

Made in N.J.

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PREFACE

Made in New Jersey is a label to tie on huge machines, sleek battleships and gleaming automobiles; to stamp on cans of paint, containers of vitamins and cans of soup; to affix to delicate dolls, plastic toys and roaring airplane engines; to print on rolls of paper, bright bread wrappers and frozen food containers. It's a summing up of the amazing diversified industrial production of the nation's fourth smallest state whose annual production of \$5,000,000,000 worth of finished goods ranks New Jersey seventh nationally in industrial manufacture.

Few people have to be told that New Jersey is an industrial state, of course; sight and sound and smell proclaim that fact to even the most casual rider on the cross-state Pennsylvania Railroad train or to even the most absorbed driver on the New Jersey Turnpike. Yet even within bounds of the state most people know little of the varied nature of New Jersey production, mainly because "Made in New Jersey" is a label seldom used to identify the outpourings of the state's 11,000 manufacturing plants.

This paper seeks to help rectify that oversight, to cull from bewildering statistics and scattered facts a simple and direct account of the rise and development of New Jersey's fabulous industrial might. No claim to completeness is made; obviously one paper can present only a small picture, leaving the minute details to be touched on by others - perhaps by industries themselves.

Obviously, too, no single paper could tell the role of each one of New Jersey's 11,000 industries. Even a mere listing by name and address is far out of the question. Rather the emphasis is on telling briefly the general story of some categories of industry, in all of which New Jersey has had, and continues to have, great importance

INDUSTRY IN NEW JERSEY

Come to America you men with nimble fingers and skilled hands, if you would find advantages undreamed of in the Old World. Come especially to East Jersey, where open arms await the man who can drive a nail or caulk a ship or sew a seam or stitch a sole. Yes, brother, come to Jersey and find the "brave lively-hood awaiting your skill.

No earnest craftsman who followed that advice of George Scot in Edinburgh, Scotland, in 1685 had occasion to regret it. Mr. Scot's prose waxed on the flamboyant side, yet his promise of rewards for skilled know-how stood the test of time, for it is still good in the 20th century New Jersey.

Through the years descendants of Scotsmen who heeded Scot's blandishments have been joined in New Jersey by workers from nearly every corner of the globe, bringing their diversified and unique skills to the land so happily located between the Hudson and Delaware rivers.

Somehow the nickname "Garden State" lingers quaintly on in New Jersey. It is a pleasant phrase, and true enough to a degree, yet its very appeal tends to obscure the facts of the tremendous industrial might of the state.

"Tremendous" is the kind of word George Scot or his present-day Chamber of Commerce successors might employ in an excess of local pride. But is such a powerful adjective justified in this case?

To answer that question we can start by putting together two basic statistics: New Jersey is the fourth smallest state in the country; it is the seventh largest in industrial output. Only New York, Pennsylvania, Illinois, Ohio, Michigan and California, in that order, outrank New Jersey in the value of manufactured products.

Possibly even more significant, however, is the diversity of industry in New Jersey, where no single installation matches the gigantic steel works of Bethlehem or Pittsburgh or the great automobile factories of Detroit. New Jersey industrial might is based rather on diversity, on the ability to make anything.

New Jersey makes handkerchiefs and rugs, sewing machines and air compressors. New Jersey makes jewelry and canned soup, soap and suspension bridges. New Jersey makes radios and dynamos, cigars and vests.

New Jersey in short makes almost everything. It takes 11,000 factories and 800,000 workers to do it, but New Jersey nevertheless turns out more than \$5 hundred billion of goods every year.

Perhaps nothing has so typified the industrial growth of the state as its ability to change with the times. New Jersey has had to be industrially agile to compete with its much better endowed neighbors, in the way a small boy must use brain to stay even with playground brawn.

At first the disparity between New Jersey and other states was not so apparent, because the state had ample water power in the days when swiftly-flowing streams ran mills and forges and distilleries. Moreover, the bogs of South Jersey and the hills of North Jersey abounded in rich iron deposits. In the colonial days of homespun manufacture, therefore, the state stood up well, and when the Revolutionary War came to New Jersey helped brace the nation's fight by supplying iron products, clothing, gunpowder and food.

All thirteen colonies suffered from an "unextinguishable rage" for foreign finery after the Revolution, so much so that in 1790 Governor William Livingston exhorted his fellow citizens of New Jersey to "have the patriotism to disappoint both Gaul and Albion in their arts to drain your every copper for their trifles and baubles!" But everywhere people ignored the advice, mainly because New Jersey had little in the way of manufactured goods with which to compete with cheap articles from England and France. Alexander Hamilton's 1791 report on the necessity of establishing American manufacture on a sound basis led directly to the establishment of Paterson in 1792 as America's first systematic attempt to develop water power for manufacturing purposes.

Paterson boomed - population soared from 50 to 500 between 1792 and 1797 - then collapsed when funds gave out. Almost overnight population fell from 500 to 43. The boom-and-bust characteristic plagued Paterson for decades, mainly because the city lacked diversified manufacture. Cotton, then locomotives, then silk, then airplane motors built a succession of economies, each of which failed in the face of

changing years.

Newark, on the other hand, became a city of varied industry almost from the start, and that variety, plus strategic location, quickly helped make the city's industry important. Newark has never changed - specific output has shifted with the times, but Newark products consistently have continued to be varied.

Remarkably skilled craftsmen like Seth Boyden, the "Uncommercial Inventor" who never sought money, made Newark what it is. Boyden came to Newark in 1815, carrying with him machines to make brads and files and a device for slitting leather hides. Yet Boyden looked for a greater challenge to his quick mind.

He found it in 1818 when he ferreted out the process, then unknown in the United States, for making patent leather and began making the first such leather in America. Then he learned how to make malleable iron and subsequently set up the first malleable iron foundry in America. Naturally Newark became a center for both of Boyden's products.

Elsewhere in New Jersey, industrial development languished until the 1830's when canals and railroads started to crisscross the state. New Jersey came of age via the railroads. Trenton, Jersey City, New Brunswick, Camden, Elizabeth and Paterson all gained industrial vigor from the shining rails.

Potteries, iron works and rubber mills changed sleepy little towns such as Trenton into a bustling industrial hub by 1860. Soap, iron and pottery invigorated Jersey City, while America's first nickle works combined with carriage factories to build early Camden. Wallpaper and rubber made New Brunswick vital, while locomotives and silk nurtured Paterson.

Two decades of industrial development completely changed the political picture of New Jersey between 1837 to 1857, a period when seven new counties were created. Five of these - Passiac, Mercer, Hudson, Camden and Union - came into being directly because of industrial strength. The other two, Atlantic and Ocean owed their origin partially to the need to offset politically the growing North Jersey industrial might.

Many New Jersey industries bitterly opposed the Civil War. Carriages, harness, jewelry, shoes, hats, "ready-made" clothing, snuff and dozens of other items went from Jersey factories to Southern plantations. Newark shoemakers vigorously protested war with the South. Middlesex snuff makers howled at the loss of markets. Industrialists in Trenton, Camden and New Brunswick saw ruin for themselves in Civil War.

Union army contracts soothed the ruffled industrialists, however, and they went happily about the business of making uniforms and shoes and rubber blankets and silk flags. The iron industry boomed. Munitions makers held contracts for work ranging from the turning out of turret rings for the iron-clad "Monitor" to the remodeling of old flint-lock rifles into weapons fit for an 1860 soldier.

The Civil War is the natural dividing point in New Jersey industrial development. Important industrial leaders emerged in those prewar years, such as old Moses Combs, the Newark shoemaker and "father of Newark industry"; Peter Ballantine, the Scotchman who dared make ale in a German beer town; Tom Rogers, the skillful locomotive builder of Paterson; Charles Danforth, "The Big Indian" who made cotton mill machinery and locomotives in Paterson.

Then there were John Ryle who set up America's first successful silk manufactory in Paterson in 1840; Peter Cooper and Abram Hewitt, whose Trenton Iron Works revised all American thinking about iron production; John Robeling of Trenton, America's pioneer suspension bridge builder; William Colgate, Jersey City soap maker; Jacob Wiss, Newark shears maker; and the Richards family of Weymouth, who made America's first cast iron pipe.

There were many others, but it was not until after the Civil War that New Jersey's industrial muscles really began to bulge. Then industry came to the state with a rush as men recognized the wisdom of setting up factories beside the hundreds of miles of railroad tracks tying New Jersey to the nation. Thus began the era which brought New Jersey such concerns as Campbell's Soup, Esterbrook pen factory, Isaac Singer and his sewing machine works, Standard Oil, John Reigel and his Warren County paper factories, Julius Forstmann and Passaic woolen mills,

the Clark brothers and their Newark thread factory, Babcock and Wilcox and their steam boiler plant. There is no room for a full listing. These indicate nevertheless, that diversity continued to dominate as industry - big industry - flooded into the state.

All New Jersey exulted in its newfound industrial power. Newark proudly held a "made in Newark" exhibit in 1872. Trenton pottery makers called their city "the Staffordshire of America." Jersey City welcomed new industry to its docks.

State officialdom welcomed industry too- some even said heatedly that late 19th century state politicians showed altogether too much friendship. New Jersey's lenient corporation laws, at a time when Federal laws hampered big business, encouraged giant corporation to mushroom within the state. The peninsula between the Hudson and Delaware rivers became known, for better or for worse, as a haven for big business - the "Mother of Trusts," critics said with contempt.

For better, as it turned out, New Jersey industry expanded, World War I accelerating the growth. Explosives plants produced tremendous quantities of munitions, shipyards launched scores of new ships, Middlesex County plants produced half of the entire nation's refined copper supply, oil refineries boomed, uniform makers enjoyed prosperity. Meanwhile, the infant airplane industry got a firm foothold in the state, and when the blockage cut off German dyes, chemical plants sprang up to meet the demand for these products.

New Jersey emerged from World War I with its industry expanded three-fold over 1914, with a working population fully enjoying that "silk shirt" era. Postwar slumps soon gave way to the seemingly unlimited prosperity of the 1920's, which made the depression of the 1930's just so much harder to take, since heavily industrial regions always suffer most in bad times, as they thrive most in times of prosperity.

World War II is a recent and fresh industrial memory. By 1943 New Jersey ranked fifth in war orders in the nation, second in Shipbuilding, fourth in airplane manufacture. Seven percent of all Federal war contracts went to New Jersey industry, employment increased 50%

after July, 1940, and payrolls jumped 100%.

Today New Jersey leads the country in production of chemicals, and it ranks nationally among the first five states in production of wearing apparel, instruments and related products, petroleum and coal products, rubber products, tobacco manufactures and electrical machinery. Furthermore, New Jersey is among the first ten states in the manufacture of stone, clay and glass products, food and kindred products, textiles, primary metal industries, fabricated metal industries, paper products, transportation equipment, printing and publishing, leather products and machinery.

So, "tremendous" seems to be the logical adjective to describe New Jersey industry. And yet, the adjective is good only in the aggregate, since only a handful of New Jersey industries employ more than 5,000 people; nearly all state plants are "small" with 100 to 300 employees. (In the national sense, 1,000 employees is generally considered the dividing line between "big" and "small" business.)

Two main factors account for New Jersey's industrial diversity. The first is the relative scarcity of the raw materials found in the state. Iron ore production leveled off at about 600,000 tons a year between 1950 and 1953, although compared to the national output that is hardly half a week's production. Zinc production is high, but word persists in Franklin that zinc deposits there are nearing the end. Clay output is heavy in Middlesex County and trap rock is extensive in the Watchung and Sourland mountains. South Jersey sand encourages a lively glass industry. But this short listing tells the full story of New Jersey's raw materials - not a very impressive variety compared with other states. (As an interesting note, the Halecrest Co. of Edison have recently re-activated an iron mine near Hope in Northern Jersey.)

Consequently, industry must import nearly everything it uses - wool, cotton, steel, oil, titanium, platinum and so on - which means that the railroad connections are vital, the splendid highway system imperative, the good docking facilities essential. Since New Jersey must import materials, it is easiest to produce in small quantities in small plants.

Secondly, and perhaps most important to the continuing industrial div-

ersity, New Jersey has always been a "know-how" state. The pool of skilled workers who came to Paterson in the 1790's stayed on and nursed the city through boom and bust. Newark's leather makers carefully schooled apprentices in the trade. Hatters in Orange shared their knowledge with novices. It has ever been that way.

Transitions to keep pace with changing times have been necessary for New Jersey. First of all, New England factories took away the big time cotton and shoemaking enterprises. Then the Civil War ruined the Southern trade. Railroads helped most New Jersey industry, but by encouraging competition in other areas of the nation, the railroads killed the state's big flour manufactories, destroyed its South Jersey bog iron works, ruined the beef and wool producers and weakened the position of the glass makers.

Somehow, though, the state always has been able to make necessary adjustments, thanks primarily to the inventiveness of its sons and adopted sons.

Chief of these adopted sons in the vital years between the Civil War and 1900 was Thomas A. Edison, who placed invention on a production line basis at his laboratory at Menlo Park. Edison's inventions and developments in the fields of electricity and communications, the movies, the phonograph and countless other areas changed forever the complexion of American industry. It helped New Jersey immensely to have Edison's work carried on within the state's borders.

But Edison was not the only one in New Jersey to make industrially important discoveries. Quickly there come to mind the names of John Wesley Hyall and Leo Backeland (plastics), Reverend Hannibal Goodwin (flexible film), Edward Weston (electrical instruments), Edward Balbach (precious metal refining), Eldridge Johnson (Victor Talking Machine), Charles Seabrook (frozen foods), Walter Scott ~~(Lenox China)~~ Lenox (china), Johnson & Johnson (adhesive tape and many other products), and Allen B. DuMont (television).

Again the list is incomplete, yet again it reflects the quality of diversity, the quality of the thinking which says, "If it can be made, New Jersey can make it."

Down through the years New Jersey has had an impressive list of American industrial "firsts." The first steam engine, the first railroad charter, the first patent leather, the first malleable iron, the first silk flag, the first cast iron pipe, the first incandescent lamp, the first celluloid photograph film, the first photoelectric cell, the first electrically-powered sewing machine, the first terracotta, the first submarine. Obviously this list is far from complete; rather it is presented merely to point up again the diversification of industrial leadership through the years.

This matter of firsts looms large for tomorrow in New Jersey because the state has become recognized as the national leader in the research field. In a thirty-mile circle ranged around Perth Amboy more than 400 research and development facilities are located, expending more than \$150,000,000 each year to find the secrets of chemicals, drugs, television sets, airplane motors, oil, telephones, ceramics, food and just about everything under the sun.

Thus science looks into tomorrow, thinking of the "brave livelyhood" awaiting the nimble fingers and skilled hands of forthcoming generations. They beckon, and say: "Come to New Jersey, where open arms await the man who can adjust a jet engine or fix a color television set or blueprint a space ship.

Space ship? Well, ^{maybe} tomorrow. The probability is that if it's ever made, New Jersey will do it, because New Jersey knows how.