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DEPARTMENT OF
INTERNAL AFFAIRS

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MONTHLY BULLETIN

BOND ISSUES APPROVED

Municipality	Amount	Interest	Purpose	Date Approved
Allegheny Co. (Airport Bonds, Series 14)	\$2,700,000.	2%	Airdromes, landing fields and airports	May 23
Allegheny Co. (Park Bonds, Series 20)	270,000.	2%	For parks, playgrounds; gym- nasiums, swimming pools, etc.	May 23
Montgomery Twp. Sch. Dist., Montgomery Co.	75,000.	2½%	Addition to Twp. School and to sewage extensions	May 24
Wormleysburg Boro. Sch. Dist., Cumberland Co.	10,000.	2½%	Public school	May 24
Carbondale, Lackawanna Co.	105,000.	3½%	Funding floating debt; fund- ing judgment; streets	May 25
Ross Township Sch. Dist., Allegheny Co.	125,000.	2¼%	Remodeling Oakwood Ave. School	May 25
Allegheny Co. (Road Bonds, Series 63)	100,000.	2%	Roads, purchase of machinery; aiding municipalities; paying county's share of State high- ways	May 23
Allegheny Co. (Building Bonds, Series 19)	270,000.	2%	Public buildings	May 23
Allegheny Co. (Juvenile Home Bonds, Series 8) ..	120,000.	2%	Enlarging schools for education of children under jurisdiction of Juvenile Court	May 23
Allegheny Co. (Lot and Block Assessment Bonds, Series 5)	270,000.	2%	Lot and Block System of reg- istering land titles, etc.	May 23
Allegheny Co. (Veterans' Cemetery Bonds, Series 5)	60,000.	2%	Plots in cemeteries; erecting markers; monuments	May 23
Clearfield Co.	100,000.	1½%	Funding floating debt	May 22
Trafford Boro., Westmore- land Co.	30,000.	2%	Streets and sewers; garage ...	May 23
Trafford Boro. Sch. Dist., Westmoreland Co.	40,000.	2%	Repairing buildings	May 23
Allegheny Co. (Bridge Bonds, Series 40)	900,000.	2%	Bridges	May 23
Allegheny Co. (Road Bonds, Series 62)	1,500,000.	2%	County roads; aiding munici- palities in repairing and im- proving streets and alleys; County's share of State high- ways	May 23
Scott Twp. Sch. Dist., Co- lumbia Co.	42,000.	3%	Additions to schools	May 15
West Pottsgrove Twp., Mont- gomery Co.	30,000.	2%	Sewers	May 16
Allentown, Lehigh Co.	1,200,000.	1½%	Swimming pool and bath houses; streets; storm sewers; repairs to incinerator plant; golf course	May 16
Jefferson Twp. Sch. Dist., Butler Co.	52,000.	2½%	Addition to school	May 16
Housing Auth. of Altoona..	1,200,000.	3¼%; 3½%; and 3¾%	Housing	May 18
Scranton Hous. Auth. (Project PA-3-1)	2,606,000.	1.23%	Housing	May 18
Erie, Erie Co.	1,000,000.	1¾%	Pavements and curbing; gar- ages; resurfacing streets ...	May 22

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF INTERNAL AFFAIRS

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JULY, 1951

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A Monthly Bulletin Devoted to the Purposes and Activities of
the Several Bureaus Comprising the Pennsylvania
Department of Internal Affairs

DEPARTMENT OF INTERNAL AFFAIRS

SECTION 19 OF THE CONSTITUTION OF THE COMMONWEALTH OF PENNSYLVANIA

"The Secretary of Internal Affairs shall exercise all the powers and perform all the duties of the Surveyor General, subject to such changes as shall be made by law. His department shall embrace a bureau of industrial statistics, and he shall discharge such duties relating to corporations, to the charitable institutions, the agricultural, manufacturing, mining, mineral, timber and other material or business interests of the State as may be prescribed by law. He shall annually, and at such other times as may be required by law, make report to the General Assembly."

PUBLISHED UNDER THE DIRECTION AND BY AUTHORITY OF
SECRETARY OF INTERNAL AFFAIRS
WILLIAM S. LIVENGOD, JR.



EDITORIAL

MUCH has been written concerning the English, German, Swedish, Dutch, Scotch and Irish influences on the culture and development of early Pennsylvania, but very little about the part the French played in the northern tier counties. The Department is fortunate to be permitted to publish in this issue an excellent and authoritative article from the pen of the well-known Elsie Murray, director of Tioga Point Museum, at Athens, Penna. Miss Murray has made a life study of early Northern Tier lore.

What the author has to say is not only well worth while of itself, but it points a lesson. It would seem that the least Pennsylvania could do for this historic section would be a restoration of that ill-fated proposed retreat for deposed French royalty, "Azilum", and its development as a tourist mecca. We take the liberty of recommending that this be done.

WILLIAM S. LIVENGOOD, JR.,
Secretary.

Early French Influences in Northern Tier Counties

By ELSIE MURRAY, Ph.D

Director Tioga Point Museum, Athens, Pa

COMPARATIVELY few "Lower" Pennsylvanians—for a 41st if not a 38th parallel bisects our Commonwealth—will recall encountering in their school texts the long struggle of Connecticut-born Yankees to oust Penn's heirs from our northern borders. The intruders planned to erect on the fertile banks of the Susquehanna, a cocky independent statelet.¹ Its capital was to be not fusty Lancaster or Harrisburg but Athens—with an aura of the "glory that was Greece" hovering over it.

This scheme the Supreme Executive Council declared high treason, and effectively scuttled with a prison term from 1787 to 1789 for its chief proponent, Col. John Franklin; without, however, in the least deflating the spirits of its promoters! All this in the days of Shay's Rebellion, Ethan Allen's Green Mountain Boys and the remnants of the Paxtang gang, before State and Federal Constitutions had replaced our first loose union of independent colonies, and grown some teeth.

Still fewer Pennsylvanians, Upper or Lower, are at all adequately informed as to the rôle played by French emigrants on the north frontier around the turn of the century. No less a person than Senator Robert Morris of Philadelphia, our far-seeing if often over-sanguine patriot-financier, aided and abetted this adventure. Morris, like Washington, had leaned heavily on French aid in our Revolutionary struggle, and was ready and willing to repay our friends overseas, at least with kindly offices; organizing in 1794 a million-acre Asylum Company in northern Pennsylvania for refugees from the Paris Terror and the slave insurrections in the West Indies.

The salient features of this latter venture were first sketched in English in David Craft's scholarly and painstaking "History of Bradford County" (Everts Company, 1878).² In more amplified form they have been available for nearly half a century in imprints of the Tioga Point Historical Society (at Athens). From the pen of the director of the Society's museum and archives, Louise Welles Murray, there came in 1903 and 1917 "The Story of Some French Refugees and Their 'Azilum'" (152 pages), illustrated with portraits, facsimiles of documents, and genealogies of certain families. The Society's 4-page Bulletins of 1944-1948 have reported later gleanings. A brochure just off the press, "Azilum: French Refugee Colony of 1793," a revision of earlier issues put out in 1933, 1937, and 1940, and amply illustrated and documented, substantially expands the narrative. More is promised by its author, the present museum director, in a projected volume, "The North Pennsylvania French."

¹ See David Craft, *Col. John Franklin and the Wild Yankees*, 1896, pp. 1-23, Tioga Point Historical Society; L. W. Murray, *Col. John Franklin and the Last Stand of the Connecticut Settlers*, 1917, pp. 1-45, Wyoming Historical Society; Julian Boyd, *The Susquehanna Company, Connecticut's Experiment in Expansion*, 1935, pp. 1-43, Yale University Press, and *The Susquehanna Company Papers*, 1930-34, Wyoming Historical Society, 4 vols.

² As early as 1799, a short account of the colony with names of many of the settlers had appeared in the *Voyage dans les Etats Unis* of a French traveller, La Rochefoucauld-Liancourt, who visited here in 1795.

Land Office Information

For as the years have passed a wealth of data on this unique assault on the north wilderness have been amassed from the patent books of the Department of Internal Affairs' Land Office, and from deeds recorded in the county-seats of early Northumberland, Luzerne, Lycoming, Bradford, McKean, Potter, and Tioga. All are rich in the names of French owners, many of whom took out citizenship papers in Pennsylvania, and, when the course of Revolution in France turned tempestuous and bloody, planned New World retreats, remote from the disorders of old Europe. The files of the State Archives, of the Historical Society of Pennsylvania, of the Library of Congress, Johns Hopkins University and the Bibliotheque Nationale of Paris, as well as a number of private collections have filled in many gaps in the records. Additions to the total story are continually coming in from unexpected quarters on either side of the Atlantic, casting new light on motives, aims, methods of transacting business, and the character, careers, and influence on American life of the refugees.

Noted World Figures

In the pages of the brochure just issued notable figures of world history are encountered. Here is Charles Maurice de Talleyrand-Périgord, whose natural financial genius, often maligned by American writers, first found encouragement and free scope in New World circles and conditions. An unfrocked bishop, statesman and prince in the making, you meet him here in buckskins, a penniless exile; cannily successful while passing, however, in staking a claim on just the iron-rich valleys of central Pennsylvania—in the White Deer, Bald Eagle and Bellefonte section—where the Iron Baron of a later century, Andrew Carnegie, laid the foundations of his fortune. The picturesque titles assigned the tracts involved warrants or patents for which were held by Robert Morris, fill several quarto pages.

Funds to complete the title were sent back from Europe shortly after Talleyrand's return, we are told, though whether any profit from sales ever accrued to the purchaser remains a mystery. Contrary to a passage in a recent biography of Robert Morris (by E. Young), Talleyrand had no hand in the launching of Azilum, reaching America (and the Susquehanna) only in 1794, after the colony was well under way; and having at best no real concern for the fate of the Bourbons. Though he visited the settlement he invested neither in its lands nor shares, exploring a half dozen widely separated sites before committing himself.

More nearly associated with the Azilum colony is General Louis de Noailles, brother-in-law of Lafayette. Younger son of an old French military family, he had made contact with American ideals a dozen years earlier when quartered at Newport with a Quaker family; and had served with distinction at the siege of Yorktown. The first purchases of lots on the village site of Azilum from local claimants were made in his name. When the guillotine took most of his family, he became partner and land agent of the well-known Philadelphia merchant and senator from Pennsylvania, William Bingham.³ He died in 1804 of a wound received in a

³For whom Binghamton, N. Y. is named. He owned an extensive tract in northern Pennsylvania.

sea escapade near Santo Domingo (Haiti), where Napoleon's brother-in-law, Le Clerc, was struggling against yellow fever and Toussaint L'Ouverture to retrieve France's colonial possessions in the rich sugar and coffee islands.

It is unlikely, however, that Noailles was implicated in Napoleon's scheme for turning the West Indies into stepping-stones to an empire in Louisiana and the Mississippi Valley. In 1872 the vicomte's cousin, Marquis de Noailles, came as ambassador to the U. S. His grandson's book on "French Soldiers and Sailors in America in the War of Independence" was crowned by the French Academy, and an autographed copy is in the Louise Welles Murray Azilum collection.

Adventurer With John Paul Jones

Through the pages of the 1951 brochure there stalks also Captain Denis Cottineau of the "Pallas," joint adventurer with Paul Jones and his "Bonhomme Richard" in the famous raid in our behalf in British waters in 1779. A fellow exile, Saint-Memin, has preserved for us Cottineau's handsome Breton profile, displayed in the Corcoran gallery in Washington with those of nearly 200 of his countrymen and of early Americans, made at the time of the trial of Aaron Burr in Richmond.

Another naval captain, Aristide du Petit-Thouars, deflected from his carefully planned voyage in search of La Pérouse (lost with all his scientific equipment in the Solomon Islands), we find marooned also in northern Pennsylvania, struggling with only one sound hand to clear a land grant in the hills where Dushore now stands (county of Sullivan). Aristide, lured back to ward off British threats against his homeland, died fighting Nelson in the Mediterranean in 1798.

Often overlooked by half-primed writers on Azilum history is the fact that all three, Noailles, Cottineau and Du Petit-Thouars, had served with distinction in our War of Independence; and while over here had savored the true meaning of liberty and the republican life.

The Financier

In these pages, though never in person at Azilum, one comes upon the Swiss banker, Jacques Necker, ex-minister of finance for France, and reputed the wealthiest man in Europe; along with him, his headstrong literary daughter, Madame de Staël. The latter, busy manipulating the strings of an underground in Switzerland during the Terror, never crossed the Atlantic to occupy the wooded height in present Orwell Township, County of Bradford, on which for ten years her father paid the taxes. Her title reverted to another distinguished visitor, son of the well-known French manufacturer, Jacques Le Ray de Chaumont, who had befriended Benjamin Franklin and backed John Paul Jones in our Revolutionary conflict.

James Le Ray, turned American citizen, and his son and grandson, paid for surveys, roads, taxes, contributed to the building of schools and churches, and visited his investments personally, in the early years of the 19th century; travelling through dangerous narrows, over villainous roads. Employing as land agent, a Sheshequin man notorious locally for his

dogged support of Connecticut claims, the Le Rays derived insufficient revenue from their Pennsylvania tract of 80,000 acres to stave off bankruptcy (incurred primarily because of unpaid claims on our Congress). Other investments, solicited by our Gouverneur Morris and backed by Nicholas Biddle of the Bank of the U. S., were in northern New York State on the Black River, in the very region traversed or skirted by Champlain nearly 200 years before. Claims for reimbursement for water and mining rights that have enriched Americans in this area over a term of years are now being pressed by the French heirs of the Le Rays. Jacques Le Ray, Senior, is said never to have been paid by Congress for his loan of a home in Paris to Franklin, or the powder and ammunition with which he early supplied the Continental Army.⁴ Today his heirs seek redress.

Some Pioneers Remained

While the titled or politically ambitious exiles who backed or visited Azilum or bought stock in the Company eventually returned to France, or retired to older French settlements such as Charleston, Savannah, or New Orleans, a number of families remained (Homets, Le Fevres, La Portes, joined later by Prevosts, Piollets, Delpueches, and others). Intermarrying with local American stock, they built roads, mills, frame houses and inns; pushed work on canals and railroads, and in legislature and congress worked for the laying out of other Northern Tier counties to the west. Their descendants are scattered up and down the Susquehanna Valley, and westward over the entire U. S. French names—Du Thouars (Dushore), La Porte, Homet's Ferry—are sprinkled over the countryside. Fleur-de-lis reminiscent of their homeland decorate local residences and churches.

Fantastic and misleading webs of romance have been woven about the colony by ill-informed or prejudiced countryfolk, city reporters, and aspiring novelists. A simple but relatively accurate story, "New World or Old?" based on the letters of a group who settled first at Greene in New York State, coming down the Chenango to the colony at Azilum later when disputes over their land title arose, was published in 1945 by the author of the recent brochure, above mentioned.

While there is ample evidence that it was in the original plan to provide in this remote area a refuge, possibly permanent, for Marie Antoinette, widow of the French king Louis XVI, and their children, the princess and the 8-year-old Dauphin, it is of course historic fact that Marie left prison only for the guillotine.

It is further exceedingly doubtful that the Dauphin ever reached America or Azilum, though a hundred years ago, after a visit from King Louis Philippe's son, a half-breed missionary among the Oneidas, Eleazar Williams, for a time put up a claim that kept many guessing. As for the Queen's jewels, among them the stone later known (ironically) as the Hope Diamond, there is even less likelihood that any were brought to America by Azilum refugees. Most of the exiles escaped across the border in the final crash of the monarchy with their lives alone—and the clothes on their backs.

⁴ Bills for the same presented in 1792 to the U. S. Consul General in France, Thomas Barclay, have recently come to light at the American Philosophical Society.

La Grande Maison

La Grande Maison, the Queen's House—for the King was guillotined in January 1793 before Azilum was started, and only those for whom French history is a blank have ever called it the King's Mansion—was an 80-foot two- to three-story planed-log structure, just off the block of town lots and facing the river. Here the colony manager, ex-judge Antoine Omer Talon for a few years played host to distinguished exiles. About 1801 the great house was placed in charge of Barthélémi La Porte, to whom Talon was indebted for effecting his rescue from pursuing Revolutionists in 1792. In 1839, Barthélémi's son, Congressman John La Porte, built a spacious summer home just off from the Great House, of similar proportions but on a lesser scale. Fearing fire, he had the old log structure razed, using some of the timbers and probably some of the woodwork and the glass of its numerous windows.

The La Porte House

The La Porte house with its great fireplaces, brick oven, swinging crane and H-hinges, now for several decades owned by the Hagerman family, has of late been opened by Mrs. Mark Hagerman as a show place. A cluster of farmhouses, with lines of trees marking the old avenues, a white-steepled church and graveyard, known locally as "Frenchtown," in the township of Asylum, mark the site of the village laid out across the river from the main highway in 1793.

The records show it was designed as the river port of a million-acre area reaching back into the hills, and reported by its early surveyors to contain iron and other minerals. Valued in the last century for its semi-bituminous coal mines, at Barclay and Lopez, and its lumber, it is notable today chiefly for its vacation camps and hotels, its trout streams and game, and its green woodlands and laurel and rhododendron thickets.

Many Owners

These back country holdings, organized by Robert Morris in 1794 as the Asylum Company, have known many masters. Following the business troubles that converged on Morris and his partner John Nicholson⁵ (as the French armies and Napoleon swung out over Europe, laying embargoes on Atlantic ports, and disrupting world finance) passed from one set of creditors to another. A remnant came in the middle of the last century to the Meilerts, Secku and his son Michael. The elder Meilert, a German emigrant who had served Napoleon, and was affiliated by marriage with the banker Rothschild, gave the land in the adjacent county of Sullivan (erected in 1847) for a county-seat, and named it for his friend the state surveyor John La Porte.

Dogged by Connecticut claimants long after Federal and State laws had adjusted their legal claims, Michael, whose fine old residence dominates La Porte on its high plateau near Lake Mokoma, died, it is alleged, of injuries received at the hands of agents of the old Susquehanna Company. A poster of the period in the Bingham Land office at Wellsboro

⁵ Organizer of Pennsylvania finances after the Revolution, and comptroller general for a number of years.

offers a reward for the apprehension of the assailants who stole his trunk and burned his papers.

Tioga Point Museum

Thirty miles up the river at Athens, Tioga Point Museum, founded largely through the efforts of a La Porte descendant, houses loan collections of letters, accounts, maps, portraits and personal possessions of the French refugees and the Asylum Company. Highly treasured is a sketch of the Queen's house, and its ground floor plan, which we owe to the elder La Porte's granddaughter, Elizabeth La Porte (Mrs. Charles F. Welles, Jr.), who was born and brought up in it. Fairly recently, through the kindness of Gilbert Chinard, of Princeton, and the comte de Leusse of Paris, a replica of a sketch made in 1798 of the entire village, including the house, has been added to the collection. A plan to reproduce a six-foot model of the village based on the 18th century map preserved by the La Portes and now on display at the Bradford County Historical Society's rooms in Towanda, with details added from accounts in old deeds and records, has been advanced by the Tioga Point Museum, seconded by Mrs. Mark Hagerman.

Authorities Given

Records in the State Archives at Harrisburg, in the Wyoming Historical Society at Wilkes-Barre, in the Locust Street rooms of the Historical Society of Pennsylvania in Philadelphia and in the American Philosophical Society (near Independence Hall), in the Manuscript Division of the Library of Congress, in the New York Public Library and Historical Society, in the White Library of Cornell University, and in French Archives corroborate many of the details of the story as given out by the Tioga Point Historical Society, and by the Wyoming Historical Society in Craft's "Day at Asylum" (1902). They do not, of course, confirm the gross distortions launched by various writers of fiction.

Highway markers along the Sullivan Route, of a fair degree of accuracy, call the attention of passing tourists to what sentimentalists delight to dub a "ghost town." Widespread interest is evoked, in part by the hauntingly beautiful bird's eye view of the site from the mountain opposite, with cloud shadows drifting over its grain fields, and distant blue ridges framing the picture. Though slightly off the main highway, if developed by the State this might easily become one of the major attractions of Pennsylvania.

Tioga Point Museum, Athens, Pa.

STEELTON'S PLANNING COMMISSION

Steelton has a new five-man planning commission. The appointment of the group was promised residents of Steelton prior to the general election last November 7. Named to the commission by Borough Council and their terms of office were: Norman Bishop, bank cashier, five years; Charles Hoy, assistant principal of the Steelton High School, four years; William Reagan, Steelton and Highspire railroad superintendent, three years; John Verbos, postmaster, two years, and Samuel Cole, teacher in the Hygienic School, one year. The Planning Commission was appointed at the instigation of the Citizens Joint Housing Committee, representing 18 civic and service groups in the borough and organized for action to halt the decline in population through the provision of more and better housing in the community.

Protection for Motorists Buying "Penna. Grade"

"**Y**OUR OIL'S LOW," the service station attendant says. 'Probably take a couple quarts.'

"To many a motorist, a quart of oil is a quart of oil . . . and nothing more. He appreciates the necessity of periodic oil-level checks, but does not realize that two quarts of oil, picked at random, may vary in quality.

"To protect the unsuspecting motorist and make sure he gets what he asks for, reminds a release from the Pennsylvania Grade Crude Oil Association, a system has been set up to prevent non-Pennsylvania oils being misrepresented as Pennsylvania.

"According to Dr. Walter C. McCrone of Armour Research Foundation, Chicago, life is becoming more difficult for those few dishonest dealers who yield to temptation and misrepresent their oil.

"Under a Foundation program for the Pennsylvania Grade Crude Oil Association, he said, quart samples of oil are purchased from filling stations all over the country and abroad and are sent to the Armour Foundation oil analysis laboratory for checking.

"There, through procedures developed in the Foundation's chemistry department, technicians can tell whether an oil sample is from Pennsylvania fields, from non-Pennsylvania fields, or is a mixture of the two. The man behind the wheel cannot detect the differences but they are made plain by infrared spectrophotometry, precision density calculations, and refractive index measurements.

"Differences in color form the basis for the infrared method. The human eye easily spots rain clouds and police cars by color alone, but sometimes runs into complications when trying to differentiate between, for instance, fuchsia, cardinal, and scarlet. The infrared technique takes over where the human eye leaves off and readily spots minute differences in color composition. Generally speaking, this method will identify oils wholly from Pennsylvania or non-Pennsylvania sources.

"Precision density refers to the weight of an oil sample and can be roughly compared to human ability to tell lead from aluminum by noting the mass of each.

"The third method, refractive index measurements, is related to the speed with which light passes through the oil sample. If a brook trout could survive in a tank of molasses, he would not swim as fast as he would in water. Similarly, the speed of light decreases when it encounters a substance which is denser than air. This method is used to detect the adulteration of one oil by another."—*Warren Times*.

NARBERTH HAS REAL ESTATE TRANSFER TAX

The tax rate on real estate in the Borough of Narberth has been raised one mill this year and a stamp tax will be levied on real estate transfers. The one-mill increase, which the Council says will amount to only \$3.50 per year for the average family, will bring the Borough tax rate to 19 mills. The tax for school purposes is 25 mills.

Air Conditioning and Ground Water in Pittsburgh

By D. W. VAN TUYL¹

THE use of ground water specifically for air conditioning in the "Golden Triangle" of Pittsburgh has increased steadily since 1927. During this period, also, ground-water pumpage for other uses nearly doubled in volume. The combined pumping load now averages about 10,000,000 gallons a day during the summer months. All this water is obtained from the underground sand and gravel deposits that were washed into the Allegheny and Ohio River valleys during the glacial epoch thousands of years ago. Wells 50 to 70 feet deep tap the water-bearing deposits, which are recharged principally by water from the rivers, and they yield as much as 1,500 gallons a minute each at some locations in the Triangle area.

Advantages of Ground Water

In general, ground water is preferred to surface water for air conditioning because of the temperature factor. Natural ground water has a nearly constant temperature equal to or slightly above the mean annual air temperature of the region, whereas surface water ranges in temperature from near freezing in winter to 80° or 90° F. in summer. Ground water derived by infiltration from nearby surface sources, as in the Triangle area, fluctuates in temperature above and below the annual mean, but less than does surface water. Thus, during the air-conditioning season, ground water is generally cooler than adjacent river water, giving it an advantage for use in cooling.

Another advantage of ground water is its fairly constant chemical quality, as compared to the variable quality of surface water. Although generally harder than surface water, ground water contains no suspended matter and rarely requires treatment or sterilization prior to use.

The availability of ground water in the Triangle area and other sections of Pittsburgh generally results in costs of development, operation, and maintenance that are lower than the cost of treated water from the city supply.

Air Conditioning With Cold Water

Most of the air conditioning in the Triangle area of Pittsburgh is for comfort in buildings in which large numbers of people work or congregate. Air conditioning for industrial and process purposes is not included in this category. Air-conditioning systems employ either natural cooling ingredients such as water and ice or artificial refrigerants such as Freon, ammonia, carbon dioxide, and sulfur dioxide. In the former, or natural refrigeration, heat is absorbed in melting the ice or warming the cool water. In the latter, or mechanical refrigeration, heat is absorbed when the liquids are evaporated. Artificial refrigerants are ordinarily used over and over by completing the cycle—compression and condensation of the gas to a liquid.

¹ Hydraulic Engineer, U. S. Geological Survey, Pittsburgh, Pa.

Air-conditioning systems that use only cold water for cooling are relatively simple in design, but they require water generally below 55° F. and in large quantities at reasonable cost. Systems that use liquid refrigerants may also use water, in a number of ways:

1. Water precools the air after having cooled the coils of a condenser through which the refrigerant passes.
2. Water subcools the liquid refrigerant leaving the condenser.
3. Water is sprayed on the condenser coils across which air is drawn—the evaporative condenser.
4. Water cooled by artificial refrigeration is circulated in tubes and cools air drawn across the tubes.

Water is needed in small amounts and may be at temperatures above 55° F. in each of the first three methods. Air conditioning that employs only water as the cooling agent generally requires more water than air-conditioning systems using liquid refrigerants. Water requirements for systems using liquid refrigerants range from very small amounts to amounts as great as those used by direct water systems, depending on the mechanical design of the refrigeration cycle.

The amount of water used in air conditioning depends on the type and size of the system, on the degree of cooling desired, and on the temperature of the water. The size of a system is based on the calculated heat gains in the space to be conditioned. The design of the refrigerating plant is based on the cost of water in relation to the quantity and temperature of water available, and on the occupancy and structural features of the building. The quantity of water to be used in any system is determined after calculations have been made for heat gains, amount and condition of the air supply, size of the plant, and other factors.

The cooling load varies with the design range of wet-bulb temperatures. According to the American Society of Heating and Ventilating Engineers, the design wet-bulb temperature of outdoor air at Pittsburgh is 78° F. Likewise, the refrigerating capacity varies with the cooling load, based on temperatures, and with the amount of air to be conditioned.

In the air-conditioning industry the problem usually is one of computing the quantity of air required and the temperature at which it should be supplied in order to maintain a given temperature in a room which has a certain heat loss.

Ground Water Available in Triangle Area

The occurrence of water-bearing gravels in the Triangle area has been defined by numerous wells and test borings and has been mapped¹ by the U. S. Geological Survey working in cooperation with the Bureau of Topographic and Geologic Survey, Pennsylvania Department of Internal Affairs. The locations of existing water wells outline in general the portions of the area in which ground water can be obtained. The local geologic conditions limit the water-bearing formation (aquifer) to a narrow strip running through the Triangle area. The aquifer contains water under water-table conditions—that is, not confined under pressure. Conditions favorable for the development of large supplies of ground water

¹ Adamson, J. H., Graham, J. B., and Klein, N. H., 1948, Ground-water resources of the valley-fill deposits of Allegheny County, Pa.: Pennsylvania Topog. and Geol. Survey, 4th ser., Bull. W 8, 181 pp.

exist in the area extending up the Allegheny River north of the Triangle. In addition, wells have been drilled along both sides of the Allegheny, Monongahela, and Ohio Rivers.

In general, areas in which large amounts of ground water have been developed, as the Triangle area, are suitable for some further exploitation. However, this is true only if total pumpage has not exceeded total recharge or the ability of the formation to transmit the amounts pumped. Over-pumping results in excessive mutual interference among wells and in the lowering of water levels to or near the bottom of wells or the base of the aquifer. In some instances, where recharge is small compared to the pumpage, this lowering is permanent. In other instances, as at Pittsburgh, the lowering is temporary because total recharge is approximately equal to total pumpage year after year. The problem in the Triangle area is one of closely spaced wells being pumped heavily during a short period of time (summer), and with each increase in pumping causing additional lowering of the regional water table. However, recharge during the non-cooling season is sufficient to cause the water table to return to normal levels.

The aquifer underlying the Triangle area, being of limited areal extent, has small storage capacity. Extensive aquifers may contain hundreds of billions of gallons of water in storage, whereas the Triangle aquifer has a capacity estimated at about 1,300,000,000 gallons. Not all this water is recoverable, however, as the aquifer never could be completely drained by any practical pumping arrangements. The storage available for extraction through wells is probably in the order of 500,000,000 to 800,000,000 gallons. These amounts can be withdrawn in 50 to 80 days with a regional pumping rate of 10 million gallons a day.

Storage capacity is only one of two controlling factors in the water-yielding capacity of the aquifer. The second is its permeability or ability to transmit water through the pores of the sediments from points of high head to points of low head. Although the storage capacity of the aquifer in the Triangle area is small, the relatively high permeability and nearby source of recharge combine effectively to build up storage after the period of large withdrawal each summer.

It is apparent that recharge to the aquifer is continuous from the adjacent rivers into the regional cone of depression of water levels, at rates controlled by water temperature, hydraulic gradient, permeability, pumping rate, and extent to which the river bed is sealed with silt. It is also apparent that the rate of recharge is not equal to the summertime pumping rate, because water levels that are relatively high in winter and early spring are lowered 8 or 10 feet in a few weeks. This rapid draw-down of water level represents the establishment of a new hydraulic gradient large enough to allow additional water to flow through the sediments in response to the new pumping rate. At higher rates of regional pumping even lower water levels would be established. The limiting factor is that the relatively small thickness of saturated formation precludes much further lowering of the water levels and resetting of pump intakes in this area.

Air-Conditioning Use Tabulated

The use of ground water for comfort air conditioning at Pittsburgh began in 1927, the first such installation being at the Stanley Theater. By 1950 the number of places had increased to 32. No doubt many more have installed air-conditioning equipment, but most of them use artificial refrigerants rather than well water, or in the larger systems municipal water recirculated through cooling towers. The volumes of ground water pumped have increased steadily as new wells and new air-conditioning units have been added. Some of these obtained water from existing wells while others were supplied from new wells drilled specifically for the purpose.

The use of air conditioning, and consequently the demand for ground water, vary during the year. In general, air conditioning begins in April or May and ends in October, the exact times depending on local atmospheric conditions. The greatest demand corresponds to the hottest weather, which usually is in July. Ground-water pumping reaches a maximum in the Triangle area during July.

Table 1 lists the total and average daily pumpage for air conditioning and other uses for each year since 1930.

Table 1.—Ground-water use in Triangle area, 1930-50

Year	Air-conditioning use			Other uses		
	No. of units	Million gallons per day	Million gallons per year	No. of wells	Million gallons per day ¹	Million gallons per year
1930	1	0.12	43.0	24	3.35	1,203
1931	2	.34	124.4	24	4.01	1,464
1932	4	.48	175.2	24	4.15	1,515
1933	4	.48	175.2	24	4.15	1,515
1934	5	.58	213.1	24	4.21	1,537
1935	6	.69	253.1	24	4.28	1,563
1936	8	.85	310.1	24	4.28	1,563
1937	10	1.67	607.1	24	4.28	1,563
1938	11	1.71	624.9	24	4.28	1,563
1939	14	1.95	707.8	24	5.24	1,913
1940	16	2.08	762.7	24	6.30	2,292
1941	18	2.91	1,064.6	24	6.60	2,401
1942	19	2.95	1,080.9	24	6.67	2,437
1943	19	2.95	1,080.9	24	6.67	2,437
1944	19	2.92	1,065.6	24	6.64	2,426
1945	19	2.84	1,038.0	24	6.62	2,403
1946	22	3.71	1,351.4	24	6.64	2,426
1947	26	4.28	1,562.8	24	6.50	2,375
1948	28	4.57	1,670.7	24	6.04	2,205
1949	32	4.85	1,766.6	24	5.72	2,085
1950	32	4.47	1,631.7	24	4.60	1,680

¹ Figures in this column represent average daily use during the year; rates of total use during air-conditioning seasons are the sums of these figures and the daily air-conditioning rates.

Air conditioning accounts for a fairly high proportion of the total pumpage of ground water in the Triangle area. The amount used during 1950 was about 25 percent of all pumpage during the year. Considered on a maximum daily-rate basis, air-conditioning use was nearly equal to all other uses. This represents a great increase since 1940, at which time the yearly volume was only 10 percent of the total and the maximum daily rate was about 25 percent of the total.

Many Factors Affect the Ground-Water Supply

Ground-water conditions in the Triangle area reflect the steadily increasing withdrawal from wells. The concentration of pumping from the relatively shallow aquifer has produced a year-round regional cone of depression of water levels, in which the water table approaches the limit of feasible drawdown during the air-conditioning season. The history of well operation indicates that as new wells are put into service older ones are being abandoned, but the over-all trend is one of increasing pumping. It is evident that new wells or increased pumping in the "low" areas will cause additional lowering of the water table.

It is concluded, therefore, that maximum recharge has been approached under the existing conditions of geology, hydrology, well distribution, and pumping rates. If the ultimate cone of depression has been produced, additional water cannot be obtained from the present wells within the area unless the aquifer is recharged artificially.

The long-term trend of summertime pumping cannot be predicted, but three possibilities can be considered:

1. If ground-water demands increase, a limit will be reached with only slight additional pumping.
2. If the demand remains constant, as of 1950, additional small-yielding wells can be installed, preferably at sites away from the present center of large drawdown.
3. If demands decrease or existing wells are abandoned, additional pumping will be possible in all locations, but again preferably away from the deepest depressions in the water table.

Natural and man-made barriers exist in the Triangle area so that recharge is limited. A large percentage of the land is covered by impermeable materials which prevent the direct infiltration of rain water into the ground. Such areas include buildings, streets, sidewalks, and paved parking lots. The geologic boundaries of the aquifer prevent any appreciable recharge from adjacent land areas. The most effective boundary is the rock wall of the preglacial valley along the eastern edge of the Triangle area and against which the saturated part of the aquifer terminates abruptly.

The most important barrier to recharge is a work of man, constructed only a decade ago. It consists of a continuous sheet-pile cut-off wall along the Allegheny River. This wall is about 3,750 feet long and extends to a depth averaging about 33 feet below normal river level. The effect of the wall on recharge is a reduction of the cross-sectional area of inflow to about half the original amount. Instead of about 35 feet of aquifer thickness, only the lower 15 feet remains open for the transmission of recharge water. That a decrease in the amount of recharge must have occurred is obvious.

The permeability of a given aquifer varies with the temperature of the water passing through it, owing to the differences in viscosity. Warm water has a lower viscosity and thus will flow more readily than cold water. This factor results in higher rates of recharge in summer than in winter, other conditions being constant. In the Triangle area this is favorable from the standpoint of quantity of water but unfavorable from the standpoint of temperature of the ground water.

The elevations of the rivers in the Pittsburgh area are regulated by a series of dams, and they remain at "pool stage" most of the time. During floods, however, the rivers rise and the hydraulic head then acting to produce infiltration into the aquifer is increased. Ground water that has been drained by heavy pumping during several months may be replenished in a few days of unusually high river flow.

Conservation is Important

The most obvious method of ground-water conservation is the reduction of pumping to the smallest amount needed. In most cases this is done as a matter of economy of operation, but in some instances maximum use of the pumped water is not made. Unless the greatest possible economical use of ground water is made, the supply is being wasted.

In air-conditioning use, ground water can often be conserved by reuse. Some of the methods possible are: roof ponds to reduce the heat load imposed by the sun; precooling outside air with discharge water; engine and compressor cooling; recirculation through cooling towers; and use of evaporative condensers.

Most natural ground water is relatively pure, but it can become impure through contact with mineral and organic materials. The ground water in the Pittsburgh area is mostly free of bacterial pollution and objectionable chemical contamination, although derived from highly polluted sources. The filtering action of the river-bed silts and of the aquifer itself maintains the bacterial purity of the influent ground water. However, certain chemical contaminants cannot be filtered out and may ruin a good supply if their concentration is gradually built up. The state of the original source of supply, then, is highly important. The prevention of river pollution is a major method of conserving the existing ground-water supplies for beneficial use.

Water is a priceless natural resource, which unlike most natural resources, is replenished by nature. The supply is not inexhaustible, however, and conservation of water can be practiced in many ways. A method that is coming into practical use is that of artificially recharging the underground reservoirs. The Triangle area appears to be geologically suitable for the operation of recharge wells, similar to those used in Brooklyn, N. Y., Canton, Ohio, and other places. A localized year-round cone of depression is available for the retention of water returned by this method, so that there would be little or no loss of water.

In any business a system of accounting is necessary to insure the proper and profitable conduct of affairs. The business of ground-water supply is no exception, and an important part of its accounting method is the systematic inventory of supply and demand. The supply is measured by the observation of water-level fluctuations in the storage reservoir and the determination of sources and rates of recharge. The demand is measured by periodic or continuous surveys of pumpage. The results of the continuing inventory in Pittsburgh are made available to the public through State and Federal publications.

Summary

The steady increase in ground-water use for air conditioning has resulted from a growing awareness of the value of ground water for this specific purpose. The trend appears to be that pumping will become heavier in the Triangle area and in Pittsburgh in general. Limitations of a large-scale increase stem from relatively small storage and drawdown potential of the aquifer, the reduction of natural river recharge, and the possible increase in water temperature.

The future of the Triangle area as an area of dependable ground-water yield is promising, but a proposed extension of the sheet-pile cut-off wall probably would reduce the net yield of closely spaced wells. Voluntary control of pumping, including individual reduction of waste, may prove to be the easiest and best method of conserving the supply. Some additional air-conditioning units using ground water can be installed in the Triangle area. Efficient air-conditioning systems for small business establishments are available in the industry, and they could operate on as little as 30 to 40 gallons a minute of water with no reuse of the water.

The installation of air-conditioning systems using ground water should be based on all available ground-water data and should utilize the combined services of qualified engineers, well drillers, and equipment manufacturers.

Montgomery Rejoices Over "No Tax Increase"

"IT is a pleasure to be able to note again that Montgomery County—through its fine commissioners—will not increase taxes this year. The county and institution tax rates remain at one and a half mills for 1951.

"Frederick C. Peters, of Ardmore, is chairman of this Board of Commissioners and has been instrumentally active in retaining the low tax millage.

"It must be remembered that the same problems of inflation, rising costs, rising labor expenditures and upkeep face the county administration as face the townships and boroughs, and internally, the national government.

"Lower Merion Township and Montgomery County are almost unique in not passing on a higher tax in these times.

"This has been achieved by strict economy and paring of expenses and outlay to the bone. Yet we retain all needed services and actually can see far more domestic outlay, for example, than is evident in our national administration so far as this community is concerned.

"It has been our opinion for some time that good, honest Republican administration of the sort we get in Montgomery County and Lower Merion Township would change the whole picture in Washington. It certainly contrasts with that administration, doesn't it?"—*Ardmore Chronicle*.

BUDGET BOOSTED, BUT NOT MILLAGE

Although Delaware County's budget for 1951 is \$292,000 greater than that of 1950, no raise in the tax rate is contemplated. Six mills, 4.5 mills for county purpose and one and one-half mills for institutional needs, have been levied.

Suburban Growth Increases Cities' Traffic Problems

SUBURBAN growth of the last decade has increased the parking and traffic burden on central cities without contributing to the costs involved, Dr. Roy V. Peel, Director of the United States Bureau of Census, declared in an address before the Business Men's Conference on Urban Problems, held in Washington by the Chamber of Commerce of the United States.

The combined population of the metropolitan areas, the areas which contain at least one city of more than 50,000 population, is now 84 million people, Dr. Peel reported.

"Within these areas," he said, "the population of the suburbs had the largest increase, both numerically and in rate of growth. The outlying parts of the metropolitan areas gained 9 million or 35 per cent, compared with the central cities' gain of 5.7 million or 13 per cent.

City Growth "Flattens"

"While the rate of population growth in the expanding metropolitan suburbs was nearly 2.5 times that of the national rate of 14.5 per cent, the rate for the central cities fell short of the national average. The slowing of the rate in the cities is now the rule. It is evidence of the flattening out, or decentralization of the cities."

In further regard to decentralization, Dr. Peel stated that "a recent summary of the 1948 Business Census reveals that for the 32 metropolitan areas containing cities of 250,000 or more population, the rate of business growth in the suburbs has exceeded that in the central cities. This is probably true down the scale."

Down-Town Sections Stabilized

The business census, he added, "reveals that the downtown business centers of the large cities have virtually been stabilized. It is not true that the commercial cores of the cities have shown any signs of withering away, but serious competition has sprung up for them in the suburbs."

Stressing the many strains placed on the central cities, Dr. Peel said: "For the average city, traffic and parking are immediate difficulties directly traceable to suburban growth. The streets require more maintenance, new arterial thoroughfares must be built, and at the same time extremely valuable property is lost, as a tax source, because of conversion to parking areas."

NARBERTH POINTED THE WAY

According to the *Main Line Times*, Narberth was the first borough in Pennsylvania to adopt a zoning ordinance which became operative in 1924, a few years before Lower Merion had such an ordinance.

INDUSTRIAL STATISTICS FOR THE LARGER PENNSYLVANIA MUNICIPALITIES, 1949

(Amounts in thousands of dollars)

Municipality	Estab- lishments	Number of Employees	Wages and Salaries	Capital Invested	Value of Products	Value Added by Manu- facture
Aliquippa	18	10,650	\$44,099	\$121,307	\$169,919	\$74,924
Allentown	307	25,024	60,421	58,845	218,562	99,826
Altoona	90	13,155	35,768	35,889	97,440	18,249
Ambridge	16	9,692	33,459	41,066	137,765	59,573
Beaver Falls	48	6,174	18,260	26,608	56,173	24,644
Berwick	38	6,311	26,966	12,171	84,372	24,839
Bethlehem	99	23,733	71,309	64,305	260,440	112,253
Bloomsburg	30	3,336	8,194	7,278	29,475	12,053
Braddock	24	6,162	18,660	80,581	139,445	44,629
Bradford	40	2,918	8,554	12,931	35,726	17,132
Bristol	32	5,595	18,567	23,612	92,873	32,148
Butler	51	6,302	21,316	42,236	84,004	28,087
Canonsburg	19	2,981	8,969	3,945	37,837	16,766
Carbondale	36	2,293	4,795	4,132	12,414	5,122
Carlisle	42	3,595	8,428	6,002	32,691	14,323
Carnegie	25	1,524	4,897	7,228	17,217	8,605
Chambersburg	46	3,854	7,970	13,577	33,295	16,006
Charleroi	19	1,718	4,621	4,831	8,996	5,819
Chester	102	16,273	52,877	55,046	272,946	91,303
Clairton	14	6,661	21,387	91,889	142,810	43,801
Clearfield	24	1,105	2,227	1,693	6,138	2,912
Coatesville	22	5,086	17,041	11,799	55,909	23,716
Columbia	43	2,721	5,582	5,773	19,010	9,164
Connellsville	33	1,237	2,918	3,132	7,341	3,127
Conshohocken	26	6,370	21,323	27,549	97,562	50,127
Coraopolis	14	2,377	9,000	6,996	27,505	14,655
Corry	24	1,769	5,078	5,096	13,007	7,418
Donora	16	5,185	16,606	7,302	71,297	26,148
Dubois	32	1,542	4,011	3,495	11,482	4,622
Dunmore	21	1,785	3,895	3,266	9,914	4,290
Duquesne	11	6,901	20,923	61,129	92,452	27,984
Easton	97	8,134	17,312	14,430	45,546	22,870
Elizabethtown	28	1,734	3,920	4,687	19,938	6,659
Ellwood City	28	5,033	16,976	6,697	63,170	31,703
Ephrata	34	2,420	5,035	2,986	15,777	7,496
Erie	321	40,377	126,681	101,630	459,738	247,065
Farrell	12	5,432	16,484	24,846	63,827	20,844
Franklin	23	3,169	9,331	6,267	39,222	14,985
Greensburg	48	3,101	7,612	7,641	18,761	13,143
Greenville	18	2,312	7,754	7,200	30,221	7,928
Grove City	21	2,727	9,517	3,625	18,012	9,183
Hanover	86	5,805	11,575	9,818	43,308	19,337
Harrisburg	186	11,385	29,694	34,507	89,629	35,207
Hazleton	79	6,872	14,163	8,157	42,681	19,517
Homestead	16	381	1,250	1,324	3,305	1,672
Honesdale	29	1,897	2,768	1,245	11,121	5,085
Huntingdon	19	1,036	2,563	3,209	7,878	4,946
Jeannette	39	5,292	17,645	17,638	50,035	25,944
Johnstown	128	21,037	62,533	111,593	223,189	108,299
Kingston	35	4,068	6,504	4,769	17,361	10,572
Lancaster	202	20,445	57,544	61,605	224,209	122,695
Lansdale	60	5,814	14,092	16,347	40,714	23,010
Latrobe	25	3,140	10,092	10,921	33,939	16,733
Lebanon	102	9,467	22,671	23,315	78,140	32,342

INDUSTRIAL STATISTICS FOR THE LARGER PENNSYLVANIA MUNICIPALITIES, 1949—Continued

(Amounts in thousands of dollars)

Municipality	Estab- lishments	Number of Employees	Wages and Salaries	Capital Invested	Value of Products	Value Added by Manu- facture
Lewistown	25	4,726	\$13,049	\$12,582	\$30,323	\$18,522
Lititz	32	1,577	3,654	3,677	21,623	7,164
Lock Haven	31	2,728	7,132	13,463	41,559	21,526
McKeesport	56	10,230	33,305	20,233	105,969	44,617
McKees Rocks	40	7,226	19,695	20,800	71,318	26,559
Meadville	29	6,123	18,544	34,107	53,501	30,143
Milton	26	2,027	5,190	3,935	28,212	12,812
Monessen	12	6,673	22,366	19,232	68,723	27,453
Monongahela	9	144	246	455	468	272
Mount Carmel	21	1,414	1,787	866	6,608	3,919
Nanticoke	24	2,306	3,785	2,009	13,081	8,318
New Castle	75	9,986	29,448	20,622	76,359	39,023
New Kensington	37	6,688	18,969	15,000	62,663	34,330
Norristown	75	4,628	12,502	13,925	42,252	21,477
Northampton	20	2,188	4,986	11,972	16,330	9,702
Oil City	38	2,828	8,259	13,115	31,990	12,384
Phoenixville	33	2,367	5,062	9,125	18,560	8,186
Pittsburgh	1,339	85,202	272,227	373,838	1,092,369	420,656
Pittston	24	1,517	2,149	851	3,751	2,633
Pottstown	73	10,997	35,831	33,696	118,508	58,869
Pottsville	48	3,534	6,947	4,372	23,191	11,937
Punxsutawney	29	752	1,942	1,978	5,969	1,518
Quakertown	44	2,633	5,527	3,984	14,108	8,124
Reading	319	26,549	68,905	66,323	214,388	106,260
Red Lion	49	2,626	5,279	4,919	17,623	7,897
Scranton	312	19,404	41,934	40,610	132,640	59,748
Shamokin	47	4,250	9,051	3,799	25,188	13,265
Sharon	43	9,471	36,411	16,830	133,068	81,835
Sharpsburg	26	1,018	3,438	5,822	22,393	6,284
Shenandoah	23	1,294	1,849	996	5,146	2,996
Steeleton	19	5,737	18,101	20,093	82,105	30,663
Sunbury	30	3,903	8,755	4,201	44,025	16,026
Swissvale	15	3,729	12,273	4,155	27,900	21,477
Titusville	19	1,683	4,807	11,769	19,084	9,096
Tyrone	15	1,383	3,633	10,756	10,720	5,942
Uniontown	39	1,689	3,969	4,068	12,857	6,558
Warren	49	2,845	8,076	12,210	32,943	13,871
Washington	58	3,777	10,467	10,971	49,022	17,519
Waynesboro	30	3,789	10,355	10,181	32,930	19,577
West Chester	30	1,765	3,746	6,097	20,457	13,075
Wilkes-Barre	191	13,001	30,649	30,037	112,242	51,136
Wilksburg	32	464	1,165	1,568	2,958	1,605
Williamsport	131	11,335	28,983	32,005	91,876	40,407
York	264	21,975	58,064	69,378	213,273	114,710

PERKASIE'S LOWER WATER HEATING RATES

Perkasie borough council has authorized a revision in electric rates which, in council's opinion, will give the borough one of the most attractive water heating rates in eastern Pennsylvania. The proposed rates permit the use of 250 kilowatts monthly for \$2.50. This is one cent per kilowatt. To qualify, residents must have water tanks of at least 30-gallon capacity and use 150 kilowatts at the current domestic rates before the one cent rate begins. Consumption over 400 kilowatts will be billed at current domestic rates.

America's First Lime Kilns In Pennsylvania

By NORMA J. SILK

LIME, a key substance in industry, was first made in this country from limestone which was quarried in Whitemarsh Township, Pennsylvania.

The first Swedes coming to America used lime prepared from oyster shells. In an early account of Pennsylvania written by Thomas Budd in 1685, he states: "There is no limestone as we yet know of."

In a letter written to William Penn by Chief Justice Nicholas More on September 3, 1686, More stated "Madam Farmar has found out as good limestone on the Schuylkill as any in the world and is building with it; she offers to sell ten thousand bushels at sixpence the bushel, upon her plantation, where there are several considerable hills, and near to your manor of Springfield." Thus it is evident that this township, which is now largely engaged in the production of lime, has the honor of being the first to have originated this industry in the new world.

The origin of the name "Whitemarsh" is said to be significant with lime. The land was subject to overflows and the white limestone was so abundant that it came to the surface of the marshes, giving a white marsh appearance.

The Farmar family mentioned in Chief Justice More's letter came from England in 1685 and settled on ten acres of land purchased from William Penn. Jasper Farmar died before he reached this country, but his widow and children settled on the land. A son, Edward, eventually took possession of the land and managed a grain mill as well as the lime business. He supplied lime and flour to Thomas and Richard Penn at various times between 1735 and his death, in 1745.

Road to Haul Lime

With the increased use of lime, it became necessary to build a road to Philadelphia to transport it; and the Provincial Council, on May 19, 1698, upon petition, laid out a road from Whitemarsh to Philadelphia. (This was later called Germantown Pike.) It is likely this was the first road laid out for hauling lime to the city. The Limekiln Pike, though not in this township, was laid out in 1693 to transport lime from the kilns to a nearby village.

Lime Subject of Rhyme

In 1696 Judge John Holme wrote a "poem" entitled, "A True Relation of the Flourishing State of Pennsylvania." A section of the poem goes as follows:

"A few years since it was known full well
Here lime was burnt of oyster shell
No limestone in these parts was found;
But since by searching in the ground,
Great store was seen in a short time,
Of which was made of oyster shell;
And much cheaper 'tis at this time
That we paid for oyster shell lime."

Limestone from the quarries of the Tyson family, who resided in the Whitemarsh area, was used in the construction of Independence Hall. The Andrew Crawford quarry was one of the first to convert the limestone to lime. This was at the time of the revolution and brought a foreign element of workers into a Quaker area. This increased population introduced the building of row houses to the area. This is still named for the builder, Mogeetown.

One of First Trusts

One of the first trusts in this country was established in 1810 by a group of builders and lime quarry owners. The purpose of this organization was to fix the prices of lime and the purchases of wood. This group was active for 15 to 20 years but was finally disbanded; its activities were declared unlawful. In 1824 there were thirty-three members in the trust.

On a farm in Lancasterville, Whitemarsh Township, in 1820, John Cox established a lime business. At the time he started operation it was said he was so poor that storekeepers wouldn't trust him with a pound of tobacco. He did all the work himself, with the aid of a cart and horse, and by 1830, he was the largest lime operator in Whitemarsh.

First to Use Railroad

He was the first quarry operator to use the railroad as a means of shipping his products. Previous to this time materials had been shipped by canal boats, with the aid of horses, down the Schuylkill River and then by sailboats to ports along the Atlantic coast. About 1920 Cox's establishment was destroyed by fire, which did \$20,000 damage. He had no insurance on the property; so his business went out of existence.

Plymouth Lime Producer

The neighboring township of Plymouth was also a great lime producing section. Lime was burned for building purposes in Whitemarsh, we know, in 1686, and in the vicinity of Plymouth Meeting before 1698. Its excellence and whiteness were known all over the union. Plymouth Township has about two-thirds of its area underlaid with limestone and at one time eighty kilns were in operation.

The most prominent family in the lime industry in this area still operates as "America's Oldest Lime Manufacturers." This company was founded in 1822 by Elias Hicks Corson. Corson was a French Huguenot who came to this area from Bucks County. He was an untiring anti-slavery man and temperance advocate. On engaging in the lime business, where the men employed had been in the habit of whipping and abusing the horses, he exercised a marked influence; not a man was allowed to strike a horse.

Free Liquor for Workmen

Also, at that time, it was the habit of the workmen in the quarries and at the kilns to be supplied with as much whiskey as he chose to have. Elias Corson announced to his workmen that no whiskey would

(Continued on page 23)

Lancaster Local Governments as Examples of Economy

"A SURVEY by the *New Era*," says that paper editorially, "indicates that municipal governments throughout Lancaster County are holding the line very well on taxes; that only two boroughs will boost taxes this year and one will cut its head tax.

"That is a very splendid record at a time when the pressure on the taxpayer is such that there must be some relief at the lower levels to help him pay his share of the defense bill. That applies to borough governments, townships, cities, school districts and, in a very real sense, the State government. It takes on added significance in the face of the increasing cost of 'living' for governments as well as individuals.

"As a general policy, every ounce of fat must be wrung from every government budget. In many instances that could very well mean wringing the fat out of the *services of governments*; especially services that contribute nothing to the defense effort and very little to the actual well being of the individual citizen.

"That won't be easy. The men in public office who will have to decide what is essential and what is not will have to draw a sharp line and hue to it in the face of criticism.

"Several projects very much sought in the Lancaster metropolitan area serve as examples. There is the proposal to build a new police station for Lancaster city. A new one is needed, certainly, but is now the time to build it when so doing will add to the tax burden and require materials and manpower which will be badly needed in the defense effort? We believe the question demands serious thought.

"And the matter of building the rest of the northern by-pass? That falls into the same category, certainly. Perhaps the answer to that one rests with the Federal government; perhaps it will be designated as an essential military road. We shall know when we learn whether Federal funds are going to be appropriated for it; without which funds the State says the road cannot be completed.

"There are countless lesser projects, some of which can be financed on a self-liquidating basis. Some of the county boroughs are building water and sewer systems through the Authority plan, the bonds of which are paid off by receipts from the services. Our concern at the moment is with projects which reflect directly in the general tax structure.

"What we're saying, in short, is that this is not the time for local governments to expand services unless they are absolutely vital; rather it may be the time for them to curtail some of the services which, convenient though they may be, can be sacrificed to the general cause of all-out defense.

"Every tax cent that can be saved is a cent in the pocketbook of the taxpayer. These taxpayers, incidentally, can help themselves materially if they will but take the trouble to express their appreciation to the public officials who make a determined effort to hold the tax line at the local level.

"Make no mistake about this: the official who does try to keep taxes down is more likely to receive criticism from those of his constituents who demand progress 'and hang the cost.' This is the time to consider reversing the process. We should be vocal in our support of those public officials who insist upon economy 'and hang the frills.'"

CERTIFICATES FOR TWO

C. A. Eckbert, Borough Manager of Hanover, and E. O. Garrett, Borough Manager of Edgewood, were honored at the 36th annual conference of the International City Managers' Association recently held in Houston, Texas. Mr. Eckbert and Mr. Garrett, along with seven other managers who had completed in 1950 a quarter of a century of manager service, were awarded by the association the Twenty-five Year Service Certificate.

TOWNSHIP BECOMES BOROUGH

Baldwin Township, a township of the first class in Allegheny County, will become Baldwin Borough in January, 1952. The decree changing the form of government was signed by Judge Thomas Marshall of Quarter Sessions Court in October, 1950. By becoming a borough, Baldwin will be able to avoid further annexation problems.

UPPER DARBY'S NEW PARK

Upper Darby Township is going to have a new park—the 34.5 acre tract north and west of the Idle Hour tennis courts along Darby Creek and extending northward to the Haverford Township line. In September, 1950, the township commissioners, prodded by President Leo B. McManus of the Aronimink Corporation, voted unanimously to purchase the property for \$42,000. The action came after Chairman William Higgins of the recreation committee had read Mr. McManus' letter explaining that some decision on the property would have to be made in 30 days or his company would proceed to develop the tract.

AMERICA'S FIRST LIME KILNS IN PENNSYLVANIA

(Continued from page 21)

be allowed at his establishment. Immediately all the skilled workers walked out and a strike ensued. Raw hands were employed and this was the first time that lime had been burned without the aid of whiskey.

When E. H. Carson died his two sons, George and William H., took over the business which still bears their names. Direct descendants still operate the company, which virtually is the oldest lime company in existence, all older companies having gone out of operation.

The company has converted all the old draw kilns to modern furnaces. Its lime products are used for building, agricultural and chemical purposes. Until 1930 canal boats were used to transport their lime products down the Schuylkill River; however, since that time railroads have taken over the transportation. It is also recorded that up to 1934 they used the barter system of trading lime for wood with the farmers in the area.

Old Philadelphia To Be New National Shrine

THE magazine *Planning and Civic Comment* presents a comprehensive description of developments in Philadelphia in connection with the preservation of Independence Hall and related historical structure as a national park and monument, a project dear to all Pennsylvanians. As is generally well known, custody of Independence Hall structures and the surrounding grounds in Independence Square was taken over by the National Park Service in July, 1950. The Philadelphia properties will be operated and managed as part of the Independence National Historical Park authorized by Congress in June, 1948. Covered by the cooperative agreement between the Service and the City of Philadelphia are Independence Hall, Congress Hall, old City Hall and associated historic objects connected with the adoption of the Declaration of Independence by the Continental Congress.

"Actual establishment of the Independence National Historical Park will follow the acquisition, by donation or purchase, by the Federal Government of specified historic sites and properties," says the magazine. "Four areas are designated; first, an area of three city blocks, including land surrounding Carpenter's Hall where the First Continental Congress met, and on which are situated the First Bank of the United States, the Second Bank of the United States, the site of old City Tavern, where Revolutionary patriots gathered; second, a memorial thoroughfare or mall extending generally from the south side of Walnut Street to the north side of Manning Street; third, the site of Franklin Court, where Benjamin Franklin had his home and printshop and where he lived when he signed the Declaration of Independence and the Constitution of the United States; and fourth, certain lands and buildings immediately adjacent to Christ Church where George Washington and many other members of the Continental Congress and the Constitutional Convention worshipped.

"During the colonial period and for some years thereafter, the area in which Carpenter's Hall stands was mostly occupied by private houses. Carpenter's Hall is the only survivor of the Colonial period in the area. In the early national period, financial interests, banks, insurance companies, the Stock Exchange, the Merchant's Exchange, the Customs and the Post Office invaded and took over the area. The transition was accompanied by a radical departure in architectural style away from the Colonial. Some of these buildings remain today as physical survivals not only of the transition era but as superb examples of the neo-classical trend in architecture in the first decades of the nineteenth century.

"Preliminary studies for the redevelopment of the park have been made by a number of planning agencies, but the exact nature of the improvements awaits a detailed historical examination of the area included. Charles E. Peterson, Resident Architect of the Independence National Historical Park Project on the staff of the National Park Service, is making an intensive research and has already completed an excellent manuscript: 'Notes on Carpenter's Hall in the Proposed Philadelphia National Historical Park.' Mr. Peterson has stated that one of the important architectural problems is the appearance which the historical

buildings will present after the adjoining structures have been cleared away. He points out that some of the buildings are examples of what has been called 'facadism.' This means they are intended to be seen only from the streets on which they front and for reasons of economy were so designed. It seems appropriate that new structures should be built alongside older ones to maintain the urban character of the setting.

"An estimated million persons visit these historic sites annually. As the plans emerge from the blueprint stage, Old Philadelphia will come to life again as one of the most important of National Shrines."

Cumberland County Towns Lead in Sewer Building

A COMPILATION of the Bureau of Engineering of the State Department of Health shows with clarity that Cumberland County boroughs have been right out in front in advancing the program to clean streams of pollution caused by sewage. The report shows that in the aggregate 40 million dollars has already been spent in Pennsylvania for sewerage systems.

The situation near Harrisburg might be summarized thus: New Cumberland has awarded contracts totaling \$1,127,180 for construction of sewers, interceptors and a sewage treatment plant. Lemoyne has completed a sewerage installation at a cost of \$830,000. Mechanicsburg has just completed sewage treatment works and installation of sewers and interceptors at a cost of \$1,850,000.

The clean stream program has been given such important impetus that it will continue to be carried forward for years to come to the State's great advantage. Many communities, unfortunately, have felt that the financial burden is more than they can bear, and have been looking for a sympathetic legislature to help. Whether defense and other demands will make this financially feasible is far from certain.

In the meantime, Cumberland countians can well be proud that they have done so well in a program so desirable. They can be encouraged, too, that Lemoyne, New Cumberland and Mechanicsburg have found it financially possible to co-operate among the earliest in the forward-looking proposals.—*The Harrisburg Evening News*.

DARBY JOINS SEWER SYSTEM

Darby Township will pay at least \$6,535 to link its sewers with the Collingdale system. This estimate was reached at a recent three-way conference in Collingdale attended by representatives of Darby Township, Collingdale, and Darby Creek Joint Sewer Authority.

COATESVILLE'S NEW CITY TREASURER

Donald F. Eastburn has been appointed City Treasurer of Coatesville to serve the year of 1951. He succeeds John B. Denithorne, resigned, due to ill health.

Upper Moreland Purchases Historic Mansion

THE Board of Commissioners of Upper Moreland Township recently purchased for \$25,000 the historic Nicholas Moore Manor House, Park Avenue, Willow Grove. The township will use the building, the original portion of which was built in 1706, to house the administrative staff and police force.

Conrad G. Moffett, president of the Board of Commissioners, said the oldest portion of the historic building would be preserved with its original outer structure of field stones and hand-hewn timbers with pegs and hand-wrought nails.

One section of the surrounding grounds, which was a grant of 10,000 acres from the King of England and William Penn to Nicholas Moore, will be used as a parking lot, Moffet said.

"With the acquisition of this fine old historical property," Moffet stated, "the township comes into possession of the original Colonial stone home or manor house of the earliest settler in the township, Nicholas Moore, from whom the township derived the early name of Mooreland. Later it was reduced to Moreland and then again changed in 1917, by referendum when the township was partitioned into upper and lower sectors."

Luzerne Cuts Debt \$19,000,000

TOTAL indebtedness of the County of Luzerne, Luzerne County Institution District and 34 municipalities and school districts of the county was reduced by \$19,191,499 in the last 19 years, according to figures recently released, an average of \$1,000,000 a year.

Luzerne County reduced its indebtedness by \$6,770,597 in the 19-year period. In July, 1931, the indebtedness stood at \$8,030,817, while in July, 1951, it has been cut to \$1,260,220.

Luzerne County Institution District wiped out a \$783,444 indebtedness between July, 1931, and July, 1950. The indebtedness of the Institution District in July, 1931, consisted of \$373,497 owed by the old Central Poor District and \$409,947 owed by the Pittston-Jenkins Poor District.

Indebtedness of 34 municipalities of the county was reduced from \$10,048,477 to \$3,830,995 from July, 1931, to January 1, 1950, a total of \$6,217,482, the figures show.

The same 34 school districts reduced their indebtedness \$5,419,967 from July, 1931, to July, 1950. In July, 1931, indebtedness of these school boards totaled \$9,639,493, while in July, 1950, this had been cut to \$4,219,517.

Early History of Cement in Pennsylvania

R. D. BILLINGER

Lehigh University, Bethlehem, Pa.

(First Article of a Series)

PENNSYLVANIA—and particularly the Lehigh Valley—assumed dominance in the cement industry shortly after Saylor's first American patent for portland cement was issued in 1871. Much earlier production of natural cement can be traced to the early 1820's.

In the early nineteenth century, the pattern of transportation which favored canal building, created the need for durable locks and bridges. Records¹ indicate that cement for canal construction was obtained for the Lehigh Canal just above Lehigh Gap (present site of Palmerton)—as early as 1826—from a plant managed by Samuel Glace. This operated until 1830 when a new mill was opened farther downstream at Siegfried's Bridge (now Northampton).

Elsewhere in the State hydraulic cement rock was also quarried and prepared for canal construction. In 1831, Col. George Crane constructed a cement works along the Susquehanna River about ten miles west of Williamsport. Five kilns operated until the canal was finished in 1834.²

Canals were being constructed throughout the country and there was nothing unique in the Pennsylvania projects. In New York, Canvass White, an engineer working on the Erie Canal, discovered a natural cement rock in 1818 near Chittenango, Madison County. He applied to the State of New York for an exclusive patent for twenty years, and it is said that he received \$10,000 (some say \$20,000), but no patent for his trouble.

These natural cements were quarried and burned in open lime kilns at comparatively low temperatures sufficient to drive off the carbon dioxide from the argillaceous (clayey) limestone.

While Americans were following the comparatively simple operations in making "natural cement," more advanced methods were being developed abroad. In 1756 John Smeaton, builder of the Edystone Lighthouse in England, showed the importance of a certain percentage of clay in the limestone used for hydraulic mortars. L. J. Vicat, a French engineer, published a treatise in 1828, in which he demonstrated how to prepare hydraulic lime by mixing clay with rich lime and calcining the mixture.

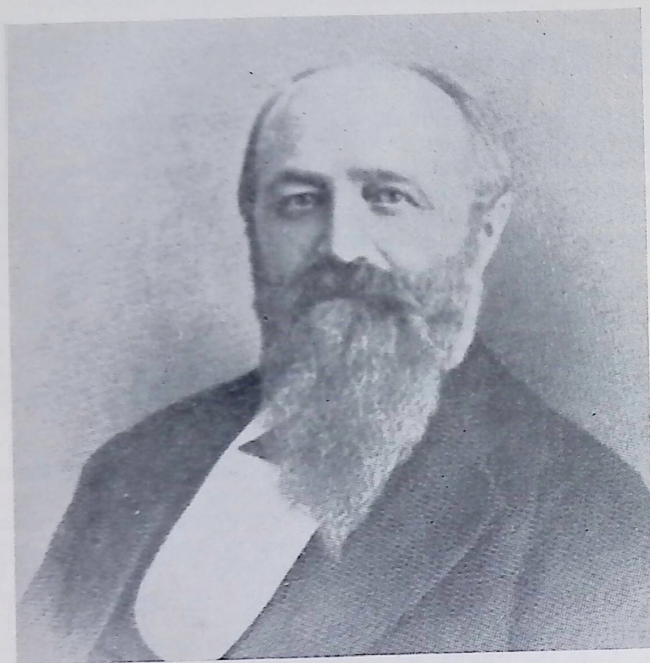
Fame came to Joseph Aspdin, an English bricklayer who in 1824 secured a patent for a cement which he named "Portland" because it resembled the famous building stone from the Isle of Portland.

In Aspdin's patent he specified that powdered limestone and clay be mixed with water, then the latter evaporated and the product finally calcined to expel the carbonic acid. This residue was ground and then ready for mixing with water and application as a cementing mortar. Aspdin's cement was held in such high repute that Bogue doubts whether the patent discloses the extent of heating employed.

There soon were a number of popular European portland cements which claimed the American markets and became more popular than the local natural cements.

American Portland Cement

Shortly after the Civil War several American manufacturers of cement simultaneously began small scale experiments in an effort to improve their cement products. One of these far-seeing pioneers in a new field was David Oliver Saylor, of Pennsylvania German origin, who had started in 1866 to produce a high-grade natural cement along the Lehigh River at Coplay, Pennsylvania. This historic mill was known as the Coplay Cement Company.



DAVID O. SAYLOR
First American patentee of Portland cement

Saylor was a native of Lehigh County, (born October 20, 1827), who had followed his father's business as a grocer in several small communities, Butztown and Schoenersville. While industrious and fairly successful, he looked to other fields of endeavor and was urged by two Allentown businessmen, Esias Rehrig and Adam Woolever, to consider the cement business. They purchased land above Coplay, Pa., along the Lehigh Valley Railroad, on the western side of the Lehigh River, where exposed

stone had been proven to have good cement qualities. Guides to the location of mineral deposits existed in the form of private explorations and State geological surveys. For example, H. D. Rogers' report of 1838 gave descriptions of "specific iron mines, slate and limestone quarries, paint and clay deposits."

Saylor was not at first too sure of the possibilities of this new venture. He was thirty-eight years old, and had shown no great aptitude for business. He tried truck farming for a year and had given it up, then considered the slate business before turning to this new industry.

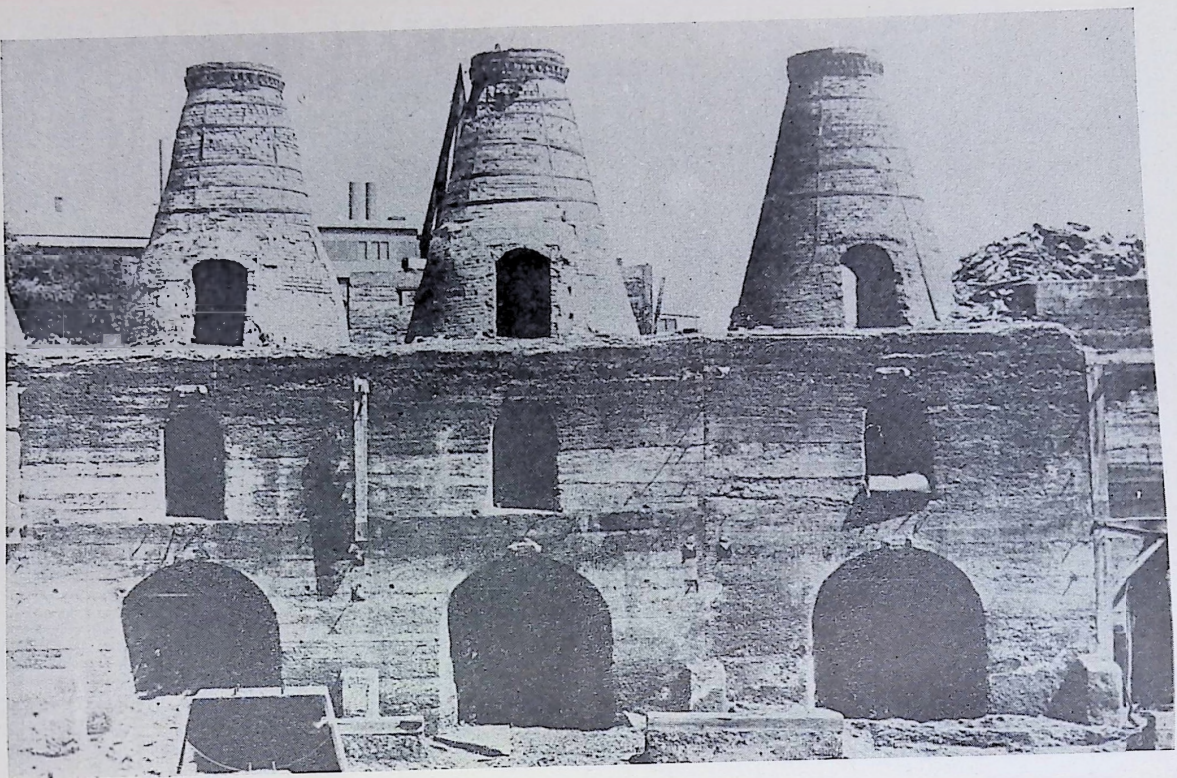
However, the Coplay Cement Company was fortunate in several respects. The quarries furnished an excellent raw material suitable for cement rock. Mr. Saylor, who became president and superintendent, showed remarkable enterprise and determination. He early patented a cement named "Anchor" brand which attained wide acceptance. The company stock was all held by Saylor and his two partners, Rehrig and Woolever. Mr. Rehrig held office as Recorder of Deeds and later became President of the Allentown National Bank, while Mr. Woolever, who was Saylor's brother-in-law, was a leading politician and prominent businessman.

The initial Coplay plant had only two small kilns and at first used the rock left in ridges between the railroad and the river. There was a wagon haul of about a mile to the plant, but quarrying costs were low and the small business soon became profitable. By 1869, with the addition of two new kilns, the capacity reached two hundred and fifty barrels per day.

The trio of stockholders gathered at Saylor's home in Allentown not only to discuss finances and the need for expansion, but also to experiment with rock burning in a small cook stove. After a long series of hit and try experiments Saylor learned how to make his cement rock perform like the best imported brands. As far as the records show his approach to the first American portland cement was entirely by observation of property changes after heating various mixtures. We know that some five or six years later after his patent was awarded he employed a young chemist, Mr. John W. Eckert, to analyze his mixtures, but if analysis entered the earliest ventures there is no record or mention of it.

It is a little difficult to believe that men with such meager experience as Saylor and his associates had with technical subjects and experiment, could in a few short years perfect and patent a product which was to become famous. However, there were several practical texts printed in America during that period which no doubt were available to all cement makers. General Gillmore's work on "Limes, Hydraulic Cements, and Mortars," and the treatises on portland cement manufactured by Reid and Lipowitz might have inspired at least three inventors. At any rate Saylor of Allentown, John K. Shinn of Wampum, Pennsylvania (Lawrence County), and Thomas Millen of South Bend, Indiana, all worked independently in the early seventies to develop a portland cement which in each case was the basis for successful manufacture.

However, the Saylor patent was issued in 1871 and his statement of the principle behind portland cement manufacture is a matter of historic record.



VERTICAL KILNS USED AT COPLAY, PA.

His patent application follows:

" UNITED STATES PATENT OFFICE

David O. Saylor, of Allentown, Pennsylvania
Improvement in the Manufacture of Cement.
Specification forming part of Letters Patent No. 1
26, 1871.

To All Whom It May Concern:

Be it known that I, David O. Saylor, of Allentown
Lehigh, State of Pennsylvania, have invented a new and
improved method of manufacturing hydraulic cement, and I do hereby declare that the following is a full,
description thereof, which will enable others skilled in the
art to use the same.

I have discovered that some kinds of the argillo-
calcareous limestone found along the Appalachia
more or less carbonate of lime, magnesia, silica, alumina
alkalies adapted to the purpose, and which are now
the manufacturing of hydraulic cement, will make, when
of incipient vitrification, so as to be agglutinated, wary
contraction, and some burned to cinders, a very strong
hydraulic cement, weighing from one hundred and ten
hundred and twenty pounds per bushel, and in every
Portland cement made in England and imported into

The ordinary cement now in our market such as I
and other American brands, are burned with the least
heat. The stage of calcination is arrested before it fuses
should any of it do so it is thrown away as worthless. I
seventy to ninety pounds per bushel. I propose to burn
condition above indicated. After this calcination a
and the pulverulent and scarified portions of the mass
thrown away. The remainder is then passed through
through a mill consisting of ordinary sand, or burnt-
factured material is then placed in a layer of from
thick over the floor of a cool shed and left exposed to
four weeks before it is fit to use.

The stone which I use for the purpose contains the
as the composition used for making Portland cement,
cannot be distinguished from each other except by treat-
Having thus described my invention, I claim as my
secure by Letters Patent—

1. The process of making hydraulic cement from
and argillo-calcareous limestone, substantially as here-
described.

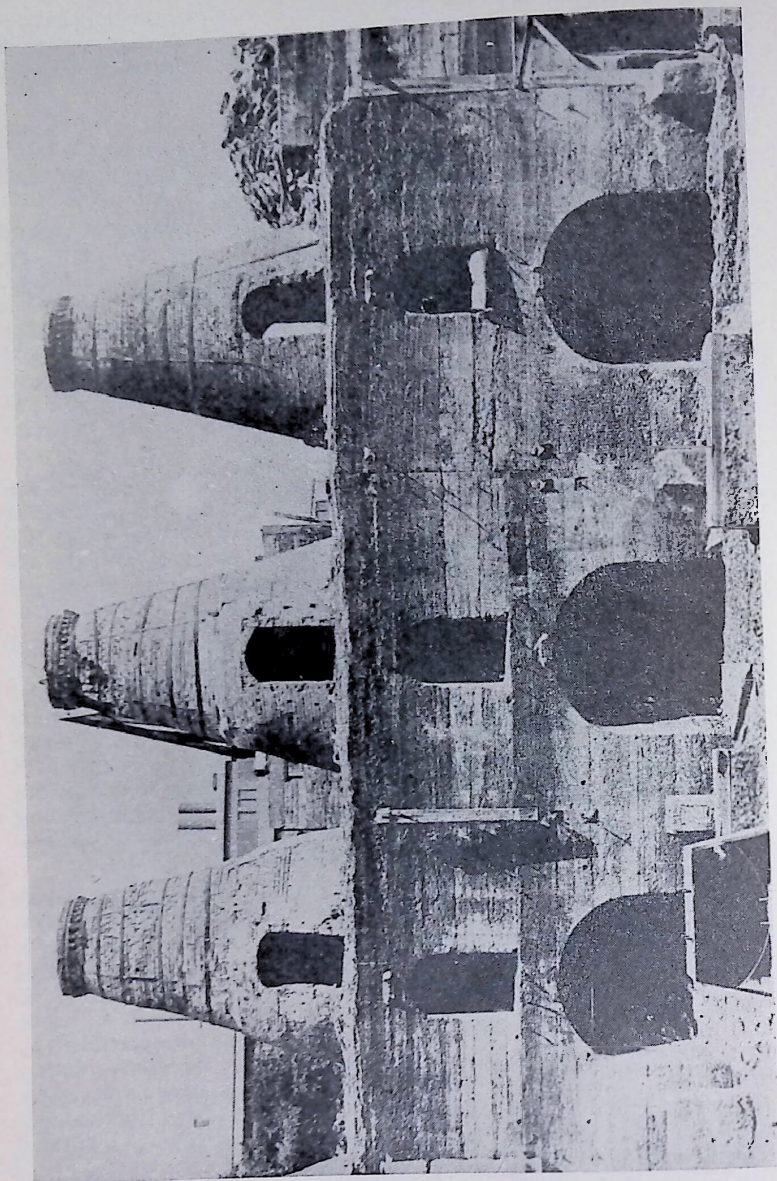
2. As an improved article of manufacture, hydra-
duced from argillo-magnesian and argillo-calcareous
stantially as herein specified and described.

Witnesses:

Edwin Albright
Augustus Weber.

31

DAVID



VERTICAL KILNS USED AT COPLAY, PA.

His patent application follows:

" UNITED STATES PATENT OFFICE

David O. Saylor, of Allentown, Pennsylvania
Improvement in the Manufacture of Cement.
Specification forming part of Letters Patent No. 119,413, dated Sept.
26, 1871.

To All Whom It May Concern:

Be it known that I, David O. Saylor, of Allentown, in the County of Lehigh, State of Pennsylvania, have invented a new and improved cement; and I do hereby declare that the following is a full, clear and exact description thereof, which will enable others skilled in the art to make and use the same.

I have discovered that some kinds of the argillo-magnesian and also argillo-calcareous limestone found along the Appalachian range, containing more or less carbonate of lime, magnesia, silica, alumina, iron, salts, and alkalies adapted to the purpose, and which are now extensively used in the manufacturing of hydraulic cement, will make, when burned to a state of incipient vitrification, so as to be agglutinated, warped, or cracked, by contraction, and some burned to cinders, a very superior and heavy hydraulic cement, weighing from one hundred and ten pounds to one hundred and twenty pounds per bushel, and in every respect equal to the Portland cement made in England and imported into this country.

The ordinary cement now in our market such as Rosendale, Coplay, and other American brands, are burned with the least possible degree of heat. The stage of calcination is arrested before it fuses or is contracted; should any of it do so it is thrown away as worthless. This cement weighs seventy to ninety pounds per bushel. I propose to burn this stone to the condition above indicated. After this calcination a selection is made and the pulverulent and scarified portions of the mass are picked out and thrown away. The remainder is then passed through a crusher; then through a mill consisting of ordinary sand, or buhr-stone. The manufactured material is then placed in a layer of from two to three feet thick over the floor of a cool shed and left exposed to the air for about four weeks before it is fit to use.

The stone which I use for the purpose contains the same ingredients as the composition used for making Portland cement, and the products cannot be distinguished from each other except by treatment.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The process of making hydraulic cement from argillo-magnesian and argillo-calcareous limestone, substantially as herein specified and described.

2. As an improved article of manufacture, hydraulic cement produced from argillo-magnesian and argillo-calcareous limestone, substantially as herein specified and described.

DAVID O. SAYLOR

Witnesses:

Edwin Albright

Augustus Weber.

"

Raise the temperature! That was the clear point made by Saylor, when he showed the difference between his method and that employed in making other American cements. There were still many difficulties—chief of which was inspection by eye of the burned product to select the “pulverulent and scarified portions” to be hand picked and discarded. There was also non-uniformity in the burning, done in the vertical kilns then employed.

Grinding problems developed, even after the company became a centralized unit. In the early days of the Coplay operations the cement rock after burning was hauled half a mile away for grinding at an old distillery. By 1873 the new portland cement was in production. In the next four years ten new kilns were erected and a crusher and six grinding mills installed.

Saylor's portland cement and the other products of the Coplay Cement Company—i. e., Hydraulic Cement, Anchor Cement and Artificial Stone were exhibited at the United States Centennial Exposition in Philadelphia in 1876 and given a certificate of award. In the same year a Centennial award was also issued for the portland cement made by John K. Shinn of Wampum, Pennsylvania.

(To be Continued)

HAROLD PIKE HONORED

Harold C. Pike, Cheltenham Township Manager, who will complete 38 years as a Township official this year, was elected President of the Pennsylvania Municipal Managers Association on Saturday, May 26th, at a two-day conference held at State College, Pa. Problems of zoning, budget, finance and building were discussed. Other officers elected were: John Bailey, Edgeworth, Pa., First Vice President; Carl Fuhrer, Ephrata, Pa., Second Vice President; and Howard Rickenbach, West Reading, Secretary-Treasurer.

1950 TAX RATE CONTINUED

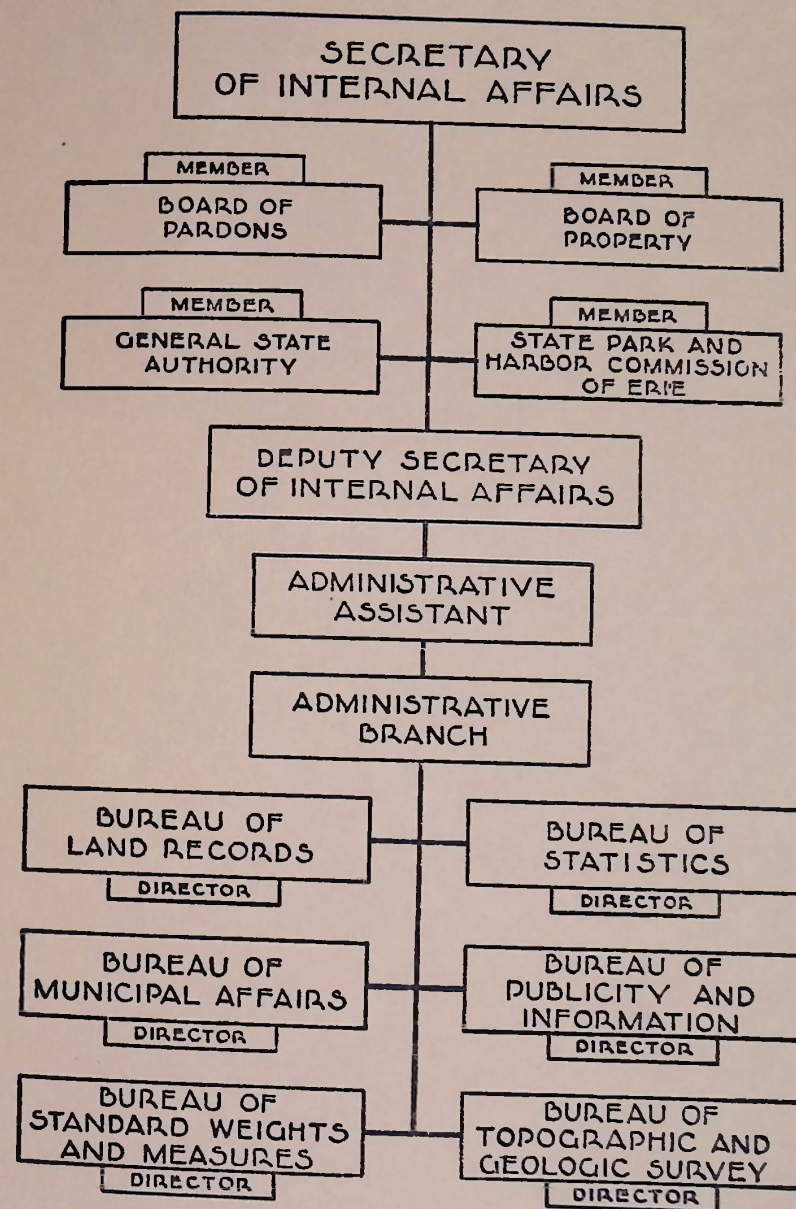
Upper Merion first class township has re-enacted its five mill tax for 1951.

LOAN FOR DISPOSAL PLANT

Royersford's borough authority has floated a bond issue of \$395,000 to finance a sewage disposal plant. The interest rate is 2.5741 percent.

BUTLER CONTINUES SIX MILL RATE

Butler county's 1950 tax rate of 6 mills will be continued through 1951. This has been made possible through rigid economies.



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WILLIAM S. LIVENGOD, JR.,
Secretary.