

VALUE OF CONCENTRATION.

A Man With Authority but Not Festered by Details Will Succeed. Experience has demonstrated that concentration is one of the remedies for useless waste, says an exchange. Years ago the scheme of appointing heads over the several departments was adopted. This has always been successful as the heads of concerns are not bothered with details, but can turn their attention to outlining the general policy.

In a certain manufacturing company there are seven separate steam plants. Each has its chief engineer, who has complete control of his plant and is responsible to no particular head. Each one does his work to suit himself, and if he finds

a method of reducing operating expenses he keeps it to himself rather than inform his associates; as a result the company suffers a loss. If a chief engineer were in charge of all of these steam plants the improved methods adopted in one would be applied to all and the company would be benefited. Further, each acting chief would try to make a good showing with the chief, and although there might be rivalry it would on the whole be beneficial. Jealousy among engineers is harmful. It causes them to become selfish and self-centered and what is worse they lose sight of the fact that they are supposed to be working for the best interests of the company. When there is no central head there is no restraining influence over jealous subordinates and the work is not systematically performed.

REALTY VALUES WILL FOLLOW PORT GROWTH

Developments to Come With the Completion of Panama Canal.

A SEPARATE FACTORY ZONE Manufacturing Plants Can be Segregated From Residential and Farming Districts—Organization Is Needed.

Real estate dealers have long understood that the natural construction of Manhattan Island, hemmed in by rivers, would tend to scatter industries on either side. And they have looked to New Jersey as a portion of the great metropolitan district which is sure to develop despite the difficulties which the low marsh lands and meadows near the coastline furnish.

A comprehensive plan and policy for the organization and administration of the interstate port of New York and New Jersey is in reality an international rather than a national responsibility, says the Record and Guide. In magnitude it ranks with the Panama Canal enterprise. Ninety per cent. of the ocean passenger business of the United States, over 37 per cent. of its exports, and 57 per cent. of its imports pass through this port.

On the completion of the Panama Canal New York will become the principal port for transshipment for Oriental and Occidental commerce—the world's greatest port. The city of New York, in spite of its coherent political, social and economic organization, has, apparently, failed to meet this grave responsibility. And this in spite of the fact that in anticipation of the completion of the Panama and Erie canals the city's commerce is growing by leaps and bounds—far more rapidly than that of any other seaboard city.

The many New Jersey communities adjacent to and back of the harbor waters under the influence of separate and parochial opinions have fallen even more signally than has New York—the New Jersey situation being aggravated by the lack of political unity and control which is found in the city of New York. New York has also acquired much experience in the public management of its waterfront, in contrast to New Jersey's policy of permitting almost exclusive private exploitation.

The fundamental idea of port organization is exceedingly simple and has been worked out as the result of experience at many of the great seaports of the world. It may be briefly expressed as the policy of adapting each part of the port to the best uses to which it can be put, and of connecting the several parts into an organic whole.

Port development is not a new science, although it is in its infancy in New York. Our great foreign rivals, such as Hamburg, Antwerp and Manchester, as well as Montreal, New Orleans and San Francisco on this side, and a rapidly increasing number of other ports, have definitely abandoned the nineteenth century stage in which we still remain and have worked out plans a mere glance at which shows that we must either copy or better them—or surrender New York's preeminence. The basic principle on which they have proceeded is that a port must be developed as a unit under public dictation of the terms on which private carriers, shippers and consignees shall be served. The port being once conceived as an organic whole, administered by the city for the benefit of all, there can be no thought of remaining in or returning to the chaos of jarring private rivalry and mutual obstruction from which we suffer or of final independence on the makeshift policy of separate sub-ports constructed by great private corporations, no matter how perfect each may be in itself or how welcome they may be as cooperators in a city system.

The recent action of the Governors of New York and New Jersey in each appointing a harbor commission to examine into and report upon the organization of this port is perhaps the greatest advance which has been made in recent years toward solving the problem. The two commissions are working intimately together toward a common end. The diverse interests of the numerous New Jersey communities (more than one hundred in all) included in what may be termed the New Jersey part of the port make it imperative that the entire port be organized upon State rather than local initiative. There are many advantages to be obtained through State control, such as that which the Commonwealth of Massachusetts exercises over Boston or the State of California over San Francisco. In addition railroad control in New Jersey is so firmly entrenched over waterfront terminals that only the State can be expected to cope with the situation. Whenever the State of New Jersey enters upon a comprehensive plan and policy for the improvement of its part of the port, it is necessary to change the State's policy of retrenchment and make liberal appropriations.

Terminal improvements at great seaports can be expected to pay for themselves, but the initial credit must be publicly advanced. A recent constitutional amendment of the State of New York exempts the State from the debt limit of the city. This makes available for New York city a dock fund aggregating possibly \$73,000,000.

Population follows the payroll. Eighty per cent. of the population of New York State and 90 per cent. of its railroads are located within a strip of land five miles wide on each side of the Erie Canal, including the Buffalo and New York terminals. The industrial valleys of New Jersey, that is of the Hudson, Hackensack and Passaic rivers, and Staten and Island Kille, and the canal zone across the State to the Delaware, afford similar opportunities. It is desirable that New Jersey should, without delay, in the most comprehensive manner possible, plan in advance for the great influx of population and wealth which will inevitably flow into these valleys.

Naturally New Jersey is one of the most beautiful States in the Union, but situated as it is between Philadelphia and New York, with nearly every trunk line railroad crossing it, its charms are peculiarly open to vulgarization unless industrialism shall be confined to the valley lands, reserving the higher lands and the seashore for residence and recreation. Factories can and should be segregated from residential, recreational and farming in this way if the best transportation facilities, including waterways, railways and terminals shall be planned for in advance.

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How great will be the advantage which will accrue to the New Jersey manufacturing interests if railroad terminals in New Jersey can be connected by a terminal belt line which will make it possible for every factory to ship over every road transportation facilities and the steamship terminal will be apparent to all.

The harbor waters divide the port into four grand divisions—New Jersey, Long Island, Manhattan and the Bronx. The State of New Jersey, which should be finally organized until ferries, car floats and lighters shall be superseded by a continuous freight movement through river tunnels. Passenger ferries have already successfully demonstrated the practicability of this, and it is only a question of time when freight tunnels will be built and extended to the back region of the State. It is especially desirable that tunnel connections should be promptly provided between Manhattan and the Hackensack Passaic valleys, which affords the natural site for car storage.

The engineers of the Dock Department have located the site for a classification yard east of the Hackensack River, as shown on the map, which tracks of all the railroads coming to tidewater in New Jersey can be led. This yard can be expanded to any dimensions necessary to meet the requirements of the roads. It will make possible the correct organization of railroad and steamship terminals on the west side of Manhattan. Such tunnels are in a position to meet at New York the sharper competition of the New York Central line—the one road which now enjoys an all rail continuous haul into New York.

All the railroads agree that freight tunnels must ultimately be built; and that whenever this shall be done the two States of New York and New Jersey should be able to do so; nor is it the duty of either State of competing terminals rather than joining in common use the roads available jointly to accomplish such a purpose. If it shall be demonstrated that more advantageously connected by a bridge than by tunnels I do not wish to be understood as in opposition to the bridge, whichever construction is the most practical should be adopted.

In case private capital is not forthcoming, then the tunnels might be planned and built by the joint action of the two States of New York and New Jersey; or through the instrumentality of beneficial assessment by the communities in each State whose local interests will be most benefited. The harbor commissions of the two States could be charged with the responsibility of making the initial report. The States have endeavored to cooperate in building bridges, and the railroad companies operate toward building comparatively inexpensive railroad freight tunnels, the practicability of which has already been demonstrated by the success of passenger tunnels.

Interstate control over the terminal plan and policy of the port which it is most desirable to enlist would thus be the outcome of linking the busses of best means of connecting and coordinating the terminal development of Manhattan with that of the Hudson, Hackensack and Passaic valleys. New Jersey should be anticipated by the West Side of Manhattan can never be properly organized and the docks recovered for marine commerce except Massachusetts exercises over Boston or the State of California over San Francisco. In addition railroad control in New Jersey is so firmly entrenched over waterfront terminals that only the State can be expected to cope with the situation.

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GRAPHITE HAS MANY LUBRICATING USES

First Utilized for Making Pencils It Now Has a Broader Field.

EDWARD ACHESON'S PATENT

He Devised an Electric Furnace That Would Turn Out a Product Which Cut Diamonds.

It is a long step upward from use merely as a material for making marks to the front rank of friction reducing mediums, although not an unusual step for a member of the mineral world, and this step was made successfully when graphite became known in its exact relation to the carbon known in graphite. Graphite has been proved to be a cousin to the diamond, whereas it had long been supposed to be a brother to dull and heavy lead. This discovery of the relationship of graphite to the carbon aristocracy of the mineral kingdom, rather than to the above strata, is not so recent as might be supposed.

About the beginning of the nineteenth century the fact that graphite was a carbon was discovered by a Swedish apothecary. He thought it was a variety of coal. This discovery was made after graphite had been a familiar substance for centuries, found in the ancient tombs and referred to during the Middle Ages as "black lead."

The first use to which graphite was put, after its properties for making a mark had been utilized for many years, was in lead pencils. Later it was made into crucibles and later still into stove polish. Electrotypers employed it when that art began to develop and finally its value as a lubricant became known. For the latter purpose the methods of production in use at the time detracted from its value, because those methods did not free it from abrasive elements with which it was naturally associated.

In 1858 the real development of the manufacture of graphite began. Edward G. Acheson discovered a process for making it artificially. He described his process before the American Academy of Arts and Sciences in Boston. Continuing his experiments, Mr. Acheson discovered that his product would remove the polished face from a diamond. He took a small quantity of it to New York and, having christened it carborundum, sold it to a jeweller, after trial, for 90 cents a carat. Mr. Acheson then devised an electric furnace, probably the first of its kind, in which the material to be heated was placed around a central core, the outer portions of the mass acting as retaining walls. A higher temperature could be developed in the mass in this way than if dependence is placed upon the furnace walls proper. By this process carbon 99.5 per cent. pure is made for electrical use and 92 per cent. pure for less exacting commercial purposes. Natural graphite contains only from 45 to 55 per cent. of carbon.

Mr. Acheson desired to use this artificial graphite in the manufacture of lubricants, but found that it was not sufficiently soft or unctuous. Now and then the desired kind of graphite would be removed from the electric furnace, and he began to look for a natural deposit of carbonaceous material out of which lubricating graphite could be made. Patient experiment with material from many parts of the world showed that the desired kind was to be found in the culm piles of the Pennsylvania anthracite mines.

"Deflocculated" graphite, graphite that is broken into small units, will prevent the water in which it is suspended from rusting iron and steel, it is claimed. This alone is considered a valuable feature of the material, and there is still a wide field to be explored to discover other purposes to which it can be put. Already it is being used as a cutting compound in making screws.

Whatever may be the final part to be played by graphite in the industries, its greatest value at the present time is as a lubricant. In the million mechanical devices in use, friction must be brought down to the lowest possible point to keep them on a high plane of efficiency. It has been demonstrated that at least 50 per cent. of the power artificially generated in the world is lost between the points of contact and the moving parts. The better the grade of lubricants employed, therefore, the less will be the loss of power.

An expert in the application of graphite as a lubricant explains that there are many kinds of fluids and solids designed for special purposes. There are lubricants for watches and for steam ships and the one could not be successfully used for the other. Globular particles of oil or grease move within themselves under pressure, but if the pressure is too great the particles break and the moving surfaces rub directly against each other. Graphite is probably the best of all solid lubricants, he claims, provided it can be obtained in absolute purity and be divided finely enough to be nearly in a fluid state. In that condition graphite can be suspended in some liquid suitable for employment as a carrier to deliver the graphite to the parts requiring lubrication. The excellence of graphite for this purpose is due to the fact that, when so suspended, it is absolutely indestructible and the particles move within themselves under any amount of pressure without breaking. It is not affected by the highest degree of temperature, because the greatest heat that has yet been produced, that attained by the electric furnace above described, is employed in its manufacture. It is said that when the graphite is in this molecular state the particles are so finely divided that they actually enter into the pores of the surfaces to which they are applied and form an integral part of the metal itself. This results in the building up of an absolutely smooth, uniform surface, which is important in cylinder lubrication because it increases the compression and results in the delivery of more power, the life of the working parts being at the same time prolonged. In addition, the damage to boilers using exhaust steam due to accumulations of oil and fatty substances, is avoided. Steam generation is facilitated and heat radiation is conserved.

WHEN COAL WAS FORMED. Dense Forests of Primeval Times Now Furnish Our Heat and Power. What is said to be the strangest period through which this earth has passed is the one that was responsible for the formation of coal. The planet is described as being at that time flat and smooth, its surface peculiar as to vegetation. The continents were just beginning to rise above the ocean, and the land had not yet become dry. Mountain ranges had not arisen from the swamps and the atmosphere was thick with fog. In this state of affairs there sprouted and flourished the plants which were later to furnish the world with its coal supply.

These plants grew as big as our largest trees, taking deep root in the morasses and flourishing like the lush grasses in moist meadow land, developed into the strange shapes now found in tropical vegetation. The forests looked, scientists state, like dense growths of weeds, rushes and enormous ferns. Some of them grew in the shape of cacti, having spines all over them. The kind of vegetation was very rich in carbon, which it derived from the warm, moist atmosphere. Then the millions of years rolled by, the forests of giant woods were buried by deposits of earthy material and the chemical change took place which slowly changed them into coal. This process stopped with the carboniferous age, so that when the present supply of coal is dug out of the ground there will be no more.

ANTHRACITE COAL CARLOADS OR BITUMINOUS COAL CARLOADS TIDE WATER AND ALL RAIL SHIPPERS OFFICES: New York, Boston, Philadelphia, Toronto, Fall River, Warren, Bristol. Eastern Agents: BERWIND-WHITE COAL MINING CO. AMERICAN COAL COMPANY.

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NEW YORK OFFICE, 1 BROADWAY Room 115 Telephone 3587 Rector Sole Retail Agents in JERSEY CITY, HOBOKEN AND NEW YORK For "Vulcan," "Buck Mountain," "Middle Lehigh," "East Boston" and "New Boston" Coals

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Matchless Liquid Gloss



Restores Original Lustre To Furniture Automobile Bodies and all Finished Woodwork

The best and easiest way to clean and polish furniture, pianos, hardwood floors, and other finished surfaces is to use MATCHLESS LIQUID GLOSS.

It DUSTS, CLEANS, POLISHES and DISINFECTS at one and the same time. Dry dusting circulates dust. Matchless Liquid Gloss removes it.

MATCHLESS LIQUID GLOSS is manufactured by the Standard Oil Company, and is of the same high quality as the numerous other specialties made and sold by this Company.

MATCHLESS LIQUID GLOSS is put up in half pint, pint, quart, half gallon, gallon, and five gallon attractive lithographed tin packages. It is sold by hardware and furniture dealers, department and house furnishing stores and other reliable merchants. If your dealer does not carry it, write the

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MATCHLESS LIQUID GLOSS is unexcelled for polishing automobile bodies.



"UNCLE SAM" OF OUR STATE.

Troy Claims the Honor of Giving the Government Its Nickname.

Troy, N. Y., is said to be the place where the name "Uncle Sam" originated. After the last declaration of war with England by the Colonies a New York contractor, Elbert Anderson, visited Troy and made it his headquarters for the purchase of provisions for the Continental army. The supplies were duly inspected before shipment. One of the inspectors was Samuel Wilson, brother of Elbert's son, also an inspector and known to Uncle Sam to the workmen whom he superintended.

The cases in which the beef and pork were packed were marked with the initials of Elbert Anderson, contractor, and the United States, thus: "E. A.—U. S." The first pair of initials were of course familiar to the men, but "U. S." was not. The fact was that the name Uncle Sam was then so new these countrymen that its initials were a complete puzzle. They turned to the nearest explanation, a humorous one, and said to the contractor, "If 'E. A.' stood for Elbert Anderson, then, they opined, 'U. S.' must stand for 'Uncle Sam' Wilson. The joke spread to the Continental army, which carried it to every part of the country.