, had between 5,000,000 and 6,000,000 sheep in 1850, and there have been only slight fluctuations since, the census of 1890 showing over 5,000,000. The South has never been a woolgrowing region. Its present opportunity is in feeding lambs and muttons, for which great natural resources are enjoyed—a mild climate that requires little if any shelter and permits the growth of forage all winter, while its cotton seed is a valuable and abundant element of feeding rations. Its population furnishes an extensive market for meats, in which a high quality of mutton, as well as beef, is now scarce. Eastern and foreign markets would furnish a profitable outlet for any surplus that might be produced. In the meat-making branch of sheep husbandry there should be a large increase, climatic

and feeding resources being unexcelled by those of any other States, the most serious obstacles being dogs and an indisposition to undertake new rural enterprises.

Throughout the West a buoyant feeling exists among sheep raisers, and numbers are increasing with considerable rapidity, especially in the valleys of the Mississippi and Missouri. The impulse of growth is felt in all the States of the Ohio Valley.

In Indiana, which has never been a distinctly woolgrowing State, according to Prof. C. S. Plumb the "sheep and wool interests are destined to a very considerable increase." He says it is many years since Indiana has had as many sheep as to-day. In breeding, the value of a good mutton carcass is not lost sight of, while wool is an important consideration. The Rambouillet Merino is now very popular there, and the Delaine Merinos are held in high esteem. The sheep of Indiana are mainly of the mutton breeds, though there is now a tendency to cross with Merinos of large size that approach the mutton conformation. Shropshire grades are now predominant, and many growers incline toward the Rambouillet as an improving cross.

The Secretary of the Indiana Dickinson Delaine Association, Mr. U. C. Brouse, says this breed has been very popular because of a strong constitution, good feeding quality, mutton forms, and heavy fleeces of valuable wool. He says there are about 8,000 registered, mostly in Pennsylvania, Ohio, Indiana, and Michigan.

There is rapid increase of flocks in the prairie States west of the Mississippi. Iowa is perhaps more interested in sheep husbandry than ever before. Sheep are increasing quite rapidly in Minnesota and the Dakotas, and numbers are now greater than at any former period. The feeling is general that under present conditions sheep should prove fully as profitable as any other branch of stock raising.

The region west of the prairies, the range country, including Texas and the Pacific Coast, is the principal area of American woolgrowing. In all this region the industry is now flourishing. Sheep are increasing, the flock masters have the confidence and courage to extend operations, use their time and money in efforts for breed improvement, and give the care and attention to details necessary for the permanent welfare of flocks. Everywhere they appear to be content with the situation.

Advices from Montana and Wyoming, where sheep are counted by millions, and valued as never before, the total value of the flocks of the former being greater than that of any other State, and of the latter only exceeded by that of Ohio, declare a condition of prosperity and contentment. Similar conditions are reported in Utah and Idaho.

New Mexico is credited with the largest number of any State or Territory. The Department of Agriculture estimates 3,397,439; and Governor Otero estimates last year's product of wool at over 18,000,000 pounds and declares that sheep husbandry is now the most prosperous

industry in the Territory and flock masters are in better spirits than for many years. Many years have been occupied in breeding up the coarse-wooled Mexican stock to the Merino plane, yet the wool is still uneven, some fleeces comparing favorably with any in the United States, while the majority are not uniform in grade, running from fine to blanket wool; but each succeeding year the lambs produce a finer grade of wool. A scouring mill in Las Vegas, in its records, indicates this diversity. One clip of 90,000 pounds of grease wool scoured 97 per cent of fine and fine medium, 2 per cent of quarter blood, and 1 per cent of blanket. One of 77,000 pounds of grease wool yielded 90 per cent of fine and medium, 9 of medium, and 1 of blanket. Another of 40,000 pounds scoured 65 per cent of fine and 35 per cent of medium. These indicate a high grade of improvement. Others were not so good. One clip of 31,000 pounds gave only 2 per cent of scoured fine medium, 59 of three-eighths, 17 of quarter blood, 18 of blanket, and 4 of carpet wool. This is coarse but serviceable wool, with little of its original carpet quality.

The industry is also quite prosperous in Arizona, and sheep are increasing rapidly.

The secretary of the National Merino Sheep Register Association, of California, Mr. R. O. Logan, says that woolgrowers are generally jubilant over present prospects, over the return of a fine-wool period, feeling that the tendency of the next decade will be toward the growing of merino wool of long staple. The only serious drawback indicated is the introduction of skirted wools at the rate of unwashed, which reduces materially the protective benefit of the duty.

Oregon and Washington flocks are increasing in numbers, giving a reasonable profit to flock owners and a measure of satisfaction and contentment.

The present condition of woolgrowing has no more suggestive index than the average prices of January last. In the twelve States and Territories which now produce nearly two-thirds of all our wool, the prices of sheep are higher in every one than in January, 1893. In Oregon, Wyoming, and New Mexico the average price was more than double that of 1895, and for all of them together the average was little short of double, and the home price of wool has increased more than 100 per cent. A comparison of January prices in 1893, 1895, and 1900 is as follows:

Prices of sheep in Far West in 1893, 1895, and 1900, compared.

States and Territories.	1893.	1895.	1900.	States and Territories.	1893.	1895.	1900.
Texas	$1.60	$1.21	$1.92	Utah	$2.38	$1.47	$2.59
Montana	2.58	1.51	2.84	Nevada	2.43	2.42	2.91
Wyoming	2.75	1.64	3.51	Idaho	2.50	1.41	2.80
Colorado	2.52	1.52	2.86	Washington	2.83	1.74	3.13
New Mexico	1.50	.90	2.17	Oregon	2.40	1.16	2.67
Arizona	2.25	1.21	2.34	California	2.32	1.65	2.85

Woolgrowers regard with interest the effect of the present tariff on the price of their wools. When the enactment of 1897 went into operation as to wool August 28, 1897, and as to shoddy and other manufactures January 1, 1898, some may have expected an advance equal to the rate of duty. But this by no means occurred. The markets were then full of fine foreign wool, and two or three years of mill consumption were necessary to clear away these stocks. The diagrams (figs. 2 and 3), prepared by Justice, Bateman & Co., wool

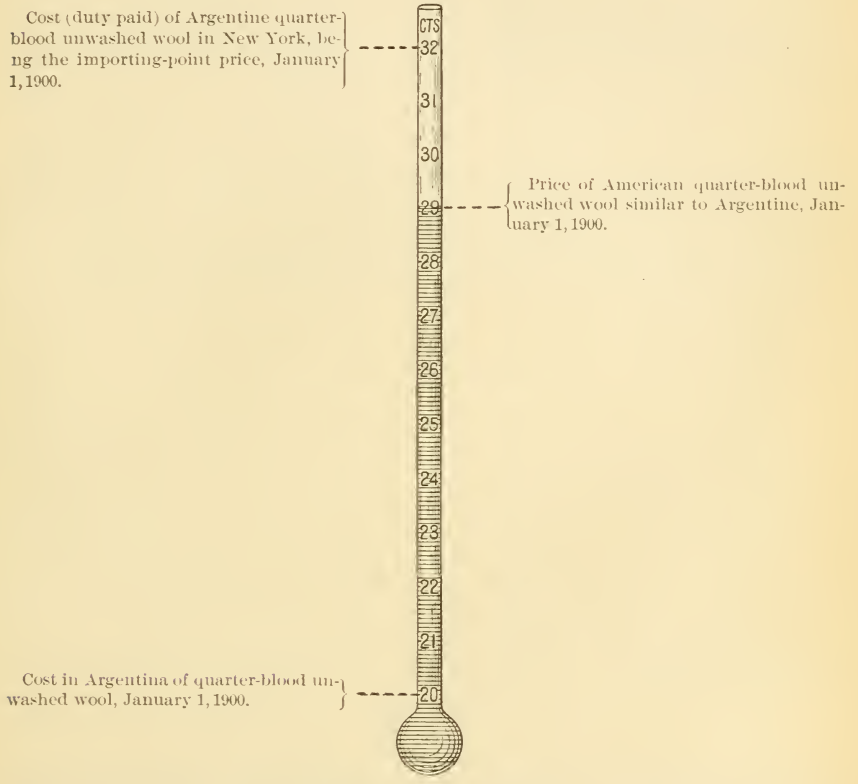

FIG. 2.—Diagram showing effect of Dingley tariff act in raising the price of American wool, January 1, 1900—only three-fourths of its lifting power realized.

dealers, of Philadelphia, illustrate clearly and accurately the price-lifting force of the Dingley tariff. The representative grade of American wool in the diagram is quarter-blood unwashed, which represents wool from mutton sheep of the Shropshire or similar flocks. Fig. 2 shows that only 75 per cent of the price-lifting effect of the tariff was attained by January 1, 1900. Justice, Bateman & Co. say in explanation:

Argentine crossbred wools, spinning to what are known here as 46s to 50s qualities, corresponding to an American medium in the unwashed condition, but skirted, now

cost in the Argentine Republic 20 cents. With 1 cent added for freight the cost afloat in New York would not be under 21 cents, but with the Dingley tariff duty of 11 cents added the cost to the American consumer would be 32 cents for wool of the same class and quality as domestic unwashed medium combing, the outside price for which on January 1 was 29 cents. Thus it would appear that an effort is being made to reduce the duties of the Dingley act before it has had a trial.

This reference to reduction of duties relates to the proposed Argentine reciprocity treaty, which makes a reduction of 20 per cent.

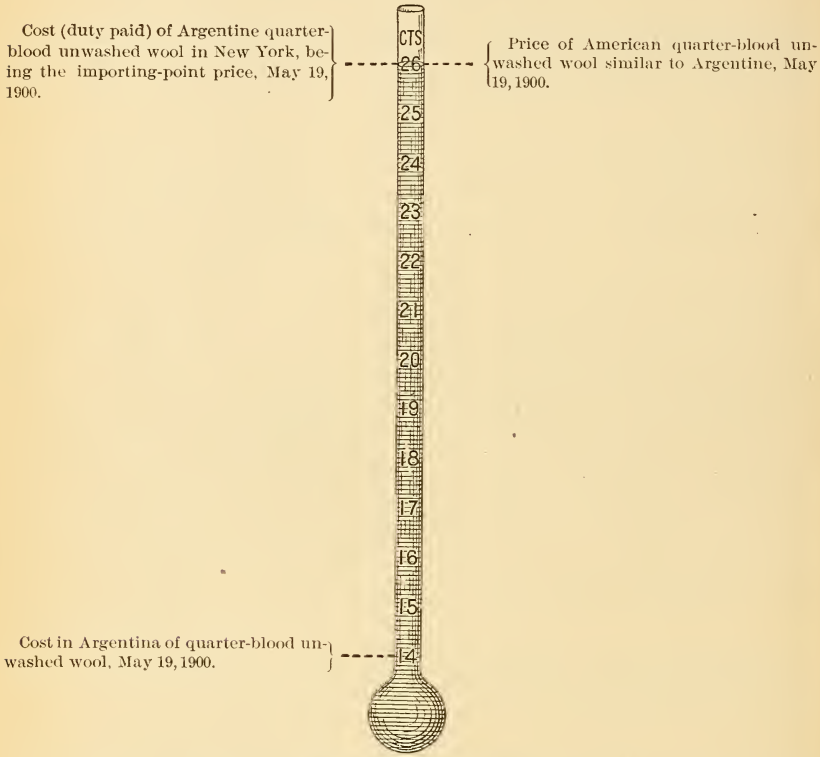

FIG. 3.—Diagram showing effect of Dingley tariff act in raising the price of American wool, May 19, 1900—its full lifting power realized.

Since January 1 there has been a 30 per cent decline in the markets of the world on Argentine quarter-blood unwashed, which realized the full price-lifting effect of the tariff, i. e., the American price is as much above the foreign price as the Argentine price, plus 11 cents duty and 1 cent freight; in other words, it is 12 cents below the American price, which is 26 cents, as shown in figure 3.

Thus it has been between two and three years since the tariff went into force before its full effect could be realized on quarter-blood unwashed wool in comparison with Shropshire or similar American wool.

The data presented in this report show that this country produces wool suited to almost every variety of honest fabric that is made; that, excepting the lower grade of wools, domestic manufacture has at some dates had a nearly full supply; that in a very brief period a full supply of clothing and worsted wools can be reasonably expected. It has also been shown that our manufacturers can not be successful without a comparatively full supply of home-grown wools.

In conclusion, it has been fully demonstrated, and needed not the bitter experience of 1894–1897 for emphasis, that the prosperity of manufacturers is inseparably bound up with that of the woolgrowers. A full supply of wool products for domestic consumption can easily be produced for a constantly increasing population, and ultimately some for exportation is possible, but never with foreign wool. In some lines even now foreign shipments of manufactures of wool are made and they are increasing. During the fiscal year ended June 30, 1900, the value of exports of wool manufactures was $1,253,602 against $1,047,407 in the preceding fiscal year, largely in wearing apparel. This will increase if the prosperity of both industries is maintained.

O