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ADDRESS

BEFORE THE

National Association of Wool Manufacturers,

AT

THE FIRST ANNUAL MEETING IN PHILADELPHIA,

SEPT. 6, 1865.

By JOHN L. HAYES,

SECRETARY.

WITH SECRETARY'S REPORT AND TABLES.

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A D D R E S S .

THE occasion of the first annual meeting of the "National Association of Wool Manufacturers" would seem to demand from your Secretary something more than a meagre statement of transactions of the Association necessarily limited by the brief period since its organization, and has suggested, as the most suitable subject for an address which shall have a wider scope than a mere official report, the consideration of the national importance of the wool manufacture and the means of developing it.

The principal articles of the wealth of a nation are the yearly products of those industries which supply food and clothing, and the instruments by which they are produced and diffused. The distribution of these products constitutes the commerce of the world. Of the four branches of textile industry which clothe mankind, the one to which we are devoted is the most ancient, the most important to the inhabitants of the temperate regions, and, therefore, to the most civilized portions of mankind, and at present the second in commercial importance. We cannot fail to benefit ourselves by impressing upon our own minds even familiar facts and considerations which tend to exalt our industry, and stimulate us to advance and ennoble it; and it is the highest duty to our cause to enlighten the public mind as to the influence which this industry has had and may have in its future possible development, in promoting the wealth of the country and

comfort of the people, in identifying the interests of distant States, in sustaining the public credit, and securing a real national independence.

Among the well-ordered adaptations of nature for the well-being of the human race, one of the most beneficent is that which has supplied the temperate regions with an animal fitted to produce at the same time food and the most essential clothing of its inhabitants, and one whose culture is a most valuable accessory to general agriculture. So early did man avail himself of this gift, that we find sheep mentioned in the most ancient writings, in the first chapters of Genesis, in the Persian Zend Avesta, in the Indian Vedas, and in the Chinese Chou-king, and represented on the monuments of Egypt. According to Geoffroy Saint-Hilaire, the highest authority on the origin of species, the specific source of our domestic sheep is unknown. All that is certain is, that the present races originated in the East; the primitive names, *Bock* and *Bouc*, found in the most ancient Asiatic languages, being preserved in our term *Buck*.*

This species is endowed with a plasticity, so to speak, so remarkable, that it is more susceptible of modification than any other animal, except the dog,† so that “the breeder,” as Lord Somerville says, “may chalk out upon a wall a form perfect in itself, and then give it existence.”‡ Hence peculiarities are developed in the coverings of different races produced by man, which make that distinctness and variety of fabric which characterize the wool manufacture; and thus we have the coarse Cordova and Donskoi wools for our carpets; the noble electoral wools of Saxony and Silesia for our broadcloths; the strong middle wools of the Southdown and our

* Bulletin de la Société Imperiale Zoologique d'Acclimatation, t. 6, p. 502.

† Cuvier. Animal Kingdom, translated by H. McMurtrie. New York, 1831. Vol. i. p. 199.

‡ Bischoff on Wool, Woollens, and Sheep. London, 1842. p. 380.

native sheep for blankets; the soft, long, and finer merino wools of France, Vermont, and Michigan, for thibets, delaines, and shawls; the longer and coarser combing wools of the Cotswold and Leicester races for worsteds in their thousand applications; the very long and bright-haired lustre wools of Lincolnshire for alpaca fabrics; and, lastly, the precious silky Mauchamp wool, the recent triumph of French agronomic skill, rivalling even the Cashmere, for shawls, and the Angora; for Utrecht velvets.*

The fibre of wool, rendered more perfect than any other by the more complete chemical elaborations and assimilations of the animal economy, has the most highly developed organic structure. While the specific gravity of cotton is 1.47, of linen 1.50, and of silk 1.30; the specific gravity of wool is but 1.26.† It is, therefore, of all fibrous substances the best non-conductor, and its tissues the lightest and warmest and most healthful. The perfection of the fibre is shown in its indestructibility and durability. Cotton and flax may be ultimately reduced to mere woody fibre. Wool is almost incapable of mechanical destruction. The existence of "shoddy," the term of reproach to the woollen manufacturers, is the strongest proof of the excellence and indestructibility of its original fibre. Unlike silk, the product of an inferior animal organization, which is straight and entirely structureless, the fibre of wool is crisped or spirally curled, and is made up of cells of different kinds,—the interior forming the pith, and the exterior consisting of serrated rings imbricated over each other, having under the microscope the appearance of a series of thimbles with uneven edges inserted into each other; these serratures, as well as the spiral curls, being more or less distinct according to the fineness of the fibre.‡ We have here the

* See note on p. 55.

† Ure's *Philosophy of Manufactures*, p. 81, *et seq.*

‡ Youatt on Sheep, p. 94. Argument by George Harding in Supreme Court of United States. *Burr vs. Duryee et als.* "Hat Body Case," p. 113. Report of Flax and Hemp Commission, p. 68.

cause of the invaluable quality of felting, to which we owe our hats and broadcloths. Flax and cotton composed of mere woody fibre are opaque and dull in aspect; woolly fibre, when freed from the peculiar soapy oil or yolk which nourishes and protects its growth, has a natural polish which protects it from soiling, and in some varieties gives a positively lustrous beauty to its fabrics; the vegetable fibres receive with difficulty permanent dyes, and sometimes curiously exhibit their refractory nature in contrast with wool. The fibres, accidentally detached from cotton or hempen strings, with which fleeces are sometimes bound, when incorporated with the woollen fabric, refuse the dye, and often ruin whole products of the loom. On the other hand, all animal fibres have ready affinities with the chemical agents of the dyer. Wool especially, from its beautiful whiteness, itself the result of the amelioration of the original black sheep, is unrivalled in its facility for receiving, and power of permanently retaining, color, as in the famous woollen Gobelin tapestries,* where over a thousand distinctly defined tones and hues are given to fabrics destined to be indestructible as works of art.

Such are the qualities of fibre which have led every industrious nation to the culture of flocks as the first necessity of its people; which have caused, in every manufacturing nation, the demand to constantly exceed the supply; which have transplanted colonies from the Cape of Good Hope to Australia, and have carried the shepherd-emigrant to the steppes of Russia and the plains of La Plata; † and which have brought the present production to such enormous figures as are given by recent German estimates, ‡ giving to Great Britain an annual production of 260,000,000 pounds of wool; to Germany,

* Chevreuil on Colors. Translated from the French by John Spanton. London, 1858. p. 113.

† See Southey on Colonial Wools, *passim*.

‡ United-States Economist of June 10, 1865, which quotes from a writer in the Year-book of German Cattle Breeders.

200,000,000; France, 123,000,000; Spain, Italy, and Portugal, 119,000,000; European Russia, 125,000,000; making, in all Europe, 827,000,000; in Australia, South America, and South Africa, 157,000,000; the United States, 95,000,000; the British North-American Provinces, 12,000,000; Asia, at a very general estimate, 470,000,000; Northern Africa, 49,000,000: the aggregate production of wool in the whole globe amounting, by these estimates, to 1,610,000,000, or a pound and a quarter to each inhabitant, reckoned at twelve hundred and eighty-five million people.*

In tracing the history of the woollen manufacture, we find that it had already attained considerable perfection with the Romans, who employed this material in almost all their garments,† and with whom sheep were so abundant that a single patrician bequeathed, by will, two hundred thousand to Augustus.‡ The prices of the finer fabrics, however, were enormous.

* Bulletin of American Geographical Society, 1865, p. 153. Hon. Fred. A. Conkling, in a paper on the Production and Consumption of Cotton, furnishes a table, prepared by Prof. A. J. Schem, in which the populations of all the countries on the globe using cotton exclusively are set down at 695,596,483. The populations which use cotton only partially (and, consequently, use more or less wool) are set down at 519,656,253.

† "All the garments of both sexes were for many centuries made of wool exclusively; and, although silk and flax were introduced under the empire, they were never adopted by any large portion of the community."—Ramsay's *Elementary Manual of Roman Antiquities*. London, 1860. p. 238.

‡ *Statistique des Peuples de Antiquité*, par M. Moreau de Jonnes, t. ii. p. 464. The invaluable race of merino sheep is probably an inheritance of Roman civilization. The race most prized by the Romans was called the Tarrentine, from Tarrentum, a town settled by a Greek colony. They were also called Greek sheep. Their wool was of exceeding fineness; and they were protected by coverings of skins, and were also carefully housed, and often combed, and bathed with oil and wine. Hence they were very delicate. Columella, the most eminent agricultural writer of the Romans, who lived in the century before the Christian era, relates (*De Re Rustica*, lib. vii. chap. 2) that his paternal uncle, M. Columella, "a man of keen genius and an illustrious agriculturalist," transported from Cadiz to his farm-lands, which were in Bœtica, comprehending a part of the present province of Estramadura, some wild rams of admirable whiteness brought from Africa, and crossed them with the covered or Tarrentine ewes. Their offspring, which had the paternal whiteness, being put to Tarrentine ewes, produced rams with a finer fleece. The progeny of these again retained the softness of the dam and the whiteness of the sire and grandsire (*maternam mollietiam, paternum et avitum colorem*). Other agriculturalists undoubtedly imitated Columella, and a stronger constitution was thus imparted

The Roman purple worn by the senators was made from wools of Italy, which, according to Pliny, were worth four dollars per pound of twelve ounces,* and which, of the same weight, were worth one hundred and sixty dollars, when colored with the Tyrian dye.† It is not strange, then, that Horace should boast of a gift to his mistress of fleeces twice dyed with the Tyrian murex.‡ The world has regretted, for many centuries, the loss of this imperial dye; but within the last ten years, or no later than 1856, chemistry has produced from aniline, a product of worthless coal tar, a purple tint, resisting light, alkalis, and acids,§ and rivalling, upon the light worsted zephyrs of our simple maidens, the hue of the patrician mantle.

The woollen industry disappeared with the incursions of the barbarians and the fall of the Roman Empire, or languished

to the fine-fleeced but delicate sheep of ancient Italy. That this improvement was commenced in ancient Spain is further established by the testimony of Strabo, who says, in his account of the geography of that country (lib. iii. chap. 2), that in his time, that of the Emperor Tiberius, wool of great fineness and beauty was exported from Truditania, a part of Bœtica; and that rams were sold in that province for improving the breed for a talent each, or about one thousand dollars. When the Roman Empire was overrun by the barbarians, the Tarrentine stock of Italy, being very tender, became extinct; but the improved stock of Bœtica, living in the mountains, survived and perpetuated by the Moors, who, skilled in the textile arts, could appreciate its value, still exists as the merinos of Spain. If this view is correct, the merino race is the most important surviving relic of the material civilization of the Greeks and Romans. I shall be excused for these remarks, which may be of little practical benefit, by those who appreciate the sentiment of Niebuhr, the great historian of Rome, "that he who calls what has vanished back into being, enjoys a bliss like that of creating."

* Pliny's Natural History (lib. viii. chap. 73): *Centennos nummos*, or a hundred sesterces, a sesterce of the value of four cents.—Allen's Classical Hand-book, p. 110.

† Pliny's Natural History (lib. ix. chap. 63): *Denariis mille*, or a thousand denarii, a *denarius* of the value of sixteen cents.—Allen's Classical Hand-book, p. 110.

‡ *Muricibus Tyriis iteratæ vellera lanæ*, epod, 12–21.

§ "It is no exaggeration to say that the introduction of this one color (the aniline purple) has been a greater boon to the dyer than all the other inventions of the last ten years put together. Not only is the hue yielded by the coal tar (purple) of a different and better kind than any before known: it is likewise so fast, that it may, with indigo blue and a few other colors, be considered as permanent."—International Exhibition of 1862. Reports of Juries, Class 21.

only in domestic manufacture, or in the abbeys where the monks of the dark ages still pursued the arts necessary for their own comfort. This decline in the arts continued until the time of the Crusades, which effected a complete revolution in industry and commerce. The Crusaders* found in Asia the scattered fragments of the sciences and arts, and among others, the processes for making those rich fabrics which had formed the most luxurious vestments and furniture of the Romans.† The States of Italy were the first which availed themselves of these discoveries, making the mechanical arts auxiliary to the commerce which they had revived on the ancient course of navigation to the East. In the twelfth and thirteenth centuries, Florence, Venice, Pisa, and Genoa, had arrived at great perfection in manufactures. In those States we have the first brilliant illustration of the influence of the industrial arts upon the prosperity of the State. Florence owed her splendor to the woollen manufacture with which she supplied the world.‡ Machiavelli alludes to the sound of the moving shuttle which resounded in all her streets, and he mournfully contrasts the former cheerful hum of a busy industry with the stillness prevailing, after the loss of this manufacture, through the plague and change of traffic.§ It is no little boast for our industry that it was the source of the commerce and wealth whose magnificent fruits still survive in the wonders of Florentine art.

* Mill's History of the Crusades, vol. ii. p. 346.

† Metellus Scipio, in the accusation which he brought against Cato, stated that even in his time Babylonian (Asiatic) coverings for couches were selling for 800,000 sesterces, or \$128,000. In the time of Nero, they had risen to four million sesterces, \$640,000. — Pliny's Natural History, lib. viii. chap. 73.

Some of the most ancient Asiatic forms survive unchanged in modern woollen fabrics, such as the palm patterns of shawls. Specimens of Cashmere shawls, of the kind called *Espouliné* in France, collected, in the year 835, by Theodolphus, Bishop of Orleans, are preserved in the archives of the Bishopric du Puy de Velay. — Pastoral Life and Manufactures of the Ancients. New York, 1845. p. 94.

‡ Millar's Historical Views of the English Government, vol. ii. p. 370. James's History of the Worsted Manufacture, p. 20.

§ Quarterly Review, January, 1821, p. 296.

The Netherlands, already advanced, as early as the tenth century, in the manufacture of linen, which their soil produced of admirable quality, readily appropriated from the Italians the arts of manufacturing wool. Favored by their internal water-carriage, which gave them supplies of material, and by the middle station of their ports in the foreign navigation of the maritime nations, they had outlets for their commodities in all parts of Europe. They supplied themselves with wool from England, to the vast amount of forty-five million pounds in some years, and were aided, at one period, in obtaining wool from Spain by the union of the sovereignties of Spain and the Netherlands under Charles V. Flanders continued for a long period to supply Europe with all the woollen cloths and stuffs demanded by luxury or taste, and was the veritable centre from which the arts of fabricating woollens spread in time to all the other industrious nations of Christendom.* Flemish wealth, derived mainly from this industry, was the envy of all Europe. Letters and the fine arts were encouraged and flourished, and the works of the Flemish, no less than the Florentine painters, survive to illustrate the great truth that the true source of the highest culture of a nation, and of its only immortal monuments, is its industrial prosperity.

This sketch of the industry of Rome, Italy, and Flanders, is but introductory to that of the great nation from which we derive our language, institutions, and arts, and which, commanding a foreign trade of not less than twenty-one hundred millions of dollars, and exporting annually her manufactures to the amount of six hundred and fifty millions of dollars,† must be first looked to for instruction and example by all nations who seek their own industrial development. We find that our own industry has played no mean part in securing England's commercial prosperity.

* Hume's History of England, vol. ii. p. 398. Motley's Rise and Fall of the Dutch Republic, p. 36. Millar, *supr. cit.*

† The Tariff Question, by Erastus B. Bigelow, p. 3.

The climate of England is wonderfully fitted for raising certain breeds of sheep, and it is probable that our British ancestors were employed in the domestic production of woollen goods from the earliest period that they had emerged into civilization. Names derived from textile occupations must have been early incorporated among English surnames. The name rendered so familiar by its quaint calligraphy upon our Treasury notes, and that of New-England's great orator, are inherited from the ancient *spinners* and *websters*, or weavers of England. Nevertheless, the English produced only common stuffs, and exported, in the eleventh century, more than half their wools to the Netherlands. In the early part of the fourteenth century, the English are spoken of as "only shepherds and wool merchants," and as "depending on the Netherlands, who were the only wool-weavers in Europe.*" In the latter part of the fourteenth century, the manufacture of wool received its first impulse in England, and became firmly transplanted upon her soil by the protecting influence of Edward III., who thus added to his title of hero of Cressy, the prouder name of father of English commerce. The eyes of this enlightened sovereign were opened to one of those simple facts which England now expects to be invisible to all other nations. He saw, in the quaint words of the author of the "Golden Fleece," — "that the subjects of the Duke of Burgundy, receiving the English wool at sixpence a pound, returned it, through the manufacture of that industrious people, in cloths at ten shillings, to the great enriching of that State, both in revenue to their sovereign and employment to their subjects. He at once proposed how to enrich his people, and to people his new conquered dominions; and both these he designed to effect by means of his English commodity, wool." † The first great step

* The Pensionary De Witt, quoted by Youatt. *Sheep, their Breeds, &c.*, by William Youatt, p. 205.

† Smith's *Memoirs of Wool*, vol. i. p. 139. Youatt, p. 205.

of Edward was to attract to England a large number of Flemish families initiated in the arts of fabricating woollen goods; and it is said that "he not only royally performed his promises to them, but he likewise invested them with privileges and immunities beyond those of his native subjects." Seventy families were brought over in the first year. England became speedily enriched by "this treasury of foreigners," as Fuller styles them in his Church History. "Happy," says he,* "the yeoman's house into which one of these Dutchmen did enter, bringing industry and wealth along with him. Such who came in as strangers within doors, soon after went out bridegrooms and returned sons-in-laws, having married the daughters of their landlords who first entertained them; yea, those yeomen in whose houses they harbored, soon proceeded gentlemen, gaining them estates to themselves, arms and worship to their estates." During his great military preparations, Edward summoned a parliament, whose principal business it was to make laws for the encouragement of the woollen manufacture in England.† The exportation of rams was prohibited, and it was decreed that no foreign cloth manufactures should be received, and that no one even should wear cloth made beyond the sea. Through these measures the manufacture became so well established that the first export of English cloth dates from this reign. A tax upon importations was substituted for the prohibition, and in the twenty-eighth year of this reign the exports of cloths were triple the imports.‡

* Fuller's Church History. London, 1842. Vol. i. p. 419.

† Bischoff on Wool, &c., vol. i. p. 55.

‡ In the sixth and seventh years of Elizabeth, the woollen manufacture had so much increased that the export of woollen goods to Antwerp alone, according to Camden, amounted to 750,000*l.*; and the whole value of the exports in 1564 was 1,200,000*l.* (Smith, vol. i. p. 72), all fabricated of English wool. The vigor of the woollen trade at this period is attributed by Smith to the abundance of gold and silver, in consequence of the recent discovery of South America. Mr. Bigelow has shown that the chief causes of the large increase of British exports since 1853, usually attributed to the free-trade acts, are found outside of the tariff laws, and principally in the greatly increased

For five centuries the system of protection to the wool-manufacturers, inaugurated by Edward III., was continued by the succeeding sovereigns and parliaments of England. The abstract of laws relating to the growers of wool and the manufacture thereof, made in 1772, enumerates three hundred and eleven laws,* all tending to one object,—the encouragement of the manufacture. With this object the exportation of wool, after being several times suspended, was definitely prohibited in 1660, and so continued until the year 1825.† The exportation of fuller's earth was forbidden. The exportation of sheep was prohibited under the severest penalties;‡ and even sheep-shearing could not be carried on within five miles of the sea without the presence of a revenue officer.§ To secure the manufacturers against a monopoly of wool, the number of sheep to be kept by one person was limited to two thousand.|| One statute required that all black cloth and mourning stuff worn at funerals should be made of British wool alone; another, which was carried into full effect for one hundred and thirty years, or nearly to the present century, ordained that every person should be buried in a shroud composed of woollen cloth alone.¶ The export of woollen cloth from England to any foreign ports was permitted without a duty.** The export of woollen goods from Ireland, or any of the English Plantations in America, was prohibited.†† Upon the application of the London and Canterbury woollen weavers, the wearing of

supply of gold, the annual produce of which has tripled since 1848. The correspondence between the periods of Elizabeth and Victoria is quite remarkable.—The Tariff Question, p. 17.

* Bischoff, vol. i. p. 6. See Bigelow's Tariff Question, p. 17.

† Porter's Progress of the Nation. London, 1851. p. 168.

‡ Youatt, p. 216.

§ Bischoff, vol. i. p. 244.

|| Youatt, p. 216.

¶ Youatt, p. 224.

** First William and Mary. Bischoff, vol. i. p. 85.

†† Tenth and Eleventh William III., chap. 10. Bischoff, vol. i. p. 89.

Indian calicoes was forbidden, and afterwards,* when it was apprehended that the rising cotton manufacture might interfere with the great national industry of woollens, the use of British printed calicoes was restricted to those only of a blue color.† Even the great commercial companies of England lent their protecting influence. The powerful East-India Company, possessing the power to open an almost boundless market for woollen goods, made it an invariable rule that in the cloth which it exported, both the material and manufacture should be British. This rule was inflexible till 1828.‡ The arts of diplomacy were not wanting on the part of England in aid of her favorite interest. At the close of the seventeenth century, Portugal, by interdicting the entry of foreign fabrics, had succeeded in supplying her own population and Brazil with woollen goods of her own manufacture.§ In 1703, England, having in view principally the interests of the woollen manufacture, made the famous Treaty of Methuen, by which, in consideration of certain favors to Portuguese wines, she secured the free admission to Portugal of her woollen goods.|| The English historian might well say, “this treaty hath proved very advantageous to England, in the woollen trade particularly.”¶ But this treaty was a mortal blow to Portugal. Her manufacturing industry disappeared. While all Europe progresses, Portugal remains stationary. The few of her products shown at the great Exhibition in 1862, were noticed only for the melancholy representation which they gave of her industry.

The measures of protection which were most significant of

* Bischoff, vol. i. p. 90.

† Bischoff, vol. i. p. 97.

‡ Report of Committee of House of Lords, 1828. Examination of Mr. Ireland.

§ Smith's Memoirs, vol. i. p. 394. “I appeal to every person,” says Smith, “that lived in Portugal from the year 1683 to 1703, during the time of the prohibition, whether Portugal did not make cloth enough for herself and Brazil.”

|| Smith, vol. i. p. 394.

¶ See Smollett's History of England, vol. i. p. 568.

the devotion of England to her manufacturing interests, were the prohibition, for nearly a century and a half, of the exportation of British wool,* and the admission of foreign wool at a merely nominal, or very moderate duty, in spite of the violent reclamations of the landed aristocracy. In a struggle of over a hundred years with the manufacturers, the landed proprietors had but one brief success, where they secured, for four years only—viz., from 1819 to 1824—a tax upon foreign wool of six pence per pound.† It had become a deep-rooted sentiment of British statesmen of every party, that their highest duty to the State was the encouragement of their own manufactures, and, first of all, those of wool, for so many years their chief export, and peculiarly national staple, —“eminently the foundation,” as it was called, “of English riches,”‡ and “the flower and strength, the revenue and blood of England.”§ The “wool sack,” upon which the Lord Chancellor of England has sat for ages as the President of the House of Lords, is a symbolical tradition of the importance which the nation has always attached to the woollen industry. || It was declared by statute that “wool and woollen manufactures, cloth, serge, baize, kerseys, and other stuffs, made or mixed with wool, are the greatest and

* “The one sole reason why England obtained the mastery of the ocean, and command of the world’s business, is that she exported no raw material; and the reason why the Southern States went into ruin by the route of rebellion is because they exported nothing else.”—The Western States; their Pursuits and Policy, by Dr. William Elder, p. 20.

† In 1802, a duty of 5s. 3d. sterling per cwt. was laid upon foreign wool. This was gradually raised till it reached 6s. 8d. per cwt. In 1819, the ministers wanted to raise 1,400*l.* by a tax on malt; and the landed aristocracy refused their assent unless a tax was laid on wool, and the tax of sixpence a pound was imposed, the bill having been hurried through Parliament before the manufacturers could be heard. Bischoff, vol. i. p. 452.

‡ Sir Josiah Childs. Smith’s Memoirs, vol. i. p. 157.

§ Golden Fleece. 1656. Smith’s Memoirs, vol. i. p. 139.

|| “The antiquitie of wool within this kingdom hath been beyond the memorie of man, so highly respected for those many Benefits therein that a customeable use has always been observed to make it the seat of our wise learned judges in the sight of our noble Peers (in the Parliament House) to imprint the memorie of this worthy Commodity within the minds of those firm supporters and chief rulers of the land.”—John May, 1613. Smith’s Memoirs, vol. i. p. 91.

most profitable commodities of the kingdom.”* One of the greatest English lawyers, Mr. Lawes, afterwards Lord Ellenborough, speaking of this interest before the House of Lords, said,† “to state to your Lordships the extent of the manufacture, would be to state that it is at least a third in point of export, that it is a fourth of the national income, as derived from all its various sources. Its magnitude is so important, its connections with the vital interests of the country so close and intimate, that it has been the principal object of attention in the framing of the statutes upon your rolls from the earliest period of any ascertained act of legislation of this country.” The encouragement of this industry had received the sanction of the greatest of English names, even that of the founder of experimental philosophy. Lord Bacon, addressing the future ministers of his sovereign, patriotically exclaims,‡ “Let us advance the native commodities of our own kingdom, and *employ our own countrymen before strangers*. Let us turn the wools of the land into cloths and stuffs of our own growth. It would set many thousands to work; and thereby one of the materials would, by industry, be multiplied to five, ten, and many times to twenty-five times more in value, being wrought.” It was by such lessons and traditions as these that British legislators had become imbued with devotion to the woollen trade, as with loyalty to the throne. In the whole history of the world there is no such example of persistent national care, continued alike through all administrations, in peace and in war, under commonwealth and monarchy; and thus “fondled, favored, and cherished,” to use the words of Mr. Huskisson,§ the woollen manufacture in England has advanced, with constantly increasing prosperity, only, in mod-

* Tenth and Eleventh William III., chap. 10.

† Bischoff, vol. i. p. 323.

‡ Bischoff, vol. i. p. 321. From Mr. Lawes' speech. I do not find the passage in Lord Bacon's Works.

§ Bischoff, vol. i. p. 5.

ern times, overshadowed by its own offspring, the cotton manufacture, and still surpasses that of all other nations in the quantity and value of its fabrics.

“The rapid growth and prodigious magnitude of the cotton manufacture of Great Britain,” for a century has not elapsed since its infancy, have been called “the most remarkable phenomena in the history of industry.”* But it should be remembered that this industry was the natural offshoot from the woollen manufacture. Through the protection of four centuries afforded to the woollen trade mainly, and in a less degree, only because they were less important, to the linen and silk trades, England had become a nation of spinners and weavers, or of artisans subsidiary to them. The textile crafts had become, by hereditary transmission, as fixed as in the castes of India. The skill and taste for textile industry was already developed for application to a kindred fibre. Some of the first and most important inventions which have produced the wonderful results of the cotton manufacture, sprang directly from that of woollens. To instance one only; John Kay, residing in Colchester, where the woollen manufacture was then carried on, devised the fly-shuttle, by which double the quantity of cloth, and of a better quality, could be produced by each workman, and with less labor. The Yorkshire clothiers were the first to adopt his improvements, which form a part of every power-loom of the millions of silk, cotton, linen, and woollen-loom in all parts of the world.† The commerce and capital which supplied the raw material from abroad for the rising manufacture had grown up from the woollen trade principally; but it had exerted a more important influence in making capitalists familiar with the direct and incidental profits of manufacturing industry, and in assuring them that the favor of government, which had been extended for centuries to one,

* McCulloch's Commercial Dictionary, article Cotton.

† Brief Biographies of Inventors of Machines, by Bennett Woodcroft, p. 3.

would never be wanting for a kindred interest. Hence capital flowed by a natural transition into the new channel, and invention found a fresh field for its creative skill under the patent system which England had inaugurated as a part of her protective policy. The subject which I have proposed for this address,—the national influence of our own peculiar manufacture,—finds its most brilliant example in the history of English industry, which no less illustrates the more important truth, that any industry, thoroughly incorporated in the national existence, will have new offshoots and unexpected developments, and may enrich a nation even more than by its own fruits, in opening fresh sources of productive power.

Towards the close of the last century the woollen manufacture received in its turn the inventions first applied to cotton-spinning. They were, first of all, the great discovery of Watt, which furnished a motive-power everywhere applicable; the roller-spinning of Paul, adopted by Arkwright, which furnished an automatic mechanism, instead of muscular force, which drew and twisted the fibre in a continuous thread; the jenny of Hargreaves, which drew at once from ten to sixty or seventy threads; the mule of Crompton, which increased the power of the spinner a hundred fold; and the power-loom of Cartwright, which quadrupled the power of the weaver.* All these inventions, and what was equally important, the factory system of Arkwright, were applied, upon a large scale, to the woollen manufacture, first by Mr. Gott, who added the gig-mill for raising the wool on the cloth, and shearing-frames worked also by power. These improvements gave a vast extension to the manufacture. The use of woollen tissues increased with the low price of production, which continued to advance with accelerated progress. At the end of the eighteenth century Great Britain already consumed in her fabrics ninety-four millions of pounds of her own wool, and eight millions imported.

* Woodcroft, p. 3, *et seq.*

In 1828, the number of sheep in Great Britain had increased one-fifth, and the average weight of the fleeces in equal proportion.* Mr. Bernoville, in his admirable work on the "Industry of Combed Wools," published in the report made to the French government on the labors of the French Commission, at the Universal Exposition of 1851, estimates the number of pounds of wool in Great Britain in 1851 at two hundred and eight million pounds, so that the production doubled in fifty years. This increase of production was caused partly by the increase of the number of sheep, but principally by the increase in the weight of fleeces. Within that period a genuine transformation has taken place in the English races. To attain the utmost possible weight of mutton, sheep are fed to their utmost capacity, and the increase of flesh is accompanied by a corresponding increase of wool, which, losing in fineness, has gained in strength, length, and brilliancy. While the domestic production has made such extraordinary progress, the importation has increased with equal rapidity. The eight million pounds in 1801 have risen successively from sixteen million pounds in 1821 to fifty-six millions in 1841, to eighty-three millions in 1851, having increased tenfold in fifty years. In 1859, the importation had reached one hundred and thirty-three millions.†

There are no official statements of the amount or value of the whole production of British manufactures, or of the population employed in them; we must, therefore, rely upon the very general estimates of the best authorities, which, however, differ so widely that we can merely approximate the totals of production in the woollen manufacture. Mr. Bernoville, in the work above quoted, estimating the mean value of the domestic production of wool in Great Britain at one franc twenty cen-

* Porter's Progress of the Nation. London, 1851. p. 168. Industrie des Laines peignées, par M. Bernoville, p. 11. Travaux de la Commission Française, vol. iv.

† Bigelow's Tariff Question, Appendix, p. 198.

times the pound, and the imported wool at one franc seventy centimes, places the whole value of wool employed by British industry at 370,000,000 francs, or \$74,000,000. He estimates that the value of this wool is increased once and a half times by the manufacture, and that the annual production of woollen fabrics in 1851 was 925,000,000 francs, or \$185,000,000, and the domestic consumption 679,000,000 francs, or \$135,000,000. Mr. Redgrave, one of her Majesty's Inspectors of Factories, estimates the value of the British woollen and worsted manufactures in 1856 at \$183,492,725, and the domestic consumption in Great Britain, \$111,366,160, for each person of its population at \$4.25.* Mr. Simmonds, the editor of Ure's "History of the Cotton Manufacture," estimates the total production of woollen goods in 1860 at \$160,000,000, and the domestic consumption at one-half that amount. This estimate appears too small, and that of Mr. Redgrave seems most reliable. Judging from the progress of exports, sixty millions of dollars in 1856, and eighty millions in 1860, the value of the woollen manufactures in the United Kingdom cannot be short of \$200,000,000. The number of persons employed in the woollen industry, in all its ramifications, was estimated in 1841 at 245,000 persons. This number must have vastly increased in twenty years. Mr. Bernoville estimates them at 400,000 in 1851. Statistics have been procured, from time to time, by the inspectors of factories in reference to establishments under their supervision. They give the number employed in the wool manufacture in 1856, at 79,091; and in the worsted manufacture at 87,794; a total of 166,885. The number employed in 1835 is stated at only 71,274. The number had more than doubled in twenty years, although the progressive employment of mechanical means has had a tendency to diminish the number of hands. Precise data are given only in

* Bigelow's Tariff Question. Appendix, p. 199.

relation to establishments subject to the provisions of the Factory Acts, which make the whole number employed in all the textile manufactures only 682,497. Mr. Redgrave estimates that there are 887,369 persons employed in textile fabrics, not subject to the provisions of the Factory Acts, which two classes have dependent upon them at least 3,000,000 unemployed persons, representing a total of 4,568,082 persons. Those employed in the woollen and worsted manufactures constitute very nearly a quarter of the whole number enumerated under the provisions of the Factory Acts, which would give to the woollen manufactures a population, depending upon them, of over one million. This immense progress in the manufacture of wool has been due principally to the advance in the manufacture of combing wools or worsted, which now employ directly a larger number than fabrics of carded wool. This progress is best illustrated by the rapid increase of population around the manufacturing centres of the worsted trade. In the West Riding, where there was only a population of 593,000 inhabitants in 1801, it had risen, in 1841, to 1,154,000; it had increased at Halifax from 63,000 to 130,000; at Huddersfield from 14,000 to 38,000; at Leeds from 53,000 to 152,000. It is still more remarkable at Bradford, the great centre of the worsted trade. At the commencement of this century, when this town had a population of only 13,000 souls, all the wool was spun and woven in private houses of the workmen. In 1821, Bradford had doubled the number of its inhabitants, which were 26,000. By the introduction of power-looms in 1834, and afterwards the use of cotton warps in woollen fabrics, and the employment of alpaca and Angora goat's wool, the manufacturing industry was so developed that it sustained in 1851 a population of 103,000, an increase of ninety thousand in half a century.* Such an increase in this country would

* Bernoville's *Industrie des Laines peignées*, p. 22. James's *History of Worsted Manufacture*, p. 611, *et. seq.*

appear by no means remarkable; but in England, where the question has been for centuries, how to employ the present population of each year, the increase is truly marvellous.

One of the most interesting questions in the study of the philosophy of manufactures is their influence upon the comfort of mankind in diminishing the cost of production. The amounts and values of British exports are instructive upon this question.

One of the largest exportations of woollen tissues from England occurred in the year 1815, after relations had been established with this country, which had been interrupted by the war. It amounted to £9,381,000 in value, and 1,482,000 pieces, and twelve millions of yards. In 1851, it amounted to 2,637,000 pieces, and sixty-nine million yards. The number of pieces, comprising cloths, damasks, and stuffs in general, had almost doubled; and the number of yards, consisting principally of articles of wool and cotton, had more than quintupled. Yet the total value in 1851 was only £9,856,000, exceeding the exportation of 1815 about half a million. The increase of cheapness consisted principally in fabrics of wool combined with cotton.*

This progress in the cheapness of production has continued since 1851. It is estimated in the report of the International Exhibition of 1862,† from well authenticated data, that although there was a clear and established advance of twenty-five to twenty-eight per cent in the cost of wool between the prices of 1851 and 1862, the manufacturers had cheapened the prices of goods between the two periods from seven and a half to ten per cent, the quality and weight being the same. It is, perhaps, unnecessary to say that this increased cheapness of production is no peculiarity of English manufactures. The facts here mentioned illustrate a result which is sure to follow

* Bernoville, p. 18.

† International Exhibition of 1862. Report of Juries, Class 21.

from any well established manufacturing industry. An increased cheapness of production in England has been effected by two other causes, one of which certainly will be regarded by consumers with less favor. The first is, the use of cotton warps, which are used as a vehicle to extend the surface of wool to such a degree that millions of pounds of cotton are, as it were, plated with this material. Vast establishments in Lancashire are employed solely in making cotton warps, to be woven with wool into what are called union fabrics.* The second is, the combination of shoddy with wool. Twenty-five years ago, woollen rags were worth about £4 per ton, and were used only for manure. They are now worth, in England, £40 per ton, to be converted again into cloth. It is estimated that, in the neighborhood of Leeds, 7,000,000 to 8,000,000 yards of cloth, of the value of \$15,000,000, are annually manufactured from this material; and, that if the supply of shoddy were stopped, it would close one-third of the woollen mills in the United Kingdom, and bring distress upon the West Riding, in Yorkshire, as great as that lately suffered in Lancashire from the want of cotton. It is disclosed in the report on the London Exhibition of 1862, that sixty-five million pounds of shoddy are annually consumed in England, a greater quantity than the whole wool product in the United States, estimated at 60,264,913 pounds by the census of 1860! † It is one of the advantages of depending upon foreign importation for our goods, that we are in blissful ignorance of their

* Mr. Anderson, a gentleman of much experience in English wool, stated before an agricultural club in England, that a single hogget fleece weighing twenty pounds, with a length of staple of about seventeen inches, "when used in manufacture to its utmost extent, as an admixture with cotton to fabricate the finest alpaca fabrics, would suffice to make upwards of twelve pieces, each forty-two yards in length, and very possibly might be extended to sixteen pieces, or six hundred and seventy-two yards."—Ohio Agricultural Report, 1863, p. 224.

I would, in this connection, invite attention to the most valuable and admirable papers and communications on sheep, husbandry and wool, furnished for these reports by Mr. Klippart, Secretary of the Ohio State Board of Agriculture.

† Eighth Census of the United States, vol. Agriculture, p. 86.

origin, and are not shocked with the consciousness of being clad in the cast-off habiliments of a Polish Jew or an Italian beggar.

I will close this sketch by some general remarks upon the character of the British industry in woollens. The whole energies of British manufacturers are directed to supply the masses with goods of the utmost cheapness. They do not seek so much excellence in the fabrics as marketable products. It was remarked by continental observers, at the two great expositions, that although fabrics of wonderful perfection were exhibited, they were not specimens of the ordinary work of their spindles and looms. The colors of their goods are excellent, much better than their designs; but, above all, they surpass in the art of dressing their fabrics so as to conceal their defects and make them attractive to purchasers. Their inventive capacity is shown, particularly in the application to new uses of the vast variety of raw materials which their extensive commerce supplies, but, more than all, in mechanical improvements for substituting the iron frame for the human hand. The breaking up of existing machinery and the replacing of new is the marked feature in the present era of British manufactures. The abundance and cheapness of capital, cheap food under the change in the corn laws, the free admission of raw materials, a well founded confidence in friendly legislation, and the establishment of mercantile houses in all parts of the world, sustain England in the war which she is waging unceasingly against the manufacturing industry of all other nations; and would render a strife against her utterly hopeless, without the barriers of countervailing duties which the instinct of self-preservation has placed around all other industrious nations.

The history of the woollen industry of France, the second in the amount of its productions, and the first in the general excellence of its products, exhibits the important part which this industry performs in developing the national prosperity,

and how it may flourish or decay under the favorable or adverse policies of governments.

This industry received its first impulse in France, near the close of the sixteenth century, from the celebrated edict of Nantes, which restored to that country the Protestants, who had become the most enlightened merchants and skilful workmen in Europe. They brought from Germany, and the Low Countries where they had wandered, the arts of spinning, weaving, and dyeing woollens, and founded the first establishments for making woollen cloths. The infant manufactures, slightly advanced by the agricultural improvements of Sully, who introduced some important breeds of sheep, and, languishing under the inauspicious administration of Richelieu, were finally planted in their present flourishing seats by Colbert, the illustrious minister of Louis XIV. Under his administration, the manufactures of new products created by the arts of Italy, Holland, and Germany, were attracted to the French soil by seductive offers made to foreign artisans. The woollen manufacture received his special attention. He obtained, from Louis XIV., the disposal of fifty thousand livres to be distributed in encouraging this industry. At this period, Holland alone had attained any perfection in the manufacture of fine cloths. Colbert attracted Gosse Van Robais from Holland, by enormous concessions, to fabricate — as his patent, signed by the King, declared — fine cloths, after the fashion of Spain and Holland. Of this act Thiers says, — “When Louis XIV. struck down the Spanish power, Colbert, at his side, executed conquests more important, by introducing the manufacture of cloths into France.”* Not content with naturalizing foreign skill, he imposed heavy duties upon foreign manufactures, and attempted the amelioration of flocks by imported breeds; and it is admitted that France owes to his wise acts and counsels

* Industrie des Laines foulées, par M. J. Randoing, p. 38.

the most important developments of her industry.* It is with great justice, then, that our own great political economist, whose works, translated into five languages, have been adopted as text-books in the universities of the continent of Europe, has selected the name of the French financier to designate that school of statesmanship which aims to develop, by protection and encouragement, the industrial wealth of a nation.†

The woollen interest became again depressed under Louis XV., in whose reign those arts alone flourished which administered to pleasure and luxury. The manufacture revived under Louis XVI., in whose reign merino sheep were naturalized in France, to be again struck down by a fatal error of administration. In 1786, a treaty was concluded between France and England, which admitted into the latter country French productions of luxury and taste, in exchange for an analogous concession for the admission to France of English goods of apparently small price, but which, suiting all classes, are the essential bases of the industry of a people. This treaty was the most fatal blow that the textile manufactures had ever received. England, favored as we have seen by continued protection, had already made great progress in the capacity of manufacturing at comparatively low prices. Before the lapse of the second year from this treaty, France was so flooded by English importations of cloth that she ceased to attempt even to supply her own consumption. Although the policy of 1786 was speedily retraced, and protection restored, the French manufactures had not recovered from the shock when the revolution completed the prostration of all industry.‡

* See the Works of Mr. H. C. Carey, *passim*.

† Smith, in his Memoirs, speaks thus instructively of this great statesman: "Monsieur Colbert, erecting manufactures of wool in all parts of France, and prohibiting all the English woollen manufactures to be imported among them, in a few years set the poor to work throughout that kingdom; . . . the first consequence of which was, that the King of France saw all his subjects clothed, however indifferently, with the manufactures of their own country, who, but a few years before, bought all their clothes from England. — Vol. ii. p. 290.

‡ Randoing, *Industrie des Laines fouteés*, p. 21. *Manual of Social Science*, by H. C. Carey, p. 209.

No sooner had the first Consul, Bonaparte, grasped, with a firm hand, the reins of State, than he resolved to develop upon the French soil all the elements of wealth concealed within its bosom. He wished to appropriate for France all sciences, arts, and industries. Made a member of the Institute, he uttered this noble sentiment:—"The true power of the French Republic should consist, above all, in its not allowing a single new idea to exist which it does not make its own."* To learn the necessities and resources of the nation, he called upon savans, painters, and artisans, to adorn with their productions the vast hall of the ancient Louvre. From this epoch a new career was opened to the industry of France, which found its most magnificent protector in the chief of the State. Napoleon said:—"Spain has twenty-five millions of merinos; I wish France to have a hundred millions."† To effect this, among other administrative aids, he established sixty additional sheepfolds to those of Rambouillet, where agriculturalists could obtain the use of Spanish rams without expense. By the continental blockade, he closed France and the greater part of Europe against English importations; and the manufacturers of France were pushed to their utmost to supply, not only their domestic, but European consumption. They had to replace, by imitating them, the English commodities to which the people had been so long accustomed. The old routines of manufacturing were abandoned, and the reign of the Emperor became, in all the industrial arts, one long series of discoveries and progress. Napoleon saw that the conquest of the industry of England was no less important than the destruction of its fleets and armies. He appealed to patriotism, as well as science and the arts, to aid him in his strife with the modern Carthage. Visiting the establishment for printing calicoes of the celebrated Oberhampf, Napoleon said to him, as he saw the perfection of

* Bulletin de la Société Imperiale Zoologique d'Acclimatation, 2d Serie, t. i. p. 665.

† Bernville, p. 133.

the fabrics, — *Nous faisons tous deux la guerre à l'Angleterre, mais je crois que la meilleure est encore la votre*— “We are both of us carrying on a war with England; but I think that yours, after all, is the best.” “These words,” says M. Randoing, “so flattering and so just, were repeated from one end of France to the other; they so inflamed the imaginations of the people, that the meanest artisan, believing himself called upon to be the auxiliary of the great man, had but one thought, the ruin of England.” *

The fabrications of cloths attained such high perfection during this period, that since then the only progress has been the modification of details. During this period the chemical arts of dyeing attained the excellence so characteristic of French colors; and, during this period, the mechanical genius of Jacquard, aided by the practical skill of Depouilly, produced the loom which has been justly regarded as the greatest invention in the art of weaving of the present century, and has only been eclipsed by the great achievement of our own inventor, who made the Jacquard loom automatic.† The profits acquired by successful manufacturers, during this period of prosperity, were immediately applied to the erection of vast factories, and Mulhouse, St. Quentin, Tarare, and Roubaix, at present renowned seats of the woollen manufacture, received the elements of progress and wealth which they have not since ceased to develop. Of all the conquests of Napoleon, the greatest by far, the industrial independence of France, is still secure.‡ And the assaults of British free trade are still unavailing against

* Randoing, p. 11.

† For an account of Mr. Bigelow's great invention, see Preliminary Report of Commissioner of Patents, 1863. The report says, “It now presents a machine which is admitted to be unsurpassed by any thing which the mechanical genius of man has ever devised.” p. 11.

‡ “Protection, the industrial creation of Napoleon, the most precious and principal cause of his conquests.” *Industrie des cotons*, par M. Mimirel, Président du Council General des Manufactures de France, etc. p. 5.

the bulwarks of protection established through his maxims and example.*

Thanks to the immortal founder of the industrial glory of France, she has never been hoodwinked by the specious philosophy of British free trade. She saw, when Mr. Huskisson suppressed the prohibitory duty upon French silk, that it was only because he could not suppress the contraband trade, and because the duty of twenty-five per cent was a more efficient protection of British silks. "When the British Parliament applaud the absolute enfranchisement of commerce," says Baron Dupin, in 1852, "they clap their hands, and these hands are covered with English gloves, whose inferiority is protected against foreign gloves by a duty of twenty-five per cent." Whenever a new manufacture, not provided for in the tariff regulations, has been attempted, the French have seen it crushed by British capitalists, who had been instructed by Mr. Brougham, that "England could afford to incur some loss on the export of English goods, for the purpose of destroying foreign manufactures in their *cradle*." † "Three times," says Dr. Sacc, "since the commencement of the present century, have attempts been made in France to spin the wool of the Angora goat. Each attempt has failed; for, as soon as the products appeared in the market, the English spinners lowered the prices from twenty to twenty-five per cent, and rendered competition impossible." ‡ The Anglo-French Treaty of 1860, although often referred to as evincing a change in the protective policy of France, still carefully guarded her manufactures. The Leeds Chamber of Commerce, the highest authority in relation to woollens, regarded the duties under that treaty as prohibitory. Lord Grey asserted, without contradiction, in the

* Tableau Statistique des Industries, Françaises du coton, de laine et de la soie, par Baron Charles Dupin, p. 9. Travaux de la Commission Française, t. iv.

† Report of the Commissioner of Patents for the year 1861. Agriculture, p. 17.

‡ Bulletin de la Société Imperiale Zoologique, &c., t. v. p. 579.

House of Lords, that "France retained her whole system of navigation laws. She bound herself to no duties on her manufactured goods lower than thirty per cent in the first instance, and twenty-five per cent afterwards. The only articles, on which she made any reduction, were coal and iron, which she wanted in order to stimulate her manufactures." *

The condition of the woollen manufacture, under this system, must be regarded with no little interest. The number of sheep in France in 1851, according to Mr. Bernoville, who is my principal authority in the following statements, † was 40,000,000. Each fleece, upon an average, comprising the lambs, weighing, washed upon the back, about $1\frac{8}{10}$ kilogramme, the 40,000,000 of sheep give the number of 72,000,000 kilogrammes, 158,832,000 lbs., as the whole weight of domestic wool, worth, at a minimum of 3 francs 50 centimes per kilogramme, the average of the qualities, 252,000,000 francs. The mean of importation duty paid for these years was of the value of 55,000,000 francs, making the total value of wool employed 307,000,000 francs. The value of the raw wool, which enters into the average French tissues, is estimated at one-third of the price of the tissues when they enter into the hands of the consumer. The value of the raw wool, tripled, is 921,000,000 francs, or \$184,200,000. The mean of exportation for three years before, including 1851, was 116,000,000 francs, or \$23,200,000. There remained 805,000,000 francs, or \$161,000,000, as the value of the domestic consumption in France in 1851.

The average of French exportation of woollens from 1827 to 1836, was 38,000,000 francs. The exportation of the same fabrics in 1851 was 122,500,000 francs. Thus there was an increase of exportations in twenty years of 220 per cent. The exportations of woollens from England were, in 1830, 118,000,000 francs, or \$23,600,000; in 1851, 246,000,000 francs,

* Bigelow's Tariff Question, p. 38.

† Industrie des Laines peiguées, p. 135, *et seq.*

or \$49,200,000. The increase in twenty years was 110 per cent. While England had doubled her exportations, France had tripled hers, besides supplying her domestic consumption. Thus the acknowledged protective system of France had accomplished more for her foreign commerce than the so-called free trade of England had done for British exterior consumption. Assured by the increased prosperity of her manufactures, of the domestic consumption of all her native wools, France, while continuing the duties on her manufactures, has diminished the duty on raw materials. In 1861, her exportations of woollens amounted to 188,000,000 francs; in 1862, 221,000,000 francs; and, in 1863, to 283,000,000 francs, or \$56,000,000.

I have been able to obtain estimates of the number of persons employed in only one branch of the French woollen manufacture, that of combing wool. Mr. Bernoville* estimates that France, in 1851, employed constantly 800,000 spindles in the fabrication of combing wool; that each spindle produced twelve kilogrammes of yarn, representing nineteen kilogrammes of washed wool, worth at least 5 francs 25 centimes per kilogramme. At that, the 800,000 spindles consumed 15,200,000 kilogrammes (33,431,200 lbs.), worth, in round numbers, 80,000,000 francs. He estimates that the various manipulations which the wool undergoes in fabrication, including the selling, adds two and one-half times to the original value of the wool, making the total cost of wool, and fabrication of combing wool, 280,000,000 francs. The 800,000 spindles produce 9,600,000 kilogrammes of yarn, representing 8,400,000 fleeces, of which 5,800,000 are produced by French sheep. It is ascertained, from the statistics of M. Billiet, that this wool, from the shepherd to the spinner inclusive, employs 51,000 workmen, who receive a total salary of 26,182,976 francs. It is calculated that two looms occupy five persons, and each wea-

* Industrie des Laines peignées, p. 139.

ver uses about eighty kilogrammes of spun wool. The 9,600,000 kilogrammes give employment to 120,000 looms, which gives the number of 300,000 workmen employed in weaving. It is estimated that in dyeing, bleaching, printing, and selling, 20,000 more persons are employed. Estimating the average pay of each of the 320,000 workmen, exclusive of the spinners, at 1 franc 25 centimes a day for three hundred days' work, and adding the salary included in the spinning, Mr. Bernoville arrives at the sum of 146,000,000 francs distributed among 371,000 men, women, and children, which would allow 393 francs 55 centimes, or \$78.70 to each person. These estimates furnish data by which we may arrive at a general estimate of the number employed in all the branches of the woollen manufacture. The value of the fabrication of combing wool was 280,000,000 only of her 921,000,000, the estimated value of the whole fabrication; leaving a value of 641,000,000 in other branches. These branches, by the rates established in the estimates above given, would employ 849,000 persons, making nearly a million and a quarter as the number of persons directly employed in the woollen manufactures of France.

In studying the characteristics of the French manufacturers, and the part they have taken in advancing the general progress of the woollen industry, and in adding to the means of consumption, we observe that they have not attained that economy of production which so eminently distinguishes the British manufacturers. Supplied with abundant labor, supported by cheap sustenance, the French manufacturers have been content to remain far behind the British and Americans in the substitution of machinery for human labor. But the tendency of machinery, as they think, is to give mediocrity to manufactured products; and the French aim at the utmost excellence in their works. The individual skill or handicraft of the workman is developed to the utmost extent. All ma-

chinery is rejected which will not surpass the manipulations of the hand. Spinning, the foundation of good textures, is carried by them to the utmost perfection. Yarns, spun from combed or carded wool by the rival nations, exhibited at the great London exposition, were carried ten, twenty, and even thirty numbers higher by French spinners with the same wool.* They excel equally in ameliorating raw materials, in making them softer and more flexible. The French, in the textile arts, are creators; while the English are *exploiteurs*. The one nation invents new fabrics, new combinations of old materials, new styles and patterns, or what, in a word, are called French novelties. The other works up these ideas, copies, transforms, dilutes, and, above all, cheapens. Most other nations follow the English example, and our own is as yet no exception. To specify the contributions of inventive or creative genius of France to the woollen industry, we must class, first among the machines, the Jacquard, already referred to, whose wonderful products are seen in all figured textures; and next, the machinery for combing wool and also cotton, of Heilman, of Mulhouse, an invention which possesses interest, not only on account of its vast importance, but the circumstances of its origin. The most novel and valuable part of this machine, as stated by the inventor, which he had long unsuccessfully endeavored to obtain, was ultimately accomplished by carrying into mechanical operation a suggestion which occurred to him whilst watching his daughters combing their hair. He was at that time meditating on the hard fate of inventors generally, and the misfortunes which befel their families. This circumstance, says Mr. Woodcroft, being communicated to Mr. Elmore, of the Royal Academy, was embodied by him in a picture which was exhibited, and greatly admired, at the Royal Academy in 1862.† We all practise or

* Bernoville.

† Brief Biographies of Inventors, &c., p. 45.

use French creations without suspecting their origin. Before 1834 the colors of all fulled cloths were uniform. At that time Mr. Bonjean, of Sedan, conceived the idea, to give beauty to the productions of his looms, of uniting in the same stuff different tints and figures. His thought was that the domain of production would be as illimitable as that of fantasy, which was the name given to his goods. He was the originator of the product and name of *fancy cassimeres*, by far the most important branch of our own cloth manufacture.* The French, already skilled in making light gauzes of silk, first made *bareges* in 1818; † a fabric with a weft of wool and warp of silk. The English imitated the fabric by substituting cotton for silk in the warp. In 1826, Mr. Jourdain first produced, at the establishment of Troixvilles, that invaluable fabric, *mousseline de laine*, made of fine wool, for printing. ‡ In 1831, the manufacture and printing of this tissue was fully developed. In 1838, he also created *challis*, made of a warp of silk organzin and a weft of fine wool. § In 1833, first appeared at Paris, simultaneously introduced by three French houses, that fabric so appropriate for the consumption of the masses, the *mousseline de laine*, with cotton warps. The English adopted the manufacture in 1834-5, and it prevails in every manufacturing nation. This fabric, which is unquestionably a French idea, || has been an inestimable blessing. Its products are counted by millions of pieces, and it enables the most humble female to clothe herself more comfortably and becomingly, and as cheaply, with wool, as she could thirty years ago with cotton. In 1858, plain *baréges* were introduced, for printing. These had before been made of colored threads; at the same time, *balsorine*, having the effect of alternate fabrics of cloth and gauze, was created in wool in imitation of a flaxen fabric. ¶ The

* Randoing. *Industrie des Laines foulées*, p. 23.

† Bernoville, p. 179.

§ Bernoville, p. 186.

¶ Bernoville, p. 188.

‡ Bernoville, p. 186.

|| Bernoville, p. 187.

foulards, with a warp of silk and weft of English combing, were introduced about this time at St. Denis.* The fabric, however, most appreciated by female taste, and the most unrivalled of modern woollen textures, and the only one not degraded by imitation, is that beautiful material which derives its name from the fleece of which it is made, the *French merino*. This tissue was first made at Rheims, in 1801, by a workman named Dauphinot Pallotan.† The invention, for which a patent was asked, whether successfully or not is not known, consisted solely in the adaptation of a peculiar type of wool, and not in the fabric. I shall refer to this fabric in another connection, to show that the intelligent skill of the agriculturalist is no less important than the genius of the artisan in developing the manufacturing prosperity of a nation.

The creative genius of the French is more conspicuous in their arts of design and color, as applied to all textile products. There is an unlimited application of these arts and a boundless field for novelties, in the modern use of printed woollen goods. All the manufacturers of France, in producing new styles of fabric or figure, nourish their tastes by Parisian ideas, the inheritance of the ancient splendors of Versailles. Says Mr. Bernoville: "At Paris, each consumer is a judge, and becomes a guide to the merchant and manufacturer. The Parisians appreciate only what is good, and consecrate only what is beautiful. The *grisette* as well as the *grande dame*, the artisan as well as the dandy, has received, and practises, without knowing it, the traditions of art."‡ Although important commercial houses are now established for the sale of designs elaborated in this school, there is no manufacturer in Europe who scruples to copy French patterns. We have even so framed our patent laws that, while protecting all other foreign works of invention, we might appro-

* Bernoville, p. 185.

† Bernoville, p. 195.

‡ Bernoville, p. 175.

priate with impunity the productions of the Parisian pencil and pallet.

Thus, by importation as well as imitation, all over the world, the true lovers of the beautiful, as well as "the sophists, economists, and calculators," whose advent, upon the fall of Maria Antoinette, is so pathetically lamented by Burke,* acknowledge France, so gracefully symbolized by Eugénie, the empress of taste and fashion.

I shall not attempt to review the woollen industries of the other manufacturing countries of Europe, and will confine myself to a brief notice of four other nations, the most distinguished for their resistance to the commercial policy of England. In the reports of the Bradford Chamber of Commerce for 1864-5, kindly sent me by our consul at Sheffield, Mr. Abbott, who has charge also of the vice-consulates of Bradford, Leeds, and Huddersfield, I find bitter complaints of the tariff regulations of Austria, Sweden, Spain, and Russia, as affecting, most injuriously, the woollen trade of Bradford. The Austrian tariff is spoken of as presenting "features of the most objectionable character," while "the duties are almost prohibitory, and unjust to England." The Swedish tariff is referred to as having "the unfortunate distinction of disputing with Spain the debatable honor of being the highest in the world, the Russian alone excepted." Of Russia, it is said, "the importation of manufactured tissues is practically prevented by a scale of duties higher than any in the world;" and that the value of only £46,258 of British woollens and worsteds were exported to that country in 1862. It is a matter of no little interest to us to know the manufacturing condition of the nations which have made such declarations of independence.

* "But the age of chivalry is gone; that of sophisters, economists, and calculators, have succeeded, and the glory of Europe is extinguished forever." — Reflections on the Revolution in France. London, 1791, p. 60.

Austria consumes about 70,000,000 pounds of wool per year, and its annual production of woollen fabrics amounts to about \$50,000,000 per year. It supplies its own population, and exports to the Levant, Asia, the United States, and even China. Its manufactures of woollens were stimulated, first, by almost absolute prohibition, and have been since encouraged by duties highly prohibitory. What is the condition of the manufacture thus aided by the national favor? Let the disinterested testimony of an English expert answer. The reporter on the class of woollens, in the London Exhibition of 1862, says: "There is no inland country in Europe which has made so much progress in woollen manufactures during the last ten or twelve years as Austria. It has not only maintained and improved its reputation for fine plain woollens, doeskins, heavy coatings, &c., but has made wonderful advances in fancy trouserings. They are no longer imitations of French, English, or other designs, but display an originality highly creditable to the manufacturer. Their woollen dyeing is the best in the whole exposition. The whites, scarlets, oranges, and other shades, possess a clearness, richness, and fulness of color, not attained by any other country."

Sweden, although enjoying few advantages of soil, climate, and position, owes to the policy which the Bradford merchant calls "a debatable honor," her present honorable place in the community of nations. Her population has steadily advanced. Her importation of foreign luxuries of food has greatly increased. Her agriculture has been developed. In the ten years ending in 1787, her importation of grain had been 196,000,000 pounds. In the decade ending in 1853, it was but 34,000,000, while the population had almost doubled. Lands have increased in value, property is divided, a taste for literature is extending, and the people have secured political representation. In the short space of thirteen years the iron manufacture had nearly doubled.* The manufacture of woollens in

* Carey, *Manual of Social Science*, p. 246.

the large establishments has been so successful that it is said that "the worsted and mixed fabrics are such exact imitations of Bradford goods that the most acute judges can scarcely distinguish the difference." The manufacture of woollen cloth is found everywhere throughout the country in the houses of the people. Compare the condition of the people of Sweden, under their system of industrial independence, with that of the population of Ireland, or of Turkey, where men, compelled to abandon weaving and spinning and gathering mulberry leaves and feeding silk worms, can earn but five cents a day,* to which condition the policy of the Bradford merchant would reduce them. "The people of Sweden," says a traveler quoted by Mr. Carey, "seem to unite, on a small scale, all the advantages of a manufacturing and agricultural population more fully than in any district I have ever seen. The men do the farm business, while the women drive a not less profitable branch of industry. There is full employment, at the loom or in spinning, for the old and young of the female sex. Servants are no burden. About the houses there is all the neatness of a thriving manufacturing, and the abundance of an agricultural population. The table-linen, laid down even for your glass of milk and piece of bread, is always clean; the beds and sheets are always nice and white. Everybody is well clad, for their manufacturing, like their farming, is for their own use first, and the surplus only as a secondary object, for sale; and from the number of little nick-nacks in their households, the good tables and chairs, window-curtains and blinds (which no hut is without), clocks, fine bedding, papered rooms, and a few books, it is evident that they lay out their winnings on their own comfort, and that these are not on a low scale of social well-being."

Spain, which also enjoys "the unfortunate distinction" of pro-

* Report of the Commissioner of Patents for 1861: Agriculture, p. 12.

tecting her industry, was driven to this policy by seeing, under her colonial system, her home industry abandoned, her artisans and farmers dying out, her towns and cities decaying, and her lands monopolized by the nobles and the church. Fortunately she lost her colonies, and was compelled to look at home. Her agriculture, manufactures, and commerce, have doubled in the last twenty-five years. Provided with that wonderful breed of sheep which has been the great ameliorator of most of the flocks in the world, and which, according to the statement of Her Catholic Majesty's Secretary of State in 1854, still survives in its original perfection,* Spain has made remarkable progress in her woollen manufactures, and will not be likely to abandon the system which sustains them when even English judges say of them as follows: "Upon the whole, it is evident that Spain now possesses manufacturers of great enterprise, artisans of first-rate skill, and machinery of the best and most approved kinds. The progress made by the Spanish woollen manufacturers since 1851, is of a most striking character, displaying results which bring their productions almost on a par with the most advanced manufacturers of any country. The printing of their dyes, and clearness and beauty of their blended colors, are equal to those of France, Austria, and the United Kingdom.†

Russia, which wears the crown of "debatable honor" in English eyes, was, fifty years ago, merely an agricultural nation. Manufactures began to spring up under the continental system, but were crushed by the policy of Alexander, who, at the close of the war, gave free admission to the goods of his late ally. In 1824, Count Nesselrode established the system which achieved the industrial independence of Russia. That empire has now 45,000,000 sheep, of which 18,000,000 are merinos. In 1849, the woollen industry employed 495,000 workmen,

* Ohio Agricultural Report, 1862, p. 498.

† International Exhibition of 1862. Reports of Juries, Class 21.

distributed in 9,172 establishments; besides employing a vast number in making carpets and common stuffs in the cottages of the peasantry. It supplies almost entirely the domestic consumption, including clothing for her vast army, none of which was made in the empire before 1824. In cloths alone the production is more than \$20,000,000. Russia exports even more woollen goods than she imports. In 1850, she imported woollen goods of the value of \$1,000,000, and exported to the amount of over \$2,500,000, principally to China and Central Asia.* The people of Russia, employed by this and kindred manufactures, consume at home the enormous products of their agriculture. Of the 1,600,000,000 bushels of corn, which is the product of their soil, they export only 15,000,000, less than one per cent of the total cereal product. The question arises, Can manufactures, so completely exempted from foreign competition, attain that excellence which is necessary for true industrial progress? Let the English judges again answer. They say, in 1861, "Those who remember the woollen goods exhibited from Russia, in 1851, and compare them with the goods exhibited now, cannot fail to be struck with the remarkable progress made in every branch of manufacture, cloths, beavers, fancy cassimeres, mixed fabrics, and shawls, &c.; all bear evidence of the improvement, and show a degree of excellence, which, as regards make and finish, place the production of Russia on a par with some of the oldest manufacturing countries." †

The present manufacturing prosperity of these, as well as other industrial States of continental Europe, naturally suggests this inquiry, What would have been the future industrial condition of continental Europe, if, at the time when peace restored the nations to labor, the textile manufactures had been left to their own free course, and no legislation had

* Bernville, *Industrie des Laines peignées*, p. 90, *et seq.*

† International Exhibition of 1862. Reports of Juries, Class 21.

intervened to regulate their progress? Can there be any doubt that they would have become the exclusive occupation of England? Alone in the possession of steam power and machinery; alone provided with ships and means of transport; alone endowed, through her stable legislation, with capital to vivify her natural wealth, she had absolute command of the markets of the continent. The question was presented to the continental nations, whether they should accept the cheap tissues of England, or, at some sacrifices, repel them, to appropriate to themselves the labor and profit of their production. The latter course was successively adopted, with some modifications, by each of the continental nations; and with what results to their own wealth, and the industrial progress and comfort of the world! Instead of a single workshop, Europe has the workshops of France, Russia, Austria, Prussia,* Belgium, Sweden, Denmark, Spain, each clothing its own people with substantial fabrics; each developing its own creative genius and peculiar resources; each contributing to substitute the excellence of competition for the mediocrity of monopoly; each adding to the progress of the arts and the wealth and comfort of mankind.

It remains for me now to illustrate the national importance of the wool manufacture by the industry of our own country. I shall not attempt to describe the successive steps of the progress by which this manufacture has attained its present position. I can add nothing which is not already familiar to the members of this Association, or which may not be found in easily accessible sources of information. The most striking feature in the brief history of our manufacture is its instability. As in

* "The trade of Germany at the beginning of the century was hides, tallow, flax, and wool, exported for cloth and cutlery in return; and Bonaparte could make their territory his fighting-ground. Since the battle of Waterloo they have been making their own cloths and cutlery; and his nephew, with more resources and stronger alliances, was obliged to keep within the line of war with Austria which the rest of Germany prescribed." Dr. Elder, *The Western States, their Pursuits and Policy*, p. 20.

the continental states of Europe manufactures were called into being by their respective governments, the very existence of the woollen industry in this country depended upon the national legislation, or such a state of national affairs as would restrain the competition of the older and well-established foreign manufactures. By the war of 1812, which accomplished for this country what the continental blockade did for France, the woollen manufacture was brought up from a product of only 4,000,000 in 1810 to 19,000,000 in 1815; only to be overwhelmed by the enormous importation, at the close of the war, of 70,000,000 in woollens and cottons at an *ad valorem* duty of 5 per cent.* Reviving in 1816, by the aid of a duty of 25 per cent, and the free admission of raw material, the interest was depressed again in 1820, by the fall of the duty to 20 per cent. The manufacturers were stimulated to new enterprises by the increased duty of $33\frac{1}{3}$ per cent established after June, 1825, and by the still increased rates of the tariff of 1827; but the expected benefits were neutralized by the high duties placed upon the raw material. The characteristic instability was continued under the biennial reductions of the compromise policy of 1832. The stimulus of the favorable tariff of 1842 was followed by the crushing influence of the *ad valorem* tariff of 1846, which, placing an equal duty upon wool and its manufactures, and in some cases a higher duty upon the former, gave no protection, or discriminated against American fabrics. The effect of this measure was the destruction of American broadcloths, and, at the same time, the extinguishment of our Saxony sheep. The tariff of 1857 was productive of some benefit by enlarging the free list. Finally, the so-called Morill tariff of 1861, since modified by the law of 1864, gave, not by increasing the duty, but by establishing just relations between the duties on manufactures and raw material, the

* At this time, full-blooded merinos sold for one dollar apiece. Bucks had been sold during the war for a thousand dollars apiece. Randall's Practical Shepherd, p. 24.

first encouragement that our industry might be established upon a permanent basis, and become here what it is elsewhere, a pillar of national prosperity. Notwithstanding the legislation, often unfriendly and always uncertain, the woollen manufacture had become established in 1860 as a great industrial power, and, by the amount, variety, and excellence of its products, had proved itself eminently worthy of national favor.

I am indebted to Mr. Kennedy, the late admirable Superintendent of the Census of 1860, for proof-sheets of the chapters on "woollen" and "worsted goods" of the forthcoming volume of the Census upon "Manufactures;" a work which, while passing through the press, has been most cruelly taken from the hands of the one who conceived and executed it. The total values of the several manufactures of wool in 1860 were as follows:—

Carpets	\$7,857,636
Hosiery	7,280,606
Wool-carding	2,403,512
Worsted Goods	3,701,378
Woollen Goods (including yarns, blankets, and shawls)	61,895,217
Total	<u>\$83,138,349</u>

"On the first of June, 1860, the number of establishments employed on woollen goods, exclusive of worsted dress goods, was 1,260. They represented a capital of \$30,862,654, and consumed 83,608,468 pounds of wool, and 15,200,061 pounds of cotton, costing, with all other materials, \$36,586,887. They worked 3,209 sets of machinery. They gave employment to 24,841 male and 16,519 female hands, or 41,360 persons, whose annual wages cost \$9,808,254. The aggregate value of the product amounted to \$61,895,217."

"With a decrease of 557 in the number of establishments, as compared with the census of 1850, doubtless in part occasioned by a more complete exclusion from the recent tables of such

accessory and kindred branches as wool-carding and worsted mills, the aggregates show an increase of \$4,791,112, or 18·3 per cent in capital invested; \$11,674,432, or 46·8 per cent in the expenditure for raw materials; 6,465, or 18·5 per cent in the number of hands; and \$2,640,354, or 36·8 per cent in the annual cost of wages, while the aggregate value of the manufactured product appreciated \$18,352,929, or 42·14 per cent upon the returns of 1850. The gross proceeds of the manufacture, after deducting the cost of materials and labor, was \$15,527,367, or upwards of fifty per cent upon the capital employed, to cover the interest on capital, the wear and tear of machinery, and various incidental expenses.”

“The consumption of wool amounted to an average of 2·61 pounds *per capita* for the entire population of the Union. It was in the proportion of five and one-half pounds to every pound of cotton used in the business. The quantity of cloth manufactured exceeded the amount returned in 1850 by 42,691,210 yards, or fifty-two per cent, and the weight of yarn was 2,106,870 pounds, or nearly fifty per cent greater than in that year. The product in cloth was equivalent to nearly four yards to each inhabitant of the Union, and in value averaged nearly two dollars (\$1·97) *per capita*. The average annual wages of each operative was \$237, or \$32 greater than in 1850.” (Compare this with the annual wages of the French workman, \$78·70!)

According to the same report, the worsted manufacturers had in 1860 an invested capital of \$3,460,000. “They employed 110 sets of cards, and 1,101 male and 1,277 female hands, whose aggregate yearly wages amounted to \$488,736. The raw materials were 3,000,000 pounds of wool, worth \$1,554,000; 1,653,000 pounds of cotton, costing \$196,640, besides madder, and other dye-stuffs, coal, oil, &c., costing altogether \$2,767,700. The cost of wool was 51 cents, and of cotton 11·8 cents a pound. The aggregate product was 22,500,000 yards, valued at \$3,201,378.”

Keeping in mind the total value of our manufactures of wool in 1860, according to the census returns, we have some means of forming an estimate of the progress of our manufactures since that period, from the reports of the Internal Revenue for 1864. From the amount of internal revenue paid upon those classes of manufactures of wool enumerated at three per cent, I have calculated the total value upon which that revenue was paid in each State. The aggregate is \$121,868,250.33. It will scarcely be suspected that the value has been exaggerated. The value in each State is as follows:—

Massachusetts	\$40,603,651.00
Pennsylvania	16,599,713.33
Connecticut	15,866,641.00
New York	13,977,775.00
Rhode Island	10,892,700.33
New Hampshire	9,079,677.00
Vermont	3,708,721.67
New Jersey	2,778,084.00
Maine	2,476,483.67
Ohio	1,400,877.67
Indiana	558,615.33
Delaware	548,134.67
California	538,956.00
Maryland	451,912.00
Kentucky	359,905.00
Illinois	359,084.33
Michigan	151,848.33
Oregon	128,620.67
Iowa	118,305.33
Missouri	75,344.00
Wisconsin	105,317.67
West Virginia	63,753.00
Kansas	14,947.67
Minnesota	9,146.00
Nebraska Territory	45.65

A great progress is indicated by the returns made to the office in answer to about 1,700 circulars sent out. The total

number of sets in 1860, according to the census, was 3,319; 931 returns received at the office of the Association on the first of September,* 1865, reported 4,073 sets of cards, consuming 2,275,855 pounds weekly of scoured wool, of which 1,636,821 is domestic, and 639,034 is foreign; the weekly average per set being 559 pounds. The census returns of 1860 were complete. According to our list 608 mills remain to be heard from. Returns are coming in daily, and it is believed the number of sets will not fall short of five thousand.

Another indication of progress is the greatly increased consumption of wool. The total amount of wool produced in the United States in 1860, according to the census, was 60,264,913 pounds, all of which was consumed in our manufactures. The amount imported in that year, according to the report of Messrs. Bond and Livermore, was 32,371,719 pounds,† making the total amount consumed 92,636,632 pounds. The home product of 1864 is estimated, by the Department of Agriculture, at not less than 80,000,000 pounds.‡ The amount imported was 72,371,503 pounds.§ Total, 152,371,503 pounds, an increase of 59,734,871 pounds, or sixty-one per cent.

Not the least interesting result, which is at the same time the cause and effect of the increase of our woollen manufacture, is one eminently national; viz., that we have been able to clothe our vast army with our own fabrics, and by only the national expansion of our industry. By our looms and sewing-machines we furnished, in one year, not less than 35,174,608 garments.|| Mr. Bond, chairman of our "Committee on Raw Materials," estimates, from official reports received from the Quartermaster-General of the United States of the quan-

* The Table in the Appendix contains the aggregate results up to Oct. 25th, 1865.

† Wool Report to the Boston Board of Trade for 1864, by George William Bond and George Livermore, p. 8.

‡ Monthly Report of the Agricultural Department for January, 1865, p. 22.

§ Report of Messrs. Bond and Livermore for 1864, p. 8.

|| Report of Messrs. Bond and Livermore for 1864, p. 7.

tity of woollen goods purchased for the army in 1862 and 1863, that the quantity of wool consumed in our mills for army use was, in —

1862	51,400,000 lbs.
1863	61,300,000 „
1864, no returns, say	61,300,000 „

To this must be added the consumption for the navy, and for cartridges, and the total cannot vary much from 200,000,000.

Compare this with the condition of the country at the commencement of the war of 1812, when the Secretary of War was compelled to ask Congress for permission to import 5,000 blankets for the supply of the Indians.*

This is but one of the many illustrations which the war has furnished of the great truth of political economy, that a nation is powerful and independent, just in proportion as it cultivates a variety of industry in its people.

“The war and its incidents,” says Dr. Elder,† “shed a flood of light upon the effect of a well-secured home consumption for agricultural products of every kind, of which the wool-growing interest is an example. In the ten years before the rebellion, the sheep of Pennsylvania had decreased 12 per cent in number. In May, 1864, the Agricultural Bureau reports an increase of 76 per cent in four years. In Illinois, they had fallen off in the last census decade 14 per cent. In the first two years of the war, according to the report of the county assessors, they had increased from 769,135 to 1,206,695, and the editor of the Chicago “Tribune” estimates the number at 3,000,000 at the close of the year 1864, an increase of two hundred and ninety per cent in four years. This immense advance is owing simply to a protective

* Pamphlet entitled Free Trade in Raw Materials considered in its Effect upon all Classes of the People. New York, 1855, p. 14.

† The Western States, their Pursuits and Policy, p. 22.

tariff, aided by the high rate of foreign exchange and absolute possession of the home market.”

I shall not enlarge further upon the American woollen industry. It may appear that I have not done it justice. It would have afforded me satisfaction to give, from original sources, special details of our manufacture; to enumerate the fabrics in which we excel; to specify the inventions which we have contributed; to do honor to the great men whose genius and enterprise have built up the pillars of our industry; to exhibit its peculiar social and economic relations in this country; in a word, to contribute facts from our manufacture to serve to illustrate the general progress of the arts. But the experience and observation of many years, instead of a few months, are necessary for such a work. It can be done, indeed, by no one man. Each one of you, gentlemen, must spare time and thought to contribute materials for such a work as shall be a worthy record and monument of your labors. In this way you will subserve the highest object of our Association.

But the time has not yet come for the woollen manufacture to vaunt of its achievements. Its career has but commenced. Its aim is nothing less than to clothe the American people with indigenous fabrics. In twenty years preceding 1862, we imported foreign woollen manufactures of the value of \$429,422,951,—an average of upwards of 19,000,000 a year. To displace the foreign manufacture, and supply a population of 35,000,000, to be doubled in thirty more years,—consuming more woollen goods than the same number of any people in the world,—a field for gigantic enterprise is opened to the American manufacturer. This consideration leads to the second branch of my subject:—The means of developing the woollen manufacture.

The requisite above all others necessary for the development of our manufacture, is a sufficient and diversified supply of the

raw material,—wool. For this our main dependence must always be upon our own agriculture. An instinctive sentiment of patriotism leads every consumer to prefer a home product, if it will suit his purpose equally well with a foreign product. It is for the interest of the consumer to buy at home; he saves commissions, exchanges, transportation. He can select exactly what he wants, and he can sell his own products where he buys. The statistics collected by the Association show that the vast majority of the manufacturers of the country use only domestic wool. Of 4073 sets, 2171 are employed wholly upon domestic wool. Of 931 mills, 767 use domestic wool; while only 46 mills in the whole country use foreign wool alone.

So absolute is the dependence of the manufacturer of each nation upon the wool-growers of his own country, that the characteristic features of the manufactures of different nations have been impressed by the peculiar conditions of their agriculture. I will cite some examples, which will serve at the same time to show the direction towards which it is desirable our own agriculture should tend.

The sheep of England at an early period were divided into two distinctly marked classes. The one class, thriving upon the dry uplands, produced a short wool, adapted solely for making felted cloths, called clothing wool. Of this class, the original Southdown was a type. The other class, of greater size, flourishing upon the rich moist plains, produced wool characterized by great length, strength, transparency, and the little degree in which it possessed the felting property. This wool, fitted for making serges and stuff-goods, was called combing wool, from the instrument used to make the fibres straight and parallel preparatory to spinning. The type of this class was the Leicester sheep. In raising sheep of both kinds, the primary object anciently was, the product of wool; the mutton being merely accessory.

Under the old system of pasturage, it was found that but a given number of sheep could be kept on a certain space of ground; and, throughout a portion of the year, they were deficient in nourishment. Towards the end of the seventeenth century, the culture of turnips was introduced from Holland to England, with the financial and political institutions brought over by William III. Under the new system of agriculture, the artificial or turnip husbandry, a regular supply of food was provided for each season of the year, and double or treble the number of sheep could be kept upon the same land. The agriculturalists of England then began to perceive that the meat of the sheep was a more important source of profit than the wool, and that the wool must be the accessory. The revolution, which established the superiority of meat over wool, was principally due to Bakewell, of Dishley, to whom England owes hardly less than to Watt and Arkwright. Before his day, the English sheep were not fit for the butcher till about four or five years old. He conceived that if it were possible to bring sheep to their full development before that age,—to make them fit for being killed at two years old, for example,—the produce of the flocks by this means would be doubled. To accomplish this, he applied to the old Leicester sheep of his neighborhood what is now the well known principle of selection in breeding, but which may be said to have originated in his brilliant experiments. So complete was his success, that the breed obtained by him, called the “New Leicester,” is unrivalled in the world for precocity, produces animals which may be fattened as early as one year old, and, in every case, have reached their full growth before the end of the second year. To this invaluable quality is added a perfection of shape which renders them more fleshy and heavier for their size than any known breed. Bakewell himself was not wanting in remuneration for his labors. So great was the appreciation of his new flocks, that he let his rams for one season for the enormous

sum of six thousand guineas. The "New Leicester," in time, came to be the most numerous and widely extended breed in all England. In many districts, they displaced the short-wool breeds; in others modified them. The extension of this breed gave preponderance to the production of the long wool with which it was clothed. The great value of Bakewell's labors consisted, not only in contributing a new race realizing the maximum of precocity and return, when placed on suitable lands, but in pointing out the means by which other indigenous races might be improved. The ancient race of the Downs, adapted for the highlands where the "New Leicester" did not thrive, originally producing short clothing-wool, was formerly of small size, and yielded but little meat, and would seldom fatten until four years old. By a careful selection of breeders, and the good winter regimen which the turnip husbandry gives, the English breeders caused the Southdown to become the rival of the "New Leicester" in early development and perfection of shape. They fatten generally when about two years old, and are sold after the second clip. But a change was also effected in the character of the fleece, which the farmers at first refused to believe. It lost the character of a clothing-wool. It became longer and coarser. As Mr. Youatt says, — "That which was once a carding, had become a combing-wool; and useful and valuable for a different purpose. It had not deteriorated, but it had changed."* The same change, from the same cause, has been effected in the Cheviot wool of Scotland.

The result of this direction of the agriculture of England, to seek profit rather from the meat than the wool in the culture of their flocks, is truly astonishing when a comparison is made with France, — which pursues a different system, — making the meat accessory to the wool, as it is with us. Each country

* Youatt on Sheep, p. 227.

has an equal number of sheep. But England feeds one sheep per acre, while France feeds only one-third of a head. The produce of the English sheep is double that of the French; and the average return of an English sheep-farm is six times greater than a French one.*

The effect of this system upon manufactures is no less remarkable. The wool of England, without the knowledge or purpose of her farmers, has become a combing-wool; and the worsted manufacture, through the unconscious influence of English agriculture, has become developed to such an extent, that the towns of Yorkshire have grown up as marvellously as those of our great West.

The uses of the wool have changed. It was anciently employed principally for making *says* and *serges*,—grave stuffs for monks or mourners. It is now principally used for making light fancy fabrics for female apparel. Spencer describes *envy* as clad in a garment of this wool:—

“All in a kirtle of discolored *say*,
He clothèd was y painted full of eies.” †

The female of modern times, arrayed in the bright-colored textures of Bradford, may be likened to the Fidessa of Spencer in her outward aspect:—

“A goodly lady clad in scarlet red,
Purflèd with gold and pearls.” ‡

I need not make the application of the lesson contained in these facts to our own country. We imported in 1860 \$15,000,000 of worsteds, principally from England. We made only \$3,000,000. To replace the English worsteds we have absolutely no raw material, and depend wholly upon the Leicester and Cotswold wools of Canada.§ Why should not the American, as well

* Rural Economy of England, Scotland, and Ireland, by Leonce De Lavergne, translated from the French. Edinburgh and London, 1855, p. 27.

† The Faerie Queene, Book i. Canto iv.

‡ The Faerie Queene, Book i. Canto ii.

§ The wool known in our markets as Canada wool consists wholly of fleeces from the long-wooled Leicester, Cotswold sheep, and crosses of these breeds with the South-

as the English farmer, seek a profit in mutton and wool as well as in wool alone, and thus supply the greatest necessity of American manufacture?*

Another example of this dependence of manufactures upon agriculture is found in France. The attempts of Colbert to naturalize the merino had so utterly failed, that it was believed impossible to raise or multiply this invaluable animal under the climate of France. A century after Colbert had made his attempts, Trudaine, the Minister of Finances under Louis XV., had direction of the department of commerce. Although at that time the happy effects of the administration of the Minister of Louis XIV. were evident, in the progress of French industry, the indigenous wools were all of moderate quality, and the manufacturers obtained all their choice wools from abroad. Spain threatened to organize manufactures of her own, and it was feared that France would be no longer able to obtain her choice wools. To remedy this evil, Trudaine conceived the happy thought of applying to Daubenton, already distinguished

down, recently introduced from England. Mr. Stone, of Guelph, Canada West, has taken the lead in the introduction of these sheep. The flocks in Canada are small, averaging from 20 to 50 head. It has been estimated that 6,000,000 pounds of long wool will be grown this year. Large numbers of Canadian sheep have been carried to the West during the present season. The consumption in the United States of Canada wool for the present year, is estimated by Mr. Cameron, an intelligent worsted manufacturer, whose data, showing the consumption of each mill, are now before me, at 5,500,000 lbs. The success of the Lowell Manufacturing Company, in fabricating alpaca goods from Canada lustre wools, has demonstrated that the wool does not deteriorate. The Canada wool has been found equal to the best English lustre wool, imported expressly for comparison. The free wool of Canada has been an inestimable boon to our worsted manufacturers. It does not compete with the production of our own farmers, as we grow hardly more than 200,000 lbs. of long wool, while Canada consumes 300,000 lbs. annually of our clothing wool. It is not possible that our own production of long wool will keep up with the demand.

Long-wooled Flemish sheep have been recently imported from Friesland by Mr. Chenery, of Belmont. They are said, by Youatt (p. 176), to be more prolific than any English breed. Their milk is valuable, and is used by the Dutch in the manufacture of a considerable quantity of cheese of a good quality.

* See an excellent article, on the Condition and Prospects of Sheep Husbandry in the United States, in the Report of the Commissioner of Agriculture for the year 1862, p. 242, in which the raising of long-wooled sheep is forcibly recommended.

for his profound investigations in zoölogy and comparative anatomy at the Museum of the Jardin des Plantes, where he was associated with the illustrious Buffon. Daubenton, who had studied the question of domestic animals with Buffon, did not hesitate to accept the mission of ameliorating the domestic sheep of his own country. The government furnished him the means of establishing a sheep-fold for experiments at Montbard, his native country; and, in the space of ten years, viz., from 1766 to 1776, he had solved the problem which, for a century, had been thought impossible. He produced superfine wool from the coarse native sheep of France. "I allied," he says in his instructions for shepherds, "rams whose wool was the finest with ewes having as much hair as wool, to judge by extremes the effect of the wool of the ram upon that of the ewe. I was surprised to see issue from this cross a ram with superfine wool. This great amelioration gave me the more hope for the success of my enterprise, as it was produced by a Rousselon ram.* I had at that time had no Spanish rams." "By these experiments, continued with the greatest precautions," he continues, "I brought all the races of my sheepfold to the degree of fineness of Spanish wool without using any Spanish stock." He caused his wools to be made into fabrics at the Gobelin manufactory, and the stuffs were pronounced to have all the fineness of those made with Spanish wools with more nerve and strength. Convinced by this success, Louis XVI. obtained from the King of Spain, in 1786, a flock of merinos, which he placed at Rambouillet, under the direction of Daubenton. Enlightened by his previous labors upon the domestic sheep, the practical naturalist found no difficulty in acclimating and ameliorating the Spanish race. The flock at Rambouillet was multiplied. It furnished an example and supplied reproducers, which were spread everywhere throughout France. A school of shepherds was organized; other national

* The finest of French native breeds. *Nouveau traité sur laine*, p. 67.

sheepfolds were founded; and the merinos were established in France.* Daubenton continued to publish treatises upon their management. Even fifty-three years after his first labors, when 84 years old, he addressed the Institute in relation to experiments upon sheep which he was then carrying on.

* One of the most interesting results of the acclimation of the merinos in France is the creation of a new and perfectly fixed race, remarkable for its silky wool, called the Mauchamp race. In 1828, there was accidentally produced at the farm of Mauchamp, cultivated by M. Graux, a ram, badly and even monstrously formed, having a head of unusual size and a tail of great length, but having a wool remarkable for its softness, and above all for its lustre, which resembled that of silk. This was the second animal of the kind which had been born in the flock of merinos at Mauchamp; the first had been killed by the mother. Mr. Graux separated it from the flock, and raised it apart, to prevent any accident, and used it for reproduction; obtaining some animals similar to the sire, and others to the dam. Taking afterwards the animals similar to the sire, and crossing them among themselves or with the sire, which served as a type, he succeeded in forming, little by little, a small flock of animals whose wool was perfectly silky. When he had arrived at this result, he occupied himself in modifying the forms, which he easily accomplished; and finally in modifying the size, originally quite small, but which is now the same as that of ordinary French merinos, — rams of three years old weighing as much as 80 kilogrammes, and a flock of six hundred head producing on an average two kilogrammes of wool washed on the back. As with all innovators, M. Graux met on all sides detractors of his discovery. The farmers pretended that the silky type could not be preserved when transported from Mauchamp; and the manufacturers asserted that the wool was so pliant and slippery that nothing could be done with it. They even complained of the very qualities which distinguish it. It is probable that the discoverer would have renounced the development of this magnificent race, if he had not been encouraged by an annual subvention from the government, obtained by M. Yvart, the Inspector-general of the imperial sheepfolds. In 1853, M. Davin, a manufacturer distinguished for his zeal and skill in introducing new material to the textile arts, experimented upon the material rejected by others. He succeeded in making magnificent stuffs which excited the admiration of all connoisseurs. They exhibited, in the tender colors especially, reflections of light which had never been before observed, and a softness which had never been found in any material of wool of any degree of fineness. The silky lustre was so marked, that, in a *challis* made with a silken warp and weft of Mauchamp wool, although the stuff contained only one-eighth of silk and seven-eighths of silky wool, it was as brilliant as if made entirely of silk. Merinos, mousselines, satins of China, and shawls, made of this material, equalled, if they did not surpass, analogous products made of the finest Cashmere yarns. The commission of savans, who reported upon the qualities of this new race to the Imperial Society of Acclimation, say: "The silky wool is destined to replace completely in our industry the Cashmere which comes from Thibet. It is fully as brilliant as Cashmere, fully as soft; and, while it costs less as a raw material, it requires less manipulation to be transformed into yarn, since it does not contain the hair (*jarre*), which must be removed from the Cashmere." In 1857, a medal of the first class was decreed to M. Davin for his industrial application of this material; and the society above referred to has proposed a prize of 2,000 francs for a flock of one hundred animals of the silky type. Bulletin de la Société Imperiale Zoologique d'Acclimation, t. v. p. 113, also t. vi. p. 502.

Although it was scarcely before the establishment of the empire that the advantages of the new race began to be understood, one-fourth of the sheep of France consist at present of merinos from this stock. The merino of France has become, through the culture of her agriculturalists, one of the most distinct of the merino races. In size and weight of washed wool it surpasses all other merinos, and their French savans say of them, "We are at present the first in the entire world for the fineness and quality of our wools, and the beauty and good conformation of the merinos which produce them." Within even the present year the Imperial Zoölogical Society of Acclimation, at the instance of its President,— the illustrious Drouyn de L'huys, the Premier of Napoleon III.,— has dedicated a statue to the great naturalist who endowed France with this magnificent legacy, to prove, in the language of its Vice-president, "that no true glory passes unperceived, that every serious servitor of his country and humanity receives sooner or later his just recompense." *

What has been the effect of this agricultural achievement of France upon the character of her fabries? The high culture of the French sheep for the purpose of obtaining great size and weight of fleece, has done for the merino in France what it did for Southdown in England; it has added length to the fibre, and made it a genuine combing-wool.† Its value for this pur-

* M. Richard, Vice-president of the Imperial Society of Acclimation. See Bulletin de la Société Imperiale Zoologique d'Acclimation, 2 Sevie, t. i. November, 1864, p. 647, *et seq.*

† Although the prevailing character of the French fleeces is as above described, a breed of sheep has been cultivated to a limited extent in France which rival in fineness of wool the most reputed flocks of Saxony. They are called the sheep of Naz, and have been cultivated by an agricultural association of that name for over sixty years. The original nucleus of the flock was derived from the most ancient of the Royal Cabanas, and the flock has been increased without any admixture of foreign blood. The flock in 1840 had been reduced to about 500 head, but the wool still preserved its reputation for fineness, softness, force, and elasticity. The price at that time was about five francs the kilogramme for wool in the yolk, which was double the price of the wools of Rambouillet. The average weight of the fleeces is a little less than two kilogrammes, or about 4 lbs. Gen. Lafayette raised sheep of this race at La Grange; and

pose is thus pronounced by one of the most eminent of the practical manufacturers of France:—

“There are two facts we ought to proclaim abroad.

“The first is, that without the introduction of the Spanish race into our flocks, and without all the skill of our agriculturists, we should still vegetate in dependence upon neighboring nations, and should be reduced to clothe ourselves with their stuffs. 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 Roubaix, at Amiens, and St. Quentin.

“The second fact is, that the aspect, the quality, the character of our modern tissues, in a word, all that makes them deserve, for forty or fifty years, the name of new inventions, is due principally to the particular nature of the combing-wool obtained by the Spanish cross. There are few, very few inventions, in the contexture of the stuffs, or in their mounting upon the looms, which are still the same as in the 18th century. It is because it has been favored by the wool of merinos that the 19th century has changed the physiognomy of the tissues of preceding ages.”*

Before inquiring what profit our manufacturers can derive from these facts, I wish to cite an American example of the influence of agriculture upon our manufactures, and pay homage to an American name less widely known but hardly less deserving of honor than those of Bakewell and Daubenton.

Col. Humphreys, who had been a member of Washington's family at his home on the Potomac, and had been imbued with a taste for agriculture by the immortal farmer of Mt. Vernon, having been afterwards Minister to Spain, made the first im-

in a letter to Mr. Skinner, in 1823, recommends their introduction into the United States.—*New England Farmer*, vol. vii. p. 92. See *Bulletin de la Société d'Acclimatation*, vol. vii. p. 479.

* Bernoville, p. 165.

portant importation of pure merino sheep from the Spanish cabanas. In 1813, Stephen Atwood, of Woodbury, Connecticut, bought a ewe of Col. Humphreys. He bred this ewe and her descendants with rams in his neighborhood, which he knew to be of the pure Humphreys's blood, until about 1830, after which he uniformly used rams from his own flock. This flock gaining much public favor, although full of what would be now regarded deficiencies, attracted the attention of Edwin Hammond, a farmer of Middlebury, Vermont, who made considerable purchases of Mr. Atwood's sheep in 1844 and 1846. A distinguished member of this Association, whose invaluable contributions to American-sheep husbandry place him by the side of the illustrious Von Thaer in Germany, thus describes the physiological achievements of Mr. Hammond: "By a perfect understanding and exquisite management of his materials, this great breeder has effected quite as marked an improvement in the American merino as Mr. Bakewell effected among the long-wooled sheep of England. He has converted the thin, light-boned, smallish, and imperfectly-covered sheep above described, into large, round, low, strong-boned sheep, models of compactness, and not a few of them models of beauty, for fine-wooled sheep.* I examined the flock nearly a week in February, 1863. They were in very fine condition, though the ewes were fed only with hay. Two of them weighed about 140 lbs. each. One of the two largest ewes had yielded a fleece of $17\frac{1}{2}$ lbs., and the other, $14\frac{1}{2}$ lbs., of unwashed wool. The whole flock, usually about 200 in number,—with a due proportion of young and old, including say two per cent of old rams, and no wethers,—yields an average of about 10 lbs.

* It was stated at a public discussion at the Vermont State Fair, in September, 1865, that Mr. Hammond was offered \$2,000 for his celebrated ram Gold-drop, but the owner refused to sell him. He alone possessed the characteristics he had been striving for years. The President of the Society stated that Mr. Hammond was present when the lamb, which became so valuable, was dropped. He turned it over, and examined it with the warmest admiration, and exclaimed, "Welcome! I have been looking for you fifteen years and more, and now I have got you." — Boston Evening Courier, Sept. 16th, 1865.

of unwashed wool per head. The great weight is not made up by the extra amount of yolk" (although it must be admitted that this is not the prevailing opinion of manufacturers), "but by the extra length and thickness of every part of the fleece. It is of a high medium quality, and very even. In every respect this eminent breeder has directed his whole attention to solid value, and has never sacrificed a particle of it to attain either points of no value or less value."* The genius of the American breeder received its crowning honor at the International Exhibition at Hamburg, in 1863. Sheep bred from Mr. Hammond's stock, exhibited by Mr. Campbell, — "among 350 competing sheep from Austria, Prussia, Germany, and France, — received a first prize for the best ram, a second prize for the second best ram, and a first prize for the best ewes."† The fleeces of the Vermont breeds may be regarded as types of the American merino fleece, and the character of this wool has exerted a marked influence upon American manufactures. It is not a clothing-wool, for the American merino wool exceeds all other merino wool in length. The wool exhibited at Hamburg was from $2\frac{5}{8}$ inches to $3\frac{1}{2}$ inches long; and, according to German authorities on wool, $1\frac{1}{2}$ inches is the extreme limit for the length of clothing-wool for the filling.‡ Hence we have comparatively no manufactures of broadcloth.§ American merino wool is fitted for fancy cassi-

* The Practical Shepherd, by Henry S. Randall, LL.D., p. 29.

† See extract from the official record of awards, published in the Rural New Yorker, September 9, 1865. The class of merinos in which Mr. Campbell's were shown was "stocks which have been bred with especial reference to quantity of wool."

‡ "A length of $1\frac{1}{2}$ inches may be regarded as the extreme limit for card (clothing) wool. It is true a longer wool may be used, but then it is only for the warp of the tissues, and the wool required for this purpose is only two-fifths of the quantity employed." *Traité des Bêtes Ovines* par Aug de Weckherlin. Intendant de Prince de Hohen Zolern, p. 90.

§ Since the above statement was made, I have learned that it requires a material qualification, and I am happy to say, that a name identified with the establishment of the cotton manufacture in the United States is to be associated with the revival of the

meres, in which we excel ; for fine shawls, in which we have attained great perfection ; for mousselines de laine, which we have of great excellence, and which we owe to our American fleeces. The true value of the fleece of the American merino is for combing purposes, for which it has remarkable analogy with that of France. This country will never know the inestimable treasure which it has in its fleeces, until American manufacturers appropriate them to fabricate the soft tissues of merinos, thibets, and cashmeres, to which France owes "the splendor of the industries of combing-wool at Paris, Rheims, and Roubaix." Although our main dependence for raw material must always be upon our agriculture, it supplies but little more than three-fourths of our wants, and it is probable will never supply it wholly. Our farmers will probably never attempt to supply the cheap coarse wools which Egypt and South America furnish, nor will they soon abandon the lusty merinos for the small and delicate Saxons.* For our very coarse, and, for some time to come, for our very fine, and for our long wools, we must depend upon the foreign market. Our manufactures certainly cannot be extended unless we can be on some terms of equality with foreigners who have no restriction in the supply of raw materials ; for all the principal

broadcloth manufacture in this country. During the present year the Webster Woollen Manufacturing Company, under the auspices of Mr. H. Nelson Slater, has established, on a very large scale, the manufacture of broadcloths, which rival the best German fabrics.

* I refer to the wool growers of the north and west. With the auspicious advent of free labor, an inviting field for fine-wool husbandry is opened on the Appalachian slopes of the Southern States, and the prairies of Texas. I have the authority of Mr. Gilbert, of Ware, whose opera cloths, made of the finest Saxony and Silesian wools, have replaced the best French goods in the New-York market, for saying that most admirable fine wools have been grown in the "Panhandle," Virginia. Judge Baldwin, the late eminent examiner in the class of "Fibres and Textiles" at the U. S. Patent Office, and formerly a practical flockmaster in Tennessee, assures me that the culture of fine-wooled sheep can be pursued to the utmost advantage in the Southern States. Cotton may not be king even in its own vaunted domain.

For the best history extant, in our language, of the fine-wool husbandry of Germany, the reader is referred to the article of Mr. Fleischman in the U. S. Patent Office Report for 1847.

manufacturing nations of Europe have practically thrown open their markets to the raw material of manufacture.* I will refer to but one instance of the impolicy of even the present comparatively moderate restrictions upon raw material. We have already constructed, in this country, machinery adapted for the manufacture of bunting, webbing, braids, and bindings, sufficient to make all required in the United States. The long combing-wools required for these manufactures cost in England 35 cents, and pay a duty of 12 cents and 10 per cent, averaging about 45 per cent. Two pounds of wool are required to make a pound of worsted, and the revenue tax on the manufactured goods, therefore, equals 12 per cent on the raw material. Without any duty on the imported worsted, the foreign manufacturer would have an advantage of 57 per cent. The duty on bunting, made wholly of worsted yarn, is 50 per cent. The foreign manufacturer has therefore an advantage at present of 7 per cent in the manufacture of bunting. A large portion of the worsted yarns now made, enter into the fabrication of those beautiful goods called fancy hosiery goods,—zephyrs, nubas, &c.,—for which the manufacturers of Philadelphia are so celebrated. The only protection which the

* Rates of duty on wool imported into the principal manufacturing nations of Europe, according to the Customs Tariffs of all nations, up to the year 1855:—

Great Britain	Free.
France (Tariff of 1860)	„
Belgium	„
Zollverein, including Prussia, Saxony, } and 21 other States	„
Netherlands	„
Russia	{ 20 copeks per pood or about 2 cents per pound.
Austria	{ 2d. per centner (or 123½ lbs. avoirdupois.)
Spain	{ Common 35s. 5d. per 100 lbs.; Saxon, 23s. 9d. per 100 lbs.

manufacturer has, is his superior taste and knowledge of the styles which will suit the American fancy. The English manufacturers are not quick enough to learn our styles; although it is said they had given large orders for Philadelphia hosiery to imitate our fashions. One mortifying result of this absolute discrimination in favor of the English worsted manufacture is, that we actually make no bunting. To our shame be it spoken, all our flags are grown, spun, woven, and dyed in England; and on the last 4th of July, the proud American ensigns which floated over every national ship, post, and fort, and every patriotic home, flaunted forth upon the breeze the industrial dependence of America upon England!*

I do not propose to discuss the question of the free admission of raw materials, or the relative duty on wool and woollen fabrics. Most of us, as manufacturers, believe that so long as the home product of wool is inadequate to the supply of our machinery, the only protection which can avail the wool-grower must include protection to the manufacturer; and that any policy which deprives the manufacturer of the home market for goods, tends to deprive the grower of the home market for wool, and to oblige him to compete in the general markets of the world with other wool-growers; and that the only reliable protection of the wool-grower is in the ability of the manufacturers to convert his clip into goods which will command the home market. We believe that the mutuality of the dependence of the two industries has been demonstrated by the experience that the wool-growers have always been prosperous when the prosperity of the manufacturing interest secured them a home market, and that the seasons of depression have been only when the depression of manufacturing has diminished the home demand.† But it is not enough for us to believe, or

* My principal authority for these statements is Mr. Allen Cameron, of the Abbott Worsted Company, Westford, Mass.

† See argument of Mr. Rowland G. Hazard in behalf of the Rhode Island woollen manufacturers before the Committee of Ways and Means, May 11, 1864. These views

even prove all this. There can be no reliance upon a permanent friendly legislation for both interests unless the wool-growers are satisfied. Our object is not to reach Congress, but to convince the farmers of the West, who will inevitably control the legislation of this country, of the absolute identity of our interests. The most important means of extending our manufacture, therefore, is to establish friendly relations with the wool-growers. How shall this be accomplished? Let them understand that, while, individually, the manufacturers will follow their commercial instincts in buying at the cheapest market, they utterly repudiate all associations or combinations to lower the market price. Let manufacturers be more careful in the selection of their agents for purchasing wool, or let them go themselves into the agricultural districts and become acquainted with the farmers and their flocks. If there is any rule of the trade which operates inequitably towards the wool-grower, let it be abolished. The complaint has been made by the wool-growers, that the rule that all wools shall be

are not confined to manufacturers. I find the following in the *New-England Farmer*, April, 1828, vol. vi., p. 298:—"Mr. Mallary, of Vermont (a wool growing State), in his speech on the tariff bill, reported by the Committee on Manufactures, opposed the proposed additional duty on wool costing eight cents per pound and under. He said such wool was not and would not be produced in this country. The farmers of Vermont would not grow wool worth ten or twelve cents, when they could as well produce that which may be worth forty or fifty cents. This coarse, imported wool is made into negro cloths and inferior baizes and flannels. The manufacture of it is established, and ought not to be driven from the country and given to foreigners. The proposed duty would amount to more than 100 per cent, and would ruin the manufacturer of coarse fabrics at a blow, without benefiting the farmer. If the latter should raise wool worth eight or twelve cents, he could not find a market for it. He was also opposed to the other provisions of the bill respecting wool and woollens. The charge on wool was too high, or that on woollens was not high enough; and this disproportion would inevitably ruin the manufacturer and with him the wool grower. If the farmer could not purchase the wool of the latter, it would be in vain to purchase it. The markets of Europe are full of wool, and prices are very low. The English wool-growers are petitioning Parliament for a duty on foreign wool, but their petitions will not be granted. The English woollen manufacturers will receive every encouragement, and will be able to sell their goods at the lowest rate possible so long as there is a prospect that they can break down the American manufacturers. Should they succeed in accomplishing that object, they will then raise their prices, and we must pay them."—*Hampshire Gazette*.

washed, or subjected to a deduction of one-third, to put them upon a par with brook-washed wools, operates unequally and inequitably. I am happy to say that this subject has been entrusted to a committee of this Association, and will, doubtless, receive the action of this body. Let our manufacturers interest themselves directly in the production of desirable varieties of wool. What could be a more becoming or practical contribution from our manufacturers to agriculture, than the offer of a really munificent prize for the best flock of fifty English long-wooled sheep, born and raised in this country, or the best flock of Angora goats?*

A practicable mode of extending amicable relations between the two industries is suggested by what has been done in Germany. In 1823, the illustrious Von Thacr, the great sheep-breeder of Germany, invited all the flock-masters and wool-manufacturers of Germany to meet at Leipsic, and visit the exposition of wools which has since become so important. He urged them to enlighten each other mutually in respect to their reciprocal interests, and to receive precise indications of the demands of manufacturers. This congress convened, and was continued from year to year, and contributed essentially to preserve the reputation of German wools and cloths. An important result of this congress was the adoption, in 1848, of a fixed terminology for the raising of sheep and knowledge of wools.† It is

* The Angora goat, wholly unknown to the ancients, and first described by Belon in the sixth century, is diffused around the mountains of Thibet, and beyond the central plains of Asia from Armenia to Chinese Tartary. The district of Angora, where it most abounds, is described as a country with a dry atmosphere, and very hot summers, and very cold winters,—the mercury descending to 20 degrees centigrade. The number of head in the district of Angora is estimated at from 400,000 to 500,000, and the product of wool at 2,000,000 pounds. Formerly the wools of Angora were spun and woven in the place, and were exported in the form of yarns and camlets, of which the city of Angora sold, in 1844, 35,000 pieces to Europe. The exportation of the wool called *tiftik* in Turkey, and *mohair* in England, was prohibited, and the native spinners and weavers were protected against the machinery of Europe. Some 1200 looms were employed. The natives displayed great skill in making gloves and hosiery, and summer robes of great beauty for the Turkish grandees. The town flourished, and the whole population

† Wecherlin, *Traité des betes ovines*, p. 25.

believed that a convention of delegates from the respective associations of wool-growers and manufacturers in this country would have the happiest effect upon the harmony of both interests, and might accomplish important practical results, not the least of which would be the adoption of a fixed terminology for the description and knowledge of wools in our own markets and farms.

The surest means of developing our industry rests with the manufacturer alone. It is for him perpetually to aspire to the utmost excellence in his products. I need not say that the manufacturer who suffers his goods to run down will inevitably bring down with them his credit and his fortune. I need not say that the trade-marks on your goods should be like the tower mark on old silver, the stamp of the true metal, or the marks on Swedish iron, recognized all over the world as infal-

was employed and happy in the pursuit of their beautiful industry. The Turkish Government was tempted, by British influence, to admit, free of duty, the products of European machinery, and to permit the export of the raw tiftik. This fatal step was the death-blow to the town of Angora. Instead of 1200, not more than fifty looms were employed; the retail merchants, weavers, hand-spinners, and dyers, were ruined, and the city, having at its command all the raw material for a most important and characteristic manufacture, offers, in its sad decline, another monument of the desolating influence of that system which would make the raw material of every country tributary to the one great workshop of the world. Nearly all the product of Angora wool is now exported to England, and is spun into yarns which are largely exported to France. They are used for the manufacture of Utrecht velvets, lace, braid, fine shawls, &c. Vigorous attempts have recently been made on the continent of Europe, especially in France, to acclimate this species; but nowhere have they succeeded as in the United States. The first importations of seven head were made about seventeen years ago by Dr. Davis, of South Carolina. About three hundred have been imported since. Their progeny, with crosses, is said by Mr. Diehl to number several thousand, scattered in flocks of from 12 to 300 hundred head, principally in the south-western States. A flock imported this season by Mr. Chenery, of Belmont, Mass., which I have examined, is in excellent condition. This flock numbered ten when it started, and fourteen upon arrival at Boston. They were driven 800 miles to Constantinople, and were seven months upon the voyage, but arrived in good health. The value of the wool in the market is now about \$1.25 per pound (not \$6 to \$8, as stated in the Agricultural Reports). The agent of the Abbott Worsted Manufacturing Co., Westford, Mass., informs me that he has similar machinery for spinning this wool to that used in the celebrated establishment of Titus Salt, of Bradford.— See article by Israel S. Diehl, U. S. Agricultural Report, 1863, p. 216. Southey on Colonial Wools, p. 322, *et seq.* Bulletin de la Société d'Acclimatation, t. v. p. 569.

lible seals of uniform excellence. The credit of your mills and the honor of your houses will be the most certain fortunes for yourselves and the best legacies to your sons. But it is not enough that you should be content to keep up the old standard of your goods. The highest attribute of humanity is the passion for perfection, the aspiration for some unattained ideal. The noblest men stamp these aspirations upon all their earnest works; they are then no longer workmen, traders; they become artists. Art is not found alone in painting and sculpture. It is the domain of Minerva, who gave the distaff, as well as of the Muses. The lover of art sees it in "the Stones of Venice," the iron scroll-work and armor of the middle ages, and in the old tapestries of Versailles,—in every work of man's hands which bears the impress of his soul. The sturdy honesty of the English clothiers of former times, and their workmanlike fidelity to the canons of their ancient guild, made the old-fashioned cloth of England as sound and solid as English oak. A higher sentiment, a passion, as it were, for an ideal fineness and nobility of fibre, incited the German flock-masters to create the unparalleled cloth wools which have given Silesia the crown of the "golden fleece." A passion for an ideal perfection of tissues inspires the master weavers and spinners of France in their perpetual strife to conquer new fields for her industrial glory. It impels them to add, each year, to the fineness and softness of their threads, and the perfection of their tissues, till their fabrics have become models which the spindles and looms of all other nations are content to simulate, but fail to imitate. All American industry needs to be vivified by such aspirations. Every earnest worker with such a purpose is a blessing to his country and race. As Mr. Ruskin said, in his art lecture to the manufacturers of Bradford, "If you resolve from the first, that, as far as you can ascertain what is best, you will produce what is best, on an intelligent consideration of the probable tendencies and possible tastes of the people whom

you supply, you may literally become more influential for all kinds of good than many lecturers on art, or many treatise-writers on morality." I will add: By such noble work you rise above the sphere of common labor; you become more than workmen, — more than artists, — you become creators, imitators, though humble, still worthy, of the great Worker, the infinite Maker. Indulge me a moment longer while I give you, in the eloquent words of a great teacher now passed away, the supreme example which is set for your labors.* "A thoughtful man for the first time goes to some carpet-mill in Lowell. He looks out of the window and sees dirty bales of wool lying confusedly about as they were dropped from the carts that brought them there. Close at hand is the Merrimac River, one end of it pressed against the New-Hampshire mountains and the sky far off, while the other crowds upon the mill-dam, and is going through its narrow gate. Under the factory it drives the huge wheel, whose turning keeps the whole town ajar all day. Above is the great bell which rings the river to its work. Before him are pullies and shafts. The floor is thick set with looms. There are rolls of various colored woollen yarns; bits of card, pierced with holes, hang before the weaver, who now pulls a handle, and the shuttles fly, wedding the woof to the expectant warp, and the handsome fabric is slowly woven up and rolled away. The thoughtful man wonders at the contrivance by which the Merrimac River is made to weave such coarse materials into such beauty of form and finish. What a marvel of machinery it is! None of the weavers quite understand it, — our visitor less. He goes off, wondering what a head it must be which made the mill a tool by which the Merrimac transfigures wool and dye-stuffs into handsome carpets, serviceable for chamber, parlor, staircase, or meeting-house."

"But, all day long, you and I, . . . and all the people in the

* Lessons from the World of Matter and the World of Man, by Theodore Parker. Boston. 1865. p. 51.

world, are in a carpet-factory far more wonderful. What vast forces therein spin and weave continually! What is the Merrimac River, which only reaches from the New-Hampshire mountains to the sea, compared to that river of GOD, on whose breast the earth, the sun, the solar system, yea, the astral system, are but bubbles which gleam, many-colored, for a moment, or but dimple that stream, and which swiftly it whirls away? What is the fabric of a Lowell mill to that carpet which GOD lays on the floor of the earth from the Arctic Circle to the Antarctic, or yet also spreads on the bottom of the monstrous sea? It is trod under foot by all mankind. The elephant walks on it, and the royal tiger. What multitudes of sheep, swine, and horned cattle, lie down there and take their rest! What tribes of beasts, insects, reptiles, birds, fishes, make a home there, or feed thereon! Moths do not eat away this floor-cloth of the land and sea. The snow lies on it. The sun lurks there in summer, the rain wets it all the year: yet it never wears out; it is dyed in fast colors. Now and then the feet of armies in their battles wear a little hole in this green carpet; but next year a handsome piece of botanic rug-work covers up the wear and tear of Sebastopol and Delhi, as of old it repaired the waste of Marathon and Trasimenus. Look! and you see no weaver, no loom visible; but the web is always there on the ground and under the sea. The same Clothier likewise keeps the live world tidy, and in good trim. How all the fishes are dressed out,—those glittering in plate-armor, these only arrayed in their vari-colored jerkins, such as no Moorish artist could paint! How well-clad are the insects. With what suits of mail are beetle and bee and ant furnished. The coat of the buffalo never pinches under the arm, never puckers at the shoulder; it is always the same, yet never old fashioned, or out of date. . . . The pigeon and humming-bird wear their court-dress every day, and yet it never looks dusty nor threadbare. In this grand clothiery of the world, everything is clad in more beauty

than many-colored Joseph or imperial Solomon ever put on, yet nobody sees the wheel, the loom, or the sewing machine of this great Dorcas institution, which carpets the earth and upholsters the heavens and clothes the people of the world with more glory than the Queen of Sheba ever saw in her dream of dress and love."

APPENDIX.

Secretary's Official Report.

THE By-laws of the "National Association of Wool Manufacturers" make it the duty of the Secretary to prepare, under the direction of the government, an annual report of the transactions and condition of the Association. The following is submitted in conformity with this requirement:—

The want of some organization, capable of united and systematic action, having long been felt among those engaged in the woollen manufacture, a circular was addressed, on the tenth day of August, 1864, to those most directly interested in the matter. In response to this call, a large number of the leading wool manufacturers of the country, from Ohio, Pennsylvania, New York, New Jersey, Maryland, Delaware, and from each of the six New-England States, assembled in convention at Springfield, Mass., on the twelfth day of October, 1864. The Convention at that time resolved that it should proceed to the formation of a "National Association of Wool Manufacturers." To carry this resolution into effect, a committee was appointed to prepare a plan of organization, and report at an adjourned meeting of the Convention, to be held on the 30th of November following. The Convention having met on that day, and having been dissolved, the Association was organized by adopting Articles and By-laws which had been presented by the Committee, and by choosing officers as therein described. Meetings of the government, provided for in the By-laws, were successively held at Boston, Mass., on the twenty-first day of December, 1864; at New York, on the fifteenth day of March, 1865; at New York, on the seventeenth day of May, 1865; at Newport, R.I., on the twenty-sixth day of July, 1865; and at Philadelphia, on the 6th of September. These meetings were all numerously attended. At all of them interesting discussions took place upon questions relating to the inter-

ests of the Association. Committees were also appointed, having in charge the more important matters to be acted upon by the government. By the direction of the government, a statement was prepared by the President of the "Objects and Plan" of the Association. This has been printed and extensively circulated. It was regarded by the government, that the first and most important duty of the Association was to obtain information of the actual condition of the woollen manufacture throughout the United States. With great labor, a list of all persons known or believed to be engaged in the woollen manufacture was prepared. Circulars containing such interrogatories as would draw forth the desired information were sent to all persons on this list, about 1,700 in all; 931 returns have been received, representing 4,073 sets of machinery, and returns are coming in daily. It is believed that by this means the Association will be in possession of complete and accurate statistics of the woollen machinery in operation in this country, the amount and description of wool consumed, and the quantity and character of goods manufactured,—information indispensable for wise and just legislation in matters affecting our interests. It is believed that no inquiries at present pursued by the national Government will furnish a basis for such legislation. It is the object of the government to place the Association upon such a basis that it shall have weight in our national councils, and that the interests of all the woollen manufacturers of the country shall be fully represented and cared for. The government believe that they have accomplished all that could have been expected in the few months of the existence of the Association, in completing its organization and arranging its machinery. They have not deemed it wise to attempt too much, or to make a display of their operations. The value of such an organization exists most in its silent and hardly appreciable influence; and time and patience are necessary to secure that which is really useful and permanent. The Association consists, at present, of 201 members; a number which, it is hoped, may be greatly increased when our "Objects and Plans" are more fully known.

Respectfully submitted,

JOHN L. HAYES,
Secretary.

T A B L E,

Showing the Value of Woollen Goods manufactured in the United States, for the Year ending June 30, 1864. Calculated from Official Report of United-States Commissioner of Internal Revenue.

S T A T E S .	Manufacturers of WOOL not otherwise pro- vided for.	Cloths, and all Textile, Knitted or Felted Fabrics of WOOL, before dyed, printed, or prepared in any other manner.	Manufacturers of WORSTED not otherwise pro- vided for.	T O T A L .
	Dollars.	Dollars.	Dollars.	Dollars.
MAINE	3,238,098.67	238,385.00	. . . . .	3,476,483.67
NEW HAMPSHIRE	9,044,762.00	34,915.00	. . . . .	9,079,677.00
VERMONT	3,145,933.67	562,788.00	. . . . .	3,708,721.67
MASSACHUSETTS	38,905,399.00	800,531.33	897,720.67	40,603,651.00
RHODE ISLAND	2,963,154.33	7,668,531.67	261,014.33	10,892,700.33
CONNECTICUT	11,873,763.67	3,913,965.00	78,912.33	15,866,641.00
NEW YORK	10,850,180.00	2,214,802.67	912,792.33	13,977,775.00
NEW JERSEY	2,752,652.00	25,361.67	70.33	2,778,084.00
PENNSYLVANIA	13,022,447.33	3,502,190.00	75,076.00	16,599,713.33
DELAWARE	548,134.67	. . . . .	. . . . .	548,134.67
MARYLAND	450,385.33	1,526.67	. . . . .	451,912.00
WEST VIRGINIA	58,486.00	5,267.00	. . . . .	63,753.00
KENTUCKY	117,534.33	242,370.67	. . . . .	359,905.00
MISSOURI	72,980.00	2,364.00	. . . . .	75,344.00
OHIO	1,315,243.00	85,634.67	. . . . .	1,400,877.67
INDIANA	545,128.33	11,794.33	1,692.67	558,615.33
ILLINOIS	341,907.00	11,384.00	5,793.33	359,084.33
MICHIGAN	118,094.00	33,754.33	. . . . .	151,848.33
WISCONSIN	104,457.67	860.00	. . . . .	105,317.67
IOWA	102,815.67	15,489.67	. . . . .	118,305.33
MINNESOTA	8,696.00	450.00	. . . . .	9,146.00
KANSAS	14,947.67	. . . . .	. . . . .	14,947.67
CALIFORNIA	538,956.00	. . . . .	. . . . .	538,956.00
OREGON	128,620.67	. . . . .	. . . . .	128,620.67
NEBRASKA TERRITORY	45.67	. . . . .	. . . . .	45.67
				121,868,250.33

STATEMENT OF AGGREGATE RESULTS,

OBTAINED UP TO OCTOBER 25, 1865.

In Reply to Circulars of Feb. 24, 1865, and May 30, 1865, addressed to Wool Manufacturers.

STATES.	Returns Received.	Sets Reported.	Weekly Consumption of Scoured Wool, in Pounds.	Weekly Consumption of Domestic Wool, in Pounds.	Weekly Consumption of Foreign Wool, in Pounds.	Percentage of Foreign Wool.	Average Weekly per Set.	Mills to be heard from.
MAINE	40	177	93,835	74,120	19,715	19½	530	11
NEW HAMPSHIRE	69	361	217,110	174,841	42,269	19½	601	28
VERMONT	39	112	50,217	32,652	17,565	35	448	19
MASSACHUSETTS	186	1,467	857,496	560,396	297,100	34½	585	74
RHODE ISLAND	61	340	188,775	152,967	35,808	19	555	15
CONNECTICUT	88	452	252,880	125,486	127,394	50½	559	43
NEW YORK	154	576	236,510	174,536	61,974	26½	411	124
NEW JERSEY	11	64	33,660	25,238	8,422	25	526	7
PENNSYLVANIA:								
Philadelphia	24	68	88,200	68,650	19,550	22½	1,297	98
Remainder of the State	57	90	39,054	39,054	. . . . .	..	434	69
DELAWARE	6	15	14,050	13,050	1,000	7½	937	4
MARYLAND	1	8	5,400	2,700	2,700	50	675	2
WEST VIRGINIA . . . . .	..	..	. . . . .	. . . . .	. . . . .	..	. .	1
OHIO	44	83	32,615	32,615	. . . . .	..	392	34
INDIANA	47	103	51,200	51,200	. . . . .	..	497	41
ILLINOIS	22	47	23,355	23,355	. . . . .	..	497	13
MICHIGAN	20	26	9,660	9,660	. . . . .	..	372	12
WISCONSIN	13	25	10,800	10,800	. . . . .	..	432	6
MINNESOTA	1	2	1,200	1,200	. . . . .	..	600	2
IOWA	15	43	17,658	17,658	. . . . .	..	411	6
MISSOURI	10	21	16,650	16,650	. . . . .	..	793	4
KENTUCKY	7	14	6,600	6,600	. . . . .	..	400	7
KANSAS	1	3	1,620	1,620	. . . . .	..	540	2
CALIFORNIA . . . . .	..	..	. . . . .	. . . . .	. . . . .	..	. .	1
OREGON	1	4	4,000	4,000	. . . . .	..	1,000	1
NEBRASKA TERRITORY
TOTAL, Oct. 25, 1865	917	4,100	2,252,545	1,619,038	633,497	28½	550	624

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JOHN COVODE, Lockport Station.
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RICHARD GARSED, Frankford, Pa.
J. K. KILBOURN, Pittsfield, Mass.
C. H. ADAMS, Cohoes, N.Y.
ESTUS LAMB, Blackstone, Mass.
ROBERT MIDDLETON, Utica, N.Y.

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DEXTER MILLS, <i>R. W. Robinson</i> , Ag't	Dexter.
S. O. BROWN	Dover.
ANSON P. MORRILL	Readfield.
THOMAS S. LANG	No. Vassalboro'.

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D. HENSHAW WARD, Ag't <i>Ashuelot Manufacturing Co.</i>	Keene.
MOSES SARGENT, Jr.	Lake Village.
MILTON MILLS, <i>E. R. Mudge, Sawyer & Co.</i> , Ag'ts	Milton.

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SETH B. HUNT	Bennington.
HOLMES, WHITTEMORE, & Co.	Springfield.
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C. P. TALBOT & Co.	Billerica.
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ADOLPHUS MERRIAM	"
CHARLES MERRIAM	"
PERRY & WENDELL	"
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HENRY V. WARD, Treas. <i>Lawrence Manufacturing Co.</i>	"
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FRENCH & WARD	Canton.
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