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MANUFACTURING IN ALABAMA
DURING THE CIVIL WAR

By

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INTRODUCTION

This is the narrative of the courage and perseverance of a people in their tremendous industrial fight to supply their ill-equipped soldiers with the sinews of war. It is the account of the development of manufacturing in a commonwealth which dared to claim its political independence while yet it was in economic slavery, dependent upon outside sources for every necessity of life. It is the story of the birth of war industries in a state which, gripped by a one-crop agricultural system and largely destitute of industrial establishments, commerce, or munitions of war, gallantly ventured forth on the course of a terrible conflict with a foundation no more substantial than a profound assurance that "one Southerner can lick five Yankees."

The struggle resolved itself into a war of material resources. In the possession of these the Confederacy was sadly lacking. In the realm of manufactures, the North was rich while the South was poor. The Cotton Kingdom had had no place for great manufacturing establishments. Immense industrial possibilities had been neglected. The available labor lacked skill and versatility. Little effort had been exerted to develop transportation and commercial facilities. The South was the victim of agricultural specialization, and economic insufficiency.

Reliance was first placed upon European intervention rather than upon the development of Southern industry. But as this hope faded, and as Alabama and her sister Confederate states were strangled by the smothering force of the Federal blockade, they nobly strove to create in a few years war manufactures and war supplies of which the North had been in possession for many years. Such was the spirit and devotion, the ingenuity and adaptability of the people of the South that they were able to withstand successfully for more than four years the tremendous superiority of the enemy in

material resources. To the economist this industrial defense is fully as remarkable as the more spectacular Southern military defense. Yet in the end a conflict waged on the basis of such a disparity of economic reserves could have but one conclusion, and that the triumph of an established and efficient system over an untried, extemporized system with crude and primitive industrial methods. At last the South succumbed, victim of the crushing weight of her adversary's overwhelming material reserves.

Of the Confederate states, Alabama suffered the most from the blockade, because of her central location and because of the absence of railways running north and south. Therefore this state in particular was compelled to rely on her native resources and to develop industries which might meet the needs of her military forces in the field and her civilian population at home. How well she succeeded the pages following will demonstrate.

CHAPTER I

INDUSTRIAL RESOURCES FOR CONFLICT

The state of Alabama seceded from the Union on January 18, 1861. Yet she was woefully unprepared even for a peaceful independence, much less for war and the production of the indispensable materials of war. In 1860 there were only 1,459 manufacturing establishments in the state and the total annual value of the manufactured products was only \$10,588,571.¹ In the same year the annual value of products in New York was \$378,870,939; that of Pennsylvania \$290,121,188; that of Massachusetts \$225,545,922; while Ohio and Connecticut manufactured products worth eleven and eight times as much, respectively, as those of Alabama.²

Baldwin, Dallas, Autauga, Lauderdale, Madison, Mobile, Pickens, and Tuscaloosa were the leading manufacturing counties in Alabama. Flour and meal, lumber products, textiles, and machinery constituted the most valuable manufactures.³ Of the twenty-five million dollars which trade annually brought into the state, only about one million was invested in manufacturing enterprises.⁴ Industry in Alabama was highly specialized. The raising of cotton was the prevailing interest of the state, the occupation of all gentlemen. Immense quantities of capital were concentrated in cotton lands and slaves. Under this system of agricultural specialization Mobile had become the second cotton exporting port of America. All other forms of industry were subsidiary to cotton production. Manufactures were to be encouraged only in so far as they might be of utility in the promotion of a larger cotton output.⁵

1. Eighth Census of the United States: Manufactures, p.14.

2. Ibid., 50, 113, 252, 419, 488, 544.

3. Ibid., 13, 14.

4. Armes, Ethel, Story of Iron and Coal in Alabama, p. 122.

5. Armes, op. cit., p. 121; Fleming, W.L. Civil War and Reconstruction in Alabama, p. 183.

The effect of this peculiar industrial system was to accentuate the disparity between the value of manufactured products in this state and states of the North. To indicate the extent to which certain representative Northern states had outdistanced Alabama in the field of industrial development, New York and Alabama may be compared in the production of war manufactures in 1860:¹

Products.	<u>Alabama</u>		<u>New York.</u>	
	No. estab.	Value of products.	No. estab.	Value of Products.
Boots and shoes	110	\$228,276	2,277	\$10,924,173
Clothing	9	28,350	995	32,220,037
Cotton goods	14	1,040,147	79	6,676,878
Firearms	5	4,260	37	193,739
Flour and meal	236	2,343,238	1,234	34,636,764
Iron manufactures	16	108,140	353	14,067,560
Machinery and steam engines	16	742,120	199	2,799,090
Saddlery and harness	32	140,350	607	1,652,011
Tin, copper, and sheet iron ware	27	237,420	642	3,448,928
Woolen manufactures	6	191,474	140	5,870,117
Total	471	\$10,588,571	6,563	\$378,870,939

Although Alabama was a leading cotton growing state, her cotton manufactures were valued at but \$1,040,147, while the cotton products of Massachusetts were worth \$36,282,785.² Alabama, with firearms worth \$4,260 annually, was daring to defy a nation of which the one small state of Connecticut manufactured firearms worth \$1,186,500.³ Iron manufactures are a necessity of warfare, yet Alabama's iron product was valued at \$108,140 as against Pennsylvania's product of \$36,389,655.⁴ In Alabama there were sixteen forges and

1. Eighth Census of the United States: Manufactures, pp. 14, 412-419.

2. Ibid., 14, 252.

3. Ibid., 14, 50.

4. Ibid., 14, 540-541.

one rolling mill in operation in Shelby, Tuscaloosa, Calhoun, Talladega, and Cherokee counties, but practically nothing had been done to develop the rich stores of iron and coal in the northern ranges of the state. The planters in the midst of one of the richest mineral regions in the world were not manufacturing enough ironware to repair their farming implements.¹

Alabama had scarcely been opened to railroads in 1860, probably having the poorest transportation facilities of any state in the South.² There were but 800 miles of railway in the state, none of which adequately served the great mineral region. No through lines connected the northern and southern sections of the state. The most important roads were the Alabama and Florida, the Mobile and Ohio, the Cahaba, Marion, and Greensboro, the Nashville and Decatur, and the Uniontown and Newberne Railways.³ Three other railroads were being projected in 1860; namely, the Selma, Rome, and Dalton, the Northeast and Southwest, and the Alabama Central.⁴ Iron for all these roads was obtained from England. Coaches and locomotives came from Northern foundries⁵. For years railroads of Alabama and the South had endeavored to arouse some interest in their construction plans and possibilities of service, and to stimulate production of rails and equipment in Southern workshops. Unfortunately, the planters were too loyal in their allegiance to King Cotton to divert their attention to industrial diversification and railroad building.⁶

In the decade preceding the Civil War, there had been a notable movement in the state to encourage the development of industrialism, and

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1. Alabama Historical Society Publications, Vol. IV, p.457; Wilson, Woodrow, History of the American People, Vol. IV, p.289; Armes, pp. 82,121,122,178.
 2. Armes, p. 105.
 3. Fleming, op. cit., pp. 155-156; Armes, p. 118.
 4. Armes, p. 105.
 5. Cotterill, R.S., Mississippi Valley Historical Review, 10:404.
 6. Cotterill, R.S., op. cit., 10:404.

to secure economic independence of the North and of Europe.¹ From 1845 to 1860 numerous commercial conferences were held in Alabama and other Southern states to discuss measures by which capital might be diverted into manufacturing and skilled labor attracted southward.² The legislature of Alabama passed a bill to encourage the manufacture of firearms in the state.³ But manufacturing had made but a feeble beginning at the outbreak of war.

Especially deficient was the South in the matter of supplies of ordnance and munitions of war. The only arms available at the commencement of hostilities were those confiscated from Federal arsenals and those imported from Europe before the blockade became effective.⁴ These arms were of the most antiquated design, many of them smoothbores and flintlocks altered so that they might be fired by percussion.⁵ Even old Spanish flintlocks were imported from Cuba, and so altered that they might be of temporary use.⁶ The Ordnance Department was greatly embarrassed by this variety of weapons and calibres, only ten per cent of the arms being of the improved muzzle-loading type used by the Federal infantry.⁷ A northern historian admits that the Southern forces might easily have followed up their triumph at the battle of Bull Run and won a decisive victory if they had only had adequate arms and ammunition⁸.

Ammunition and powder were practically negligible in quantity. About 1,000,000 rounds of small arm cartridges, 60,000 pounds of powder, and

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1. Manufacturers Record: The South's Development, p. 112; Fleming, p. 24.
 2. Dodd, William E., The Cotton Kingdom, pp. 44,45; Fleming, p. 24.
 3. Acts of Alabama (1859-60), pp. 689-696.
 4. Jones, J. B., A Rebel War Clerk's Diary, Vol. I, pp. 78, 478; Stephens, Alexander, The War Between the States, p. 427, Vol. I.
 5. Davis, Jefferson, Rise and Fall of the Confederacy, Vol. I, p. 471.
 6. Davis, op. cit., Vol. I, p. 480; Southern Historical Society Papers, 2:61.
 7. Alexander, General E. P., Military Memoirs of a Confederate, p. 53.
 8. Rhodes, J. F., History of the United States, Vol. III, p. 459.

250,000 percussion caps were stored in the six Federal arsenals located in the South. These munitions were of inferior quality, most of the supply having been saved over from the Mexican War.¹

Not a single battery of serviceable field artillery was available in the whole South. Neither were there stores of the necessary war equipment and accoutrements for artillery and cavalry. There were no saddles, bridles, harness or blankets.² Because of the scarcity of lead, the Confederacy was denied the use of shrapnel, the most effective kind of ammunition,³ while the supplies of copper, brass, medals, and chemicals for the manufacture of percussion caps were inadequate for the making of the best ammunition.⁴

Furthermore, there were no factories or machinery with which to fashion the essential war materials. Engaged in peaceful agricultural pursuits, the South had failed to prepare herself with the armaments of war. With the sole exception of a short period during the Mexican War, the industry of the South had failed to produce a single gun, arm, or gun carriage for half a century.⁵ The Southern arsenals were equipped with only the most simple apparatus, none of it appropriate to the manufacture or repair of weapons.⁶ There were no powder mills, powder depots, or industries which called for saltpetre.⁷

Early in January, 1861, Governor Moore of Alabama seized the forts on Mobile Bay and the arsenals at Mount Vernon, confiscating the 20,000

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1. Davis, Vol. I, p. 472; Gorgas, General Josiah, Notes on the Ordnance Department of the Confederate States, Southern Historical Society Papers, Vol. XII, 68.
 2. Gorgas, General Josiah, op. cit., Vol. XII, p. 68.
 3. Ibid., Vol. II, p. 107.
 4. Alexander, E. P., Military Memoirs of a Confederate, p. 54.
 5. Davis, Vol. I, p. 472.
 6. Ibid.
 7. Davis, Vol. I, p. 316.

muskets and a similar number of rifles stored in those places. But these arms were almost worthless, and required a change in pattern in order to be of service.¹ The first Alabama contingents marched to the front with a motley assortment of flintlocks, shotguns, squirrel rifles, and muskets salvaged from garrets and out of forgotten corners.² Many units could not be provided with arms, and were despatched to camp to wait until weapons could be placed in their hands either by capture from the enemy or by Confederate casualties.³ In 1861, the legislature purchased 1000 bowie knives so that a militia regiment might be ready for the front.⁴

A valuable resource for industry might seem to exist for the South in its abundant labor supply, and in some respects the institution of slavery proved to be an asset. The slaves were not disorganized by the war; it was not necessary to adapt the labor system to the new conditions. During the struggle the blacks proved as efficient, orderly, and faithful as in peace. Still the negro labor was unskilled and hence defective, for although it continued to be the foundation of the agricultural system, it failed to show an aptitude for manufacturing and the management of complex machines. They did most of the rough work in all of the new manufacturing industries, but they did not possess the mechanical skill necessary for the efficient production of war materials and other requisite manufactures.⁵

Thus the Confederacy was almost destitute of industrial resources for conflict. This economic impotence was fully recognized, and the life of

1. Fleming, p. 149.

2. Fleming, p. 150

3. Ibid.

4. Official Records of the War of the Rebellion, Ser. I, Vol. III, p. 440; Davis, Vol. I, p. 476; Wilson, Woodrow, Division and Reunion, p. 246.

5. Brown, William G., The Lower South in American History, p. 160; The South in the Building of the Nation, Vol. V, p. 148; Richardson, James D., Messages and Papers of the Confederacy, Vol. I, p. 378.

the new nation was staked on the omnipotence of King Cotton and of his power to invite European interference with the Federal blockade, and to arouse opposition to the war among the owners of textile factories in the North.¹ This illusion was sadly blighted as foreign intervention was not forthcoming. Despite hardship, unemployment, and starvation among the textile workers of the British Isles, the statesmen of Great Britain were soon convinced that they could neither consistently nor profitably espouse the cause of Southern slavery. Furthermore, they were wary of antagonizing the nation upon which British labor was dependent for breadstuffs. Northern wheat supplanted Southern cotton as king of European interests. The hope of the Confederacy for material assistance from foreign sources was gradually dispelled.² In the face of this new situation of economic isolation, the Southern people were compelled to develop a variety of new industries or to revive long neglected ones.³

The response to the effects of the blockade was prompt in Alabama. Although the sole port of the state was guarded by a strong Federal fleet, the blockade was generally proclaimed to be, not a curse, but a blessing in that it diversified industry and fostered a realization of long sought economic independence.⁴ It was claimed that the blockade would result in an impetus to the growth of Southern manufactures as great as that which the Embargo and the War of 1812 gave to the manufacturing enterprises in New England. There was even a movement for a protective tariff system to encourage Southern "infant industries".⁵

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1. Schouler, James, History of the United States, Vol. VI, p. 316; Rhodes, J. F., History of the United States, Vol. III, pp. 404, 415.
 2. Rhodes, J. F., op. cit., Vol. III, pp. 415-416.
 3. Schwab, J. C., The Confederate States of America, p. 248.
 4. Pollard, E. A., Southern History of the War, Vol. I, p. 496.
 5. Schwab, J. C. op. cit., pp. 244-249.

Governor Moore was enthusiastic in his message to the legislature in October, 1861. He said: "Mechanical arts and industrial pursuits, hitherto practically unknown to our people, are already in operation. The clink of the hammer and the busy hum of the workshop are beginning to be heard throughout our land. Our manufactures are rapidly increasing and the inconvenience which would result from the continuance of the war and the closing of our ports for years would be more than compensated by forcing us to the development of our abundant resources, and the tone and temper it would give to our national character. Under such circumstances the return of peace would find us a self-reliant and truly independent people."¹

1. O. R., Ser. IV, Vol. I, p. 711.

CHAPTER II

MANUFACTURE OF ORDNANCE, MUNITIONS, MATERIALS OF WAR.

Under war conditions, the industrial development of the state centered largely about the production of materials of war. The state legislature and the Confederate Congress exerted every effort to foster the immediate establishment of factories, furnaces, and shops which might quickly provide for military needs. Both government and private concern took the field. The Alabama legislature appropriated \$250,000 for loans to the manufacturers of firearms.¹ Both state and Confederate governments offered to advance fifty per cent of the capital required to set up an industrial establishment with the necessary machinery, and agreed to accept products in payment.² Employees of essential industries were exempted from military service,³ and free transportation of products by the railroads was provided by the government. An Alabama statute of 1861 recognized the validity of all patents granted by the United States prior to January 11, 1861, and the United States patent and copyright laws were adopted by the state.⁴ In the essential war industries, as iron making and the manufacture of munitions, the Confederate government either bought the enterprise outright on generous terms, or demanded a complete monopoly of the product.⁵

Of the war industries, the production of iron was the most conspicuous. Fortunately for the Confederacy General Josiah Gorgas was ap-

1. O.R., Ser. I., Vol. III, p. 440.

2. Acts of Alabama, 2nd Called and 1st Regular Session, pp. 151, 168, 214, 278; Richardson, J. D. op. cit., Vol. I., p. 158; Fleming, p. 156; Armes, p. 129.

3. Moore, A. B., Conscription and Conflict in the Confederacy, p. 53; Fleming, p. 95.

4. Bacot, D. Huger, Birmingham News, February 22, 1925. Dr. Bacot, a professor in Alabama College, has contributed to the Birmingham News a series of articles on the industrial progress of Alabama during the Civil War.

5. Ramsdell, Chas. W., Mississippi Valley Historical Review, 8:231; Armes, 129.

pointed Chief of Ordnance in April, 1861. He was an officer singularly fitted both by experience and general capacity, for the duties of "the most important scientific and administrative position in the Confederacy." Under his able direction his department, by its almost miraculous provision of ordnance and munitions, was generally recognized as the most efficient organization of the Confederacy.¹ The administration of the production of iron, lead, copper, and other minerals, together with the manufacture of sulphuric and nitric acids was conferred upon the Nitre and Mining Bureau, one of the three divisions of the Ordnance Department.²

The production of iron in the sixteen establishments existing before the war was rapidly revived, and their capacity increased. New foundries, forges, and rolling mills appeared. There were sixteen blast furnaces and six rolling mills in active operation in Alabama during the war period.³ The ten iron making counties were: Bibb, Calhoun, Cherokee, Jackson, Jefferson, Lamar, Lauderdale, Shelby, Talladega, and Tuscaloosa counties.⁴

A series of iron plants in western Alabama were very productive until they were demolished by enemy expeditions. Early in the war the owners of the Hale and Murdock Works in Lamar county made a contract with the Confederate government for the delivery of their total product. The works possessed a daily capacity of about eleven tons and turned out a steady product of cannon balls, grape shot, and other ammunition.⁵ The Leach and Avery Foundry in Tuscaloosa county, near the city of Tuscaloosa, cast cannon for

1. Armes, p. 124.

2. Davis, pp. 477-478; Fleming, p. 154; Armes, p. 129.

3. Armes, p. 186.

4. Armes, p. 157; Fleming, p. 150.

5. Armes, p. 158. A large body of cavalry under General Forrest had their horses shod at this place while the detachment was on its way through Mississippi in 1862-63.

the Confederacy until it was destroyed by Croxton in his raid of 1865.¹

A most valuable blast furnace with a capacity of twenty tons daily was the historic Tannehill Furnace in Tuscaloosa county. Its capacity had been increased in 1863 by the installation of a steam plant and an additional furnace. A small forge was operated nearby. Before these works could manufacture iron for the government, they first had to provide supplies of horse-shoes, wagon axles and chains, tools, and so forth in order that the necessary hauling of materials and repair of equipment might be carried on. This plant cast cannon balls, gun barrels, ordnance, and munitions until it was burned by Croxton.²

The new furnaces in Jefferson county first introduced the county to the state as an iron making region. Until the war period the immense mineral wealth of this section had been neglected, and the rich iron ore of Red Mountain had been utilized in the making of dyes rather than in the smelting of fine iron. Now, with the stimulus of great war orders, and the promise of the North and South Railway system to serve the locality, three iron plants were constructed in the county; namely, the Red Mountain Iron Works at Oxmoor, the Mount Pinson Iron Works, and the Cahaba Iron Works, the three producing about fifty tons of iron daily. Of these concerns, that at Oxmoor was the largest and most famous. Under the expert administration of an experienced furnaceman, Moses Stroup, the Red Mountain Works operated continuously until the last months of the war, giving employment to a large settlement of skilled laborers, and turning out a steady product of twenty tons a day³.

1. Armes, p. 158.

2. Ibid., p. 159. Iron making has never been revived at Tannehill. The ruin and destruction left by the Federal raiders has been overgrown by the wilderness. The surrounding country has been abandoned to the forest. The site of this famous old Alabama furnace is now one of the most picturesque spots in the state. Armes, p. 159.

3. Armes, pp. 161-169; Brewer, W., History of Alabama, p. 289.

Just to the south, in Bibb and Shelby counties, were built some of the best blast furnaces and rolling mills in the state. One of these groups of iron works was erected at Briarfield in Bibb county. They could produce twenty-five tons of excellent iron daily. This product was found to be the best obtainable "for strength, malleability, fluxibility, and fine texture of fibre", and to be admirably adapted for use in the manufacture of heavy ordnance and guns, and for the armor plate of ironclads. The Confederate government soon purchased the entire plant, installing devices for improving and increasing the output, and appropriating the total product for use in the great foundries at Selma.¹ The old plant at Brighthope, which had been the single iron enterprise in Bibb county at the beginning of the war, also supplied a steady shipment of iron for the Selma works.² Another of the most valuable plants in the state was the Shelby Iron Works in Shelby county. The property consisted of a blast furnace, foundry, sawmill, and a large area of mineral and timber lands.³

In eastern and northeastern Alabama another chain of iron works appeared. Two furnaces and about eight small forges operated in Talladega county. The old Knight furnace in this county, of ante-bellum reputation, increased its production, while a new plant was erected at Salt Creek in 1863.⁴ To the Cane Creek Iron Works, in Calhoun county, existing before 1860, was added during the war two large establishments - the Oxford and Janney Furnaces, respectively, - producing about thirty tons of fine quality iron daily.⁵

1. Armes, pp. 161-169.

2. Brewer, op. cit., p. 136; Swank, James M., History of the Manufacture of Iron in All Ages, p. 294; Armes, pp. 169-170.

3. Swank, James M., op. cit., p. 294; Armes, p. 177.

4. Swank, James M. op. cit., p. 294; Armes, p. 178.

5. Brewer, W., op. cit., p. 152; Armes, p. 179. The Oxford plant could ship iron to Selma with facility by means of the Alabama and Tennessee Rivers Railway which was built as far as Blue Mountain.

The product of the Oxford plant was rivalled in excellence only by that of the furnaces in Bibb and Shelby counties, these three works largely supplying the tough iron required for the rolling of armor plate for the Confederate gunboats under construction at Selma.¹ Three furnaces in Cherokee county supplied good iron to the Confederacy; that is, the Round Mountain, the Rock Run, and the Cornwell Furnaces. The last named establishment furnished the iron used by James Noble and Son, of Rome, Georgia, in the casting of cannon for the Ordnance Department, and of horseshoes for the cavalry.² Farther to the northeast the Jackson Furnace, built early in the war in Jackson county, produced a comparatively small quantity of iron.³

With the exception of an isolated iron foundry in Lauderdale county, these sixteen furnaces supplied the product of Alabama during the war.⁴ The Confederate records credit the state with only 150,000 tons of iron for the four year period, but it is probable that the state produced more.⁵ A leading authority on the history of the iron industry in Alabama estimates that the annual product of the state during the war was 30,000 tons of pig iron and 10,000 tons of bar iron.⁶

The output would have been materially larger if it had not been for the constant menace of Federal raids, and the widespread destruction wrought by enemy attacks on manufacturing enterprises in the northern half of the state. Raids by Generals Rousseau and Dodge in 1864 and Generals Wilson and Croxton in 1865 completely razed every iron plant in Alabama.⁷

1. Armes, pp. 145, 179; Gorgas, General Josiah, op. cit., Vol. XII, p. 83.

2. Armes, p. 183

3. Ibid.

4. Brewer, p. 295; Fleming, p. 150.

5. Official Records, Ser. IV, Vol. III, pp. 695, 700, 702, 990.

6. Armes, p. 186.

7. Bacot, D. Huger, Birmingham News, Feb. 15, 1925; Somers, Robert, The Southern States, pp. 162, 175; Fleming, p. 154.

There were six rolling mills which manufactured the crude iron into war munitions. Except for the manufacture of nails, the iron and steel works of the state devoted all their time to making military supplies.¹ Operating in line with the above works, there were established in various parts of the state shops, mills, and supply centers the function of which was to make finished products. One of these was the factory for the manufacture of small arms, which was set up at Tallassee in 1862. It turned out about 6,000 rifles during the war.² Arsenals were also located at Tallassee and Demopolis.³ Naval yards were constructed at Florence, Selma, and in Clarke county. In connection with the yard in Clarke county, a naval foundry was also established at a point near Sunflower Bend. Several small boats and gunboats were almost ready for service when the war ended in 1865.⁴

Selma was the great industrial center for the manufacture of ordnance and war materials, both for Alabama, and for the Confederacy during the last two years of the war. Because of its security from enemy attack, accessibility, and proximity to raw materials, this place was excellently situated for the site of a group of industries producing war materials of every description. All the works located at Selma were so organized and situated that raw materials might be assembled and finished products turned out with the maximum efficiency and the utmost precision.⁵ One-half of the cannon and two-thirds of the fixed ammunition supplied to the Ordnance Department from 1863 to 1865 were produced by the plants at Selma.⁶ After the fall of

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1. Schwab, op. cit., p. 270; Wilson, Woodrow, History of the American People, Vol. IV, p. 295. The six rolling mills in the state were: the Briarfield, the Alabama, the Helena, the Saunders, the Selma, and the Shelby. Armes, p. 186.
 2. O. R., Ser. IV, Vol. III, pp. 986, 987; Davis, Vol. I, p. 480.
 3. Farris, John T., Seeing the Sunny South, p. 185, Armes, p. 147.
 4. Ball, Timothy H., Clarke County, p. 765; Armes, p. 147.
 5. Gorgas, op. cit., Vol. XII, p. 82; Armes, p. 134.
 6. Bacot, D. Huger, Birmingham News, Feb. 15, 1925; Fleming, p. 151.

New Orleans, the old arsenal at Mount Vernon, which had been re-equipped during 1861,¹ was transferred to Selma.²

Every variety of war manufactures was produced at Selma. The plant covered an area of fifty acres and embraced one thousand separate buildings.³ The city promised to become the "Pittsburg of the South."⁴ Excellent arsenals, both for the state and Confederate governments, were maintained, as well as a navy yard and naval foundry. This foundry employed 3,000 men, and cast heavy ordnance, ammunition, and thick plating for armor-clad vessels.⁵ Authorities declared it to be the best foundry in operation.⁶ "The finest cannon in America were cast at the Selma arsenal."⁷ As an auxiliary of the foundry, a navy yard was located nearby. The famous ironclad ram Tennessee, and the gunboats Selma, Morgan, Gaines, and others were built at the navy yard. The armament and the machinery of these vessels proved to be of superior quality, - the armor of the Tennessee not being penetrated by a single shell in the battle of Mobile Bay.⁸ The rolling mills at Selma, Briarfield, Montgomery, and Shelby supplied the necessary materials for the naval construction at Selma.

Auxiliary foundries, forges, workshops, machine and car shops, repair shops, powder works, magazines, army stores, and cotton, wool, and harness factories, employing an aggregate of 3,000 men, were also set up in Selma.⁹

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1. Gorgas, Vol. XII, p. 82.
 2. Davis, pp. 479-480; Armes, p. 134.
 3. Armes, p. 140; Fleming, p. 151.
 4. Farris, op. cit., p. 192.
 5. Fleming, p. 151. The modern machinery which was installed in the naval foundry was purchased in England and run through the blockade.
 6. Bacot, Birmingham News, Feb. 15, 1925; Fleming, p. 151.
 7. Bacot, Birmingham News, Feb. 15, 1925.
 8. Armes, p. 144; Fleming, p. 151.
 9. Brewer, p. 209; Farris, p. 192; Armes, p. 146.

Rifles, muskets, swords, pistols, percussion caps, cartridges, ammunition boxes, haversacks, canteens, and other military supplies were manufactured.¹ A Federal general declared the "value of the Selma works to be, from a mechanical, social, and war point of view, almost inestimable."² For the destruction of the Selma industries, the enemy repeatedly sought to penetrate to the heart of Alabama, and for the defense of this strategic point the Confederacy concentrated every resource. It was not until April, 1865, that General Wilson finally succeeded in crushing the Confederate defense, and razing the Selma works.

There were other prominent centers of war manufacturing industries. The Alabama Arms Manufacturing Company at Montgomery was equipped with the best machinery in the Confederacy for turning out Enfield rifles.³ There were also iron and rolling mills, powder and flour mills, foundries, machine and car shops, factories for the making of harness and textiles, and magazines for stores.⁴ The state penitentiary at Montgomery was turned into a manufactory of military equipment.⁵ Additional car and machine shops were located in Madison and Sumter counties.⁶

In numerous other places textile mills, tanneries, shoe factories, and flour and grist mills were set up. The center of the textile industry of the state during wartime was in the northern section of Autauga county, where the largest and most valuable cotton and wool mills were in operation.⁷ Besides the iron foundry at Tuscaloosa, there were also maintained in this

1. Armes, pp. 135, 140; Fleming, p. 151.

2. Armes, p. 135.

3. O. R., Ser. IV, Vol. II, p. 958.

4. Gorgas, Vol. XII, p. 83; Fleming, p. 157.

5. Armes, p. 147.

6. Fleming, p. 150.

7. Bacot, Birmingham News, Feb. 22, 1925; Fleming, pp. 150, 157.

city an important shoe factory, a factory for the making of grey hats, a tannery, and nitre works.¹ An excellent though vulnerable location for manufacturing enterprises was along the Tennessee River in Franklin and Lauderdale counties. In this region a number of large flour mills, cotton and textile mills, and tanneries appeared.² Unfortunately, this site was particularly open to enemy attack, and the new industries here were destroyed by Federal troops in 1862.³

The manufactories of the state were frequently handicapped because of a scarcity of raw materials. For example, materials for iron manufacture were frequently exhausted. In the absence of an adequate supply of metallic resources, homes, churches, and farms were ransacked for them. Leaden water pipes and window weights were cast into bullets. Boiling kettles, cooking utensils, broken agricultural implements, and worn out machinery were donated to government establishments to be reworked into materials of warfare.⁴ Plantation and church bells were recast into cannon and shells.⁵

The development of manufacturing was greatly impeded by the lack of transportation facilities. This was particularly true toward the end of the war when the railroads began to break down. Many of the railroads were leased by the government for military use, and received assistance from the government in the way of extension, necessary cars and bridges, and repairs.⁶ The legislature advanced \$150,000 to the Alabama and Mississippi Railway in order that it might complete its line between Selma and Meridian.⁷ This company was

1. Publications of the Alabama Historical Society, p.457, Vol. IV; Fleming, pp. 150,157.
2. Fleming, pp. 150, 158.
3. Davis, Vol. I, p. 481.
4. Armes, p. 130.
5. Minutes of the First Presbyterian Church, Tuscaloosa, Alabama; Schouler, James, op.cit., Vol. VI, p. 302.
6. Fleming, p. 155.
7. O.R. Ser. IV, Vol. I, p. 941.

to be relieved from the payment of the duty on the rails necessary for construction. It was imperative that this line should be completed for it connected the richest supply districts of Alabama and Mississippi.¹ As iron could not be secured anywhere for this purpose, the Confederate government took over the Alabama and Mississippi Railway, and impressed the stock of the Alabama and Florida, the Gainsville Branch of the Mobile and Ohio, the Cahaba, Marion, and Greensboro, and the Uniontown and Newberne Railroads.² After overcoming continuous difficulties and hardships occasioned by lack of machinery, supplies, and labor, the road was finished at the end of 1862. In the same year the Confederate Congress appropriated over \$1,000,000 to construct a railroad from Anniston to Rome, Georgia, but due to the absence of sufficient materials and labor, this road failed to render service before the close of the war.³

The importunate demand for powder during the war gave the manufacture of nitre and saltpetre an important place among the war industries. But the industry was always hindered by the fact that the ingredients for powder production were scarce and could not be secured through the blockade from abroad. But despite the absence of a supply of the usual ingredients, a powder mill was set up at Cahaba, and heroic efforts were made to produce powder in the new way.⁴ Various common woods, such as dogwood and willow, were burned to obtain the charcoal necessary in gun powder making.⁵ Nitre was secured from two sources, - the caves of the limestone counties of northern Alabama, and from artificial nitre beds established in some of the cities of central and southern Alabama.

1. Fleming, p. 155.

2. O. R., Ser. IV, Vol. I, p. 1171.

3. Fleming, p. 156.

4. O.R., Ser. IV, Vol. II, pp. 29, 102; Bacot, Birmingham News Feb. 22, 1925; Fleming, p. 152.

5. Bacot, Feb. 22, 1925, Birmingham News; Fleming, p.152.

The greater part of nitre was obtained from limestone caves. The working of the caves of the northern section of the state was administered by the Nitre and Mining Bureau of the Confederate government, with local headquarters at Anniston.¹ The industry was carried on only in the face of the constant menace of enemy raids, as the nitre mines were repeatedly attacked by Federal expeditions. This danger, together with the vital importance of keeping the production steady, caused the work to be placed under a system of military discipline. It was well that such discipline was insisted upon for the labor used was not of the most efficient type, the majority of the workers being negroes or exempts from military service.² The methods followed in the mines were of necessity crude in character. Nitrous earth from the caves was placed in hoppers and the nitre leached out by water. The lye solution was caught and concentrated by boiling, and then dried in the sunlight.³ During the war period the quantity of nitre produced from this source was 222,665 pounds at the rather high cost of \$237,977.17.⁴ The earth from the caves yielded from six to twelve ounces of nitre to the cubic foot. From two to four ounces to the cubic foot were also obtained from a process of leaching the soil taken from under old buildings, and from under cellars.⁵

A less expensive, though also less productive, source for nitre was from artificial beds, or nitreries, established in certain sections of central and southern Alabama. The desirability for locations near cities sufficiently large to supply abundant animal matter, potash, and labor caused the largest

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1. Gorgas, Vol. XII, p. 70; Bacot, Feb. 22, 1925, Birmingham News.
 2. Fleming, p. 153.
 3. Ibid., 158.
 4. Bacot, Birmingham News, Feb. 22, 1925.
 5. Bacot, Birmingham News, Feb. 22, 1925.

nitre beds to be situated at Mobile, Montgomery, Selma, Tuscaloosa, and Talladega. By the close of 1864, the artificial nitre beds had produced 34,716 pounds at an expense of \$26,171.14.¹ Although not old enough to have reached their stage of maximum production, the results from these beds was more satisfactory than those from Russian, French, and Swedish nitre beds which served as models.²

The manufacture of nitre by private concerns was quite extensive. The usual inducements for the production of war materials were offered to the manufacturers of nitre. The Confederate authorities advanced fifty per cent of the capital required for machinery. In 1861 the legislature of Alabama passed an appropriation of \$30,000 to be expended in the promotion of enterprises to prepare powder, nitre, sulphur, and lead, although the supply of lead in the state was almost negligible.³ The response of manufacturers to the liberal offers of the government was immediate and hearty. Many of them entered into contract to fill large war orders. Early in the war the company of Leonard and Riddle of Montgomery secured an order from the Confederate government for 60,000 pounds of nitre. Another company at Larkinsville in Jackson county produced 700 pounds daily,⁴ which was purchased by Confederate agents at a nominal price. The Confederate government also encouraged the operation of the single sulphur enterprise of the state, which was located at Tallapoosa. In 1861, the Confederate War Department contracted with Dr. Ullman of Tallapoosa to produce from 1000 to 1500 pounds of sulphur a day.⁵

1. Fleming, pp. 153-154.

2. Ibid., p. 153. A large part of the nitre obtained from the above sources was manufactured into powder at the big powder mill in Selma.

3. O.R., Ser. IV, Vol. III, pp. 105, 698, 702, 987; Acts of Alabama, Dec. 7, 1861 and Dec. 2, 1862; Davis, Vol. I, pp. 316, 473, 477; Schwab, p. 270.

4. O.R., Ser. IV, Vol. I, p. 556.

5. Ibid.; Schwab, p. 270.

With the fall of Chattanooga, the source of copper for use in the manufacture of percussion caps for ammunition was lost to Alabama and her neighboring states. The supply of fulminate of mercury, with which the caps were filled and which was obtainable only from abroad, had already been cut off by the blockade. To meet the emergency, copper turpentine and brandy stills were collected, while experiments soon disclosed the fact that a combination of chlorate of potash and sulphuret of antimony acted as an effective substitute for mercury.¹

The efficient production of materials of war in Alabama and the Confederacy, under the direction of the Chief of Ordnance, was so remarkable under the circumstances, that it has received generous tribute from many prominent persons familiar with its operations. General Braxton Bragg asserted that "it was the only successful military bureau organized during our national existence," and praised General Gorgas as Chief of the Ordnance Department by declaring "that his industry, high scientific attainments, and great administrative capacity soon placed us above want."² General E. P. Alexander states that the Confederacy did not lose a single engagement on account of the lack of sufficient ammunition.³

Handicapped by seemingly insurmountable difficulties, in but within a little more than two years, the Ordnance Department successfully organized a complete system of forges, mills, arsenals, armories, and experimental laboratories equal in most respects to that of the enemy. By the spring of 1865, this department was turning out 55,000 rifles annually and 7,000 rounds of ammunition daily.⁴ Frequent mention is made in official reports and messages of

1. Alexander, E.P., Military Memoirs of a Confederate, p. 54; Wilson, Woodrow, History of the American People, Vol. IV, p. 298.

2. Armes, pp. 132, 133.

3. Alexander, op. cit., p. 54.

4. Jones, J. B., A Rebel War Clerk's Diary, Vol. II, p. 414.

the admirable results obtained by the Ordnance Department in efficiently utilizing natural resources and enabling the Confederate government to enjoy an independence of foreign supplies.¹

There were a few complaints recorded concerning the inferiority of Confederate Munitions. General Lee and other Confederate officers reported on certain occasions that their ammunition was bad in quality, and dangerous to use because it often burst the guns in which it was fired.² The scarcity of all the metals precluded the making of the best shells, and this fact, together with the constant difficulty of keeping munitions in good condition without proper transportation and storage facilities, may explain in large measure the cause for these complaints.

The work of the Ordnance Department was continuously embarrassed, especially during the last two years of the war, by the draft of its laborers into military service. The statutory-executive exemption law of February 17, 1864 greatly reduced the number of those who had formerly had claim to exemption.³ The effect of the new law was to withdraw from the employ of the department many workmen who had been trained to tasks requiring special skill. Lieutenant Colonel Mallet pointed out that "ordnance men, at the anvil and file one day, had to shoulder the musket the next."⁴ In Alabama, as the enemy approached, the employees of iron works were compelled to drop industrial pursuits for military defense. The machinery and materials had to be hastily transported to a place of safety, and reestablished, - a process seriously curtailing the output of the enterprises.

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1. Richardson, James D., Messages and Papers of the Confederacy, Vol. I, pp. 374, 378.
 2. Jones, op. cit., Vol. II, p.222.
 3. Moore, A. B., Conscription and Conflict in the Confederacy, p. 83.
 4. Armes, p. 131.

The same situation in regard to the difficulty of retaining skilled workmen in the face of imperative military demands, made necessary by enemy invasion, obtained in all manufacturing industries. The managers of leather and textile factories generally complained that they trained their employees to a satisfactory degree of efficiency only to have them snatched away by the enrolling officers. Usually unskilled or physically disabled laborers were sent to take the places of those trained workmen drafted into the army.¹ Production was materially decreased, and in some instances, stopped by the call to the colors.²

In addition to the manufacture of ordnance and munitions, there were some other war industries operated by the state and Confederate governments, and by private manufacturers. The latter were encouraged by liberal loans, abundant labor, and free transportation of products.³ One of these industries was that of manufacturing leather goods. Tanneries were operated at Tuscaloosa, Huntsville, and Florence,⁴ There was a shoe factory at Tuscaloosa, and harness and saddle factories at Tannehill, Selma, and Montgomery.⁵ In these industries leather was carefully economized. Cotton cloth, stiched in several thicknesses, was partly substituted for leather in such articles as cartridge boxes and belts, and the skirts of saddles.⁶ The only shoe soles made of pure leather were those destined for the use of soldiers.⁷

The textile factories of the state were also very productive in filling war orders. Encouragement was offered for the manufacture of cotton

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1. Ramsdell, Chas. W., Mississippi Valley Historical Review, Vol.VIII,p.248.
 2. Ibid., Vol. VIII, p. 235; Moore, op. cit., p. 92.
 3. Gorgas, Vol. XII, p. 78.
 4. Fleming, p. 150.
 5. Bacot, Birmingham News, Feb. 22, 1925; Armes, p. 159; Fleming, p. 157.
 6. Gorgas, Vol. XII, p. 78.
 7. Ibid.

and woolen goods. The legislature promised a bonus of five and ten cents for cotton and wool cards made in this state.¹ Twelve cotton factories of Alabama ran day and night turning out cloth to meet the enormous military demands. These factories were located in Coffee, Dale, and Barbour counties, and at Tallassee, Montevallo, Montgomery, Selma, Autaugaville, Prattville, Tuscaloosa, and Florence.² The establishments at Tallassee, Autaugaville, and Prattville were the largest, having 23,000 spindles, 800 employees, and producing daily 5,000 yards of fine quality tent cloth.³ The best tent and uniform cloth was made at Tallassee.⁴ The cotton mills in the northern part of the state were destroyed in 1862 and 1863 by Federal raids, the most "unsparing hostility" being displayed by the enemy toward this industry.⁵ Woolen mills were in operation at Florence, Tuscaloosa, Selma, Autaugaville, and Prattville.⁶

The preparation of foodstuffs also occupied an important place among the new industries. Seven flour mills were grouped together in the northern part of Franklin county along the Tennessee River. This region supplied the greater portion of the flour and meal sent from this state to the Confederate armies. In addition to these establishments, there were numerous small gristmills scattered at various points through the state, a large flour mill being located at Montgomery.⁷

Manufacturing medical laboratories were installed at Mobile and Montgomery to supply drugs formerly obtained abroad. The medicines obtained

1. Bacot, Birmingham News, Feb. 22, 1925.

2. Fleming, pp. 150,157.

3. O.R., Ser. IV, Vol. I, p. 493.

4. Fleming, p. 157.

5. Somers, op. cit., p. 136.

6. Alabama Historical Society Publications, Vol. IV, p. 454; Fleming, p.157.

7. Fleming, p. 150.

were indigenous to this state. "Instead of quinine were used dogwood berries, cotton-seed tea, chestnut and chinquapin roots and bark, willow bark, Spanish oak bark, and poplar bark. Red oak bark in cold water was used as a disinfectant and astringent for wounds. Boneset tea, butterfly or pleurisy root tea, mandrake tea, white ash or prickly ash root, and Sampson's snake-root were used in fever cases. Local applications of mustard seed or leaves, hickory leaves, and pepper were used in cases of pneumonia and pleurisy, while sumac, poke root and berry, sassafras, alder, and prickly ash were remedies for rheumatism, neuralgia, and scrofula. Black haw root and partridge berry were used for hemorrhage; peach leaves and Sampson's snakeroot for dyspepsia and sassafras tea in the spring and fall served as a blood medicine. The balsam cucumber was used as a tonic, as also was dogwood, poplar, and rolled cherry bark in whisky. Turpentine was used as an adjunct in many cases. Hops were used for laudanum; may-apple root or peach tree leaf tea for senna; dandelion, pleurisy root, and butterfly weed for calomel. Corks were made from black gum roots, corn-cobs, and old life preservers. Barks were gathered when the sap was running, the roots after the leaves were dead, and medicinal plants when they were in bloom. Opium was made from the poppy, cordials from the blackberry, huckleberry, and persimmon, brandy from water-melons and fruits, and wine from the elderberry. Whisky made in the hills of north Alabama, in gum log stills, formed the basis of nearly all medicinal preparations. The state had agents which looked after the proper distribution of the whisky among the counties. The castor beans raised in the garden were crushed and boiled and the oil skimmed off."¹ These native remedies, made from herbs, roots, and barks, served quite as effectively in most cases as had the imported medicines.²

1. Fleming, pp. 240-241.

2. Southern Historical Society Papers, Vol. II, p. 126.

The various manufactures in the state which have been described were developed in response to war demands. In their production was concentrated practically all of the state's available resources, labor, and capital. There were scarcely any manufactories developed to supply civilian needs exclusively. However, there was some slight activity in the production of such commodities as candles, printer's ink, coarse paper, glass, pottery, tinware, silver plate, oilcloth, and other miscellaneous articles. These manufactures were hardly beyond the experimental stage and were usually of the very crudest nature.¹

The distilling of alcohol was extensively pursued in the state during the first two years of the war, particularly in the north central counties. Alabama statutes repeatedly prohibited the making of alcohol from grain, and the governor was directed to supervise the industry². The distilling of spirits was forbidden because of its waste of grain, large supplies of which were constantly being demanded by the armies, and which was so scarce in some sections of the state that starvation of the inhabitants was imminent. Nevertheless, the law was generally circumvented and openly violated due to the high profit to be realized by distilling grain. The prohibitive policy of Alabama toward the making of liquor involved her in serious complications with the Confederate government, which manufactured whisky quite freely.³

Although not to be termed a manufacturing enterprise proper, the making of salt was an industry which assumed great proportions during the war, engaging the labor of thousands of persons and characterized by con-

1. Jones, Vol. I, p. 102; Schwab, pp. 271-272.

2. Acts of Alabama General Assembly; Aug. 27 and 29, 1863, and Dec. 13, 1864.

3. Schwab, p. 270.

tinuous activity. The procurement of salt became a serious problem just as soon as the Federal blockade prevented the importation of that essential mineral. The people of the state were indisposed to go to the trouble of making salt if it could possibly be obtained elsewhere, or unless its price should mount so high as to compel them to do so.¹ Speculators availed themselves of the opportunity to corner the available supply of salt,² and soon had raised its price to such a figure that the state was led to enact legislation to relieve the situation. The state government held salt reservations in Clarke county, and in 1861 acts were passed to lease the salt springs there to saltmakers, the latter to agree to sell their product at a moderate prescribed rate, and the state to offer an advance of \$10,000 in capital and a bounty of ten cents a bushel on the salt produced.³ The state also set up two large establishments in Clarke county, - one near old St. Stephens, the other on the Tombigbee near Sunflower Bend. For four years fifty furnaces were in operation at this place, employing a thousand men, working two hundred teams, and producing about 1,000 bushels of salt daily. These works, together with the numerous private establishments, the largest and most successful of which was near Salt Mountain,⁴ produced 500,000 bushels of salt yearly⁵.

The process followed in making salt was similar to that of making syrup from sugar cane juice. Wells were sunk until brine overflowed or could

1. Bacot, Birmingham News, March I, 1925.

2. O. R., Ser. IV, Vol. I, p. 100.

3. Acts of Alabama, Nov. II and Nov. 18, 1861.

4. Fleming, p. 158. Large private salt works were also operated at Salt-marsh, near Selma, where the brine was found very near the surface, and at Bon Secour, on Mobile Bay, where sea water was available.

5. Ball, op. cit., p. 646.

be pumped to the surface by steam or horse power. The brine was then evaporated in great iron kettles, seven or eight kettles of water producing one kettle of salt.¹ The industry demanded the labor of thousands of persons to boil the water, cut and haul fuel, and to barrel and sack the product. The fact that laborers in this industry were exempt from military service² caused it to be very popular, the works in Clarke county alone employing over 6,000 men, most of them exempted whites, or negroes. These men cleared for fuel, during the course of the war, some ten square miles of timber.³

The state exercised strict regulation of all salt production. It owned works at Saltville, Virginia, and in Louisiana, but did not obtain very great quantities from these sources due to bad transportation.⁴ Every private salt maker was compelled to share part of his product with the state, the latter purchasing it at the cost of manufacture. In other cases the government confiscated the salt works outright, the legislature appropriating \$150,000 for compensation to owners of salt impressed for public demands. Private manufacturers made contracts to sell a portion of their salt to the government at cost. The poor received allotments of salt from the state free of charge, or at moderate prices.⁵ An act of 1862 forbade the exportation of salt from the state, prescribing punishment for violation of the statute.⁶

With the exception of household manufacturing, the industries which have been described produced all the manufactures of the war period.

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1. Ball, op. cit., p. 648.
 2. Moore, A. B., op. cit., p. 67.
 3. Ball, p. 647; Bacot, Birmingham News, March 1, 1925.
 4. O. R., Ser. I, Vol. II, pt. 2, pp. 1056, 1058, 1061; Vol. LII, p. 384.
 5. Ball, pp. 645-649, 765.
 6. Fleming, p. 160.

The industrial expansion of the state, under the inhibiting circumstances which obtained, was almost phenomenal. Enormous material resources, neglected until the outbreak of hostilities, were in the brief space of a few years, beginning to be utilized to an extensive degree and an effective purpose. Though apparently hopelessly handicapped by agricultural specialization and the strangling hold of the Federal blockade, under the stimulus of war demands a variety of enterprises with hundreds of establishments appeared over the state, turning out fine quality products with a high grade of efficiency. Furnaces, foundries, forges, mills, factories, shops, and other works were pressed to the limit to keep the armies at the front provided with at least some of the necessities of war. The report of General Wilson as to the results of his raid through Alabama in 1865 indicated somewhat the remarkable growth of manufacturing in the state. The Federal commander declares that he destroyed two gunboats, ninety-nine thousand small arms and much artillery, ten iron works, seven foundries, eight machine shops, five rolling mills, three arsenals, a naval foundry, five steamboats, a powder magazine and mills, thirty-five locomotives and three hundred sixty five cars, three large railroad bridges and many small ones, and two hundred seventy-five thousand bales of cotton.¹

General scarcity of manufactures, together with speculation and inflation of the currency, caused prices to rise enormously, thereby giving a powerful stimulus to industrial expansion.² In 1864 shoes were selling for \$150 to \$175, boots for \$300, flour for \$250 to \$300, and calico for \$15 a yard.³ With the inducement of such profits, manufacturers hastened

1. Pollard, E. A., Southern History of the War, Vol. II, p. 518; Armes, p. 194; Fleming, p. 77.

2. Ramsdell, Chas. W., Mississippi Valley Historical Review, Vol. VIII, p. 234.

3. Fleming, pp. 180-181.

to claim the money advances of the government, and to set up factories which would soon make them rich if prices maintained their high level. The Confederate government was able to exert some pressure in favor of the disposal of goods at reasonable rates by threatening to conscript employees of operators who persisted in charging exorbitant prices.¹

A factor which may have served to reduce the production of private industry, and which certainly increased the suffering in the state, was the policy of government impressment, begun by the state in 1862. By acts of the legislature in that year, the governor was vested with the authority to impress shoes and other leather goods for military use.² The Confederate government also passed impressment laws, providing for assessment boards and schedules of prices to be paid by government officials.³ These officers frequently exceeded their authority and often capitalized it for corrupt purposes. Because of these conditions the small private producer was inclined to save his product rather than to attempt to market it with the risk of government confiscation.⁴

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1. Ramsdell, Mississippi Valley Historical Review, Vol. VIII, p. 234.
 2. Acts of Alabama, Nov. 19, 1862.
 3. Schwab, p. 202.
 4. Ramsdell, Mississippi Valley Historical Review, p. 245.

CHAPTER III
HOUSEHOLD MANUFACTURES.

As the Federal blockade effectively isolated Alabama from all those sources upon which the people of the state had hitherto relied for almost every necessity of life, each household was compelled to accomplish its own economic salvation. Every manufacturing establishment was already overworked to meet the demands for military supplies, so they could not pause to make provision for domestic requirements.¹ In this situation, the manufacturing system which had supported the people in the colonial period and on the frontier since, was revived.² Looms, spinning wheels, and warping frames were brought down from garrets and put in condition for work,³ and with these as models new machines were constructed.⁴ Each home became a miniature factory, with the mother acting as foreman and the other members of the family as willing laborers, each being allotted to a given task, and each performing it with skill and industry. Women and girls soon became expert in the arts of carding, spinning, weaving, knitting, and sewing.⁵

All varieties of cotton and woolen fabrics were woven. Rough unbleached sheetings, coverlets, counterpanes, muslin, and the famous "homespun" were some of the cotton goods turned out by the busy household workers.⁶ Woolen manufactures were produced with striking success, though only by the most tedious labors. Bright colored plaids, flannels, balmorals, coverlets, and blankets were fashioned from the wool of which considerable quantities were grown during the war. Discarded woolen goods were carefully unravelled

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1. Fleming, p. 236.
 2. The Atlantic Monthly, August, 1886.
 3. Hague, P.A., A Blockaded Family, p. 39; Miss Hague was a schoolteacher on a plantation in southern Alabama during the war.
 4. Fleming, p. 236.
 5. Andrews, M.P., The Women of the South, p. 27.
 6. Hague, op. cit., p. 41.

and the threads spun again into coarse clothing.¹ Pillow cases, sheets, and curtains were replaced by homespun substitutes and converted into dress goods.² As for buttons, they were improvised from gourds, persimmon seeds, pasteboard, pine bark and wood covered with cloth.³

For coloring these homemade materials, only homemade dyes were available. The women, however, were able to obtain very bright colors from the dyestuffs made from local herbs, barks, roots, and berries. Blue was obtained from indigo with little difficulty, grey from myrtle, brown from walnuts, green from a solution of hickory bark and alum, and jet black from a rare weed popularly known as "queen's delight".⁴ These dyes were made fast by the use of homemade copperas, prepared by placing rusty ironware in a solution of salt and vinegar.⁵

One of the most serious problems with which the household manufacturers had to deal was the difficulty of making good sewing thread with the poor machinery which was at their disposal. Thread was usually spun from the very finest fibres of cotton carefully picked before rain had fallen on it, but the home process was necessarily so crude, and the devices for spinning so worn by use that homemade thread was never of very high quality.⁶

Southern women were particularly ingenious in the making of pretty hats from a variety of sources. Bulrushes, palmetto, grasses, straw and corn shucks were artfully fashioned into bonnets and hats, dyed with the homemade product, and decorated with bits from old tarlatan dresses, or the finest goose or peacock feathers, with the most satisfactory results.⁷

1. Andrews, *op. cit.*, p. 27.

2. Fleming, p. 237.

3. *The Atlantic Monthly*, August, 1886.

4. Hague, pp. 40,50,51; personal interviews.

5. Hague, p. 42.

6. *The Atlantic Monthly*, August, 1886.

7. *Ibid.*; Hague, 57-59; 62.

The making of shoes, harness, and saddlery was largely the work of the plantation tannery, an industry which engaged the labor of large numbers of men, owing to the fact that workers in such enterprises were exempt from military service.¹ The hides of all available animals, including horses, mules, hogs, dogs, cats, and squirrels were prepared for use in the manufacture of leather goods. The tanning process consisted in soaking the hides in a lye solution, then placing them in pits between layers of red oak bark, with water added to form the desired tanning infusion.² In the making of shoes, the utmost economy was practiced in the conservation of leather. The shoes of women and children were often made of heavy cloth, decorated with odd trimmings from old dress goods. The soles of shoes too old for use could be sewed to new uppers if the old stitchings were carefully followed. Wooden soles were generally attached to leather uppers. Even wooden soles, similar to the sabot of the French peasant, were resorted to in many cases.³ A preparation of soot and oil was found to make a suitable dressing for shoes.

Salt was a scarce article in the homes, as it was one of the commodities for a supply of which the Southern people had relied upon outside sources. As the blockade prevented further importation, salt was of necessity found in other places. One common source for a salt supply was from the drippings of pork barrels and from the earth from under old smokehouses.⁴ In other cases the overseer of a plantation took negro labor, supplies, and utensils,

1. Moore, p. 67.

2. Hague, pp. 34-35. The hair from the hides was sometimes saved and woven into heavy clothing for winter. Hog bristles were used in the making of brushes. Hague, p. 38; Fleming, p. 237.

3. The Atlantic Monthly, August, 1886. During the last phases of the recent World War, the German people, being reduced to a like extremity, were compelled to resort to wooden shoes.

4. Hague, p. 38; Andrews, p. 21.

and went to the nearest salt well, where the party worked until a sufficient salt supply was obtained.¹

The household drugstore was in the woods and fields. Numerous efficacious remedies were found in preparations and solutions of herbs, barks, and berries. Dogwood berries were substituted for quinine. A solution from blackberry roots or ripe persimmons was found to be excellent for intestinal ailments. Various extracts obtained from the wild cherry, dogwood, poplar, and wahoo trees, and from such herbs as boneset and butterfly, were good remedies for chills and fever. Lung diseases were checked by a syrup prepared from leaves and roots of the mullein plant, the globe flower, and bark from the cherry tree. The poppy furnished opium and laudanum; the castor bean yielded castor oil.²

The lack of iron and other metals was a serious burden on the household industries. Farm implements were improvised and repaired from any scrap iron available. Cooking utensils were carefully used, lest they be broken, and they were repaired by the most ingenious devices.³ Crude pottery, such as dishes, bowls, pitchers, and crocks, were fashioned from clay.⁴

There were many other household needs that were supplied in extraordinary ways. A substitute for cooking soda was provided from the ashes of corncobs or seaweed.⁵ Rope was twisted from coarse cotton fibres, bear grass, and sunflower stalks.⁶ Pieces of furniture were made from willow branches and oak splints.⁷ For lighting purposes homemade candles manufactured from tallow, lard, beeswax, or oil sufficed.⁸ China berries, wax myrtle, and resin

1. Bacot, Birmingham News, March 1, 1925.

2. Hague, pp. 46,47; personal interviews.

3. Andrews, p. 24.

4. Hague, p. 48; Fleming, p. 234.

5. Hague, p. 47; Fleming, p. 234.

6. Hague, p. 56; Fleming, p. 234.

7. Hague, p. 60; Fleming, p. 234.

8. Hague, p. 104.

formed the basis for the making of soap. Corn, persimmons, potatoes, and sassafras were brewed into beer, while china berries were used for whisky.¹ Ink was obtained from certain berries, green persommons, pomegranate, indigo, and oak balls set with rusty nails.²

The household manufactures described above were destined for home use and consumption. Besides these, soldiers' aid societies or relief associations were organized in every community to supply the soldiers from that neighborhood with many comforting articles.³ As the Confederate and state governments were unable to manufacture adequate clothing and equipment for the soldiers, the women back home labored faithfully and lovingly to meet the need by their sacrifice and industry.⁴ Articles and supplies of every description were sent to the front. After all the available blankets in the homes were sent to the armies, carpets were cut up into blankets. The carpet in the capitol in Montgomery was torn up for this purpose. Wool mattresses supplied material for clothing and coverings.⁵ Every available piece of woolen goods was mixed with cotton and spun into socks, gloves, scarfs, and trousers for the suffering Confederates.⁶ Southern military leaders have been unanimous in their glowing tributes to the constant devotion and service of southern women in enabling the Confederate armies to keep up the struggle, by providing them with many necessary supplies of which the quartermaster was destitute.⁷

But despite the heroic sacrifices of the southern women, and despite the remarkable development of war industries in Alabama, the odds against the Southern States were overwhelming, and defeat was inevitable. The industrial system of the state was completely wrecked by the war. Every iron fur-

1. Fleming, p. 234.

2. The Atlantic Monthly, August, 1886; personal interviews.

3. Underwood, J. L., The Women of the Confederacy. p. 70.

4. Gordon, Ge. John B., Reminiscences of the Civil War. p.230; Jones, Vol. II, 418.

5. Underwood, op. cit., p. 75.

6. Gordon, op. cit., p. 230; Underwood, p. 75.

nace, forge, and foundry was destroyed, except the Hale and Murdock plant in Lamar county. Of the sixteen furnaces in operation during the war, only six were destined for subsequent activity; namely, Irondale, Shelby, Briarfield, Oxmoor, Salt Creek, and Rock Run Furnaces. Two of these, the Shelby and Oxmoor plants, exist today.¹ The repeated Federal raids through the state were most thorough in their destruction of every manufacturing industry. Textile and grist mills were demolished, mill dams destroyed, ponds drained, factories, mills, and workshops left in ruins. The few industries which survived the war were sold and dismantled after the Confederate surrender.² Nothing but wreckage remained of the transportation system of the state. All the steamboats on the rivers were burned. The railroads were hopelessly crippled, - their track torn up and twisted; their rolling stock worn out; destroyed, or captured; their trestles, bridges, and depots blown up or burned.³ Dirt roads were impassable.⁴ Property loss in the state amounted to over \$500,000,000. Capital of every description was destroyed, labor demoralized, and raw materials exhausted. The end of the war brought complete economic prostration.

Yet the industrial development of Alabama had not been in vain. The war and the pressure of necessity had forced upon the people of the state a consciousness of their wealth in material resources, if these might only be utilized, and a vision of the enormous possibilities for industrial expansion. Many of the old wartime enterprises pointed the way to new and larger industries. Out of the smouldering ruins of Alabama's war industries was to be built the mighty industrial structure of the Greater Alabama of today.

1. Armes, pp. 187-188.

2. Fleming, p. 255.

3. Ibid., pp. 259-261

4. Ibid., p. 257.

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