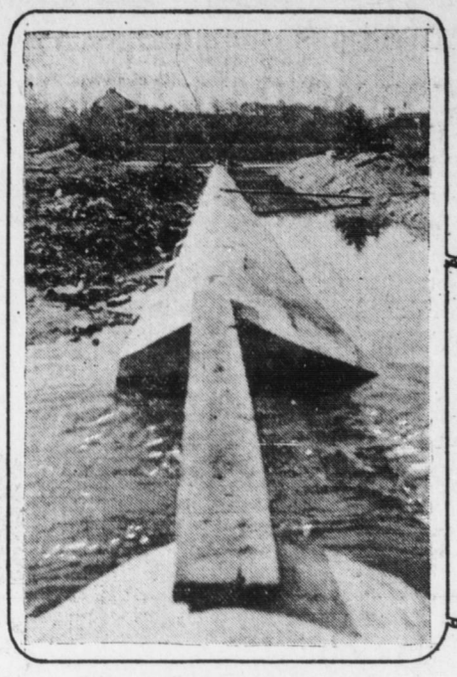
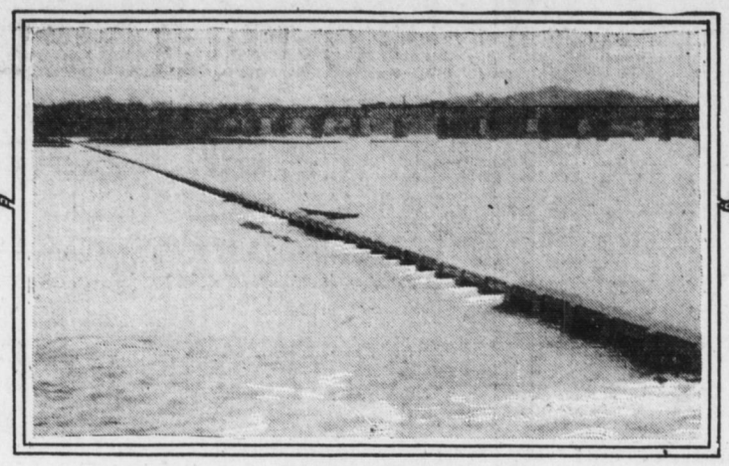
GREAT RIVER DAM STRETCHING ACROSS THE SUSQUEHANNA HAS MADE HARRISBURG'S WATER FRONT ONE OF MOST BEAUTIFUL IN THE WORLD

HOUSE MAY NOT REST ON FOUNDATIONS OF SINKING SANDS, BUT A DAM CAN



THE GAP IN THE ISLAND



THE DAM

AS OTHERS SEE IT

SETTING THE FORMS

BEATING FATHER SUSQUEHANNA

IN THE COFFER DAMS

One of the first improvements authorized in Harrisburg's fifteen-year improvement campaign was the construction of the dam across the Susquehanna at Dock street. While $65,000 was originally voted for the purpose in 1901, extra work cost considerable and eventually ran the total up to about $77,000. The dam is practically completed and represents a new type of construction for this section of the country—"the hollow concrete" type. While the dam will insure a four-foot rise of water at its breast all the time with a depth graduating a few inches at Maclay street even in extreme low water, there will be sufficient current all the time to push a thin sheet of flow across the breast. Two big openings, one on the island, and one along the city shore, afford passage room for fish and boats—if any of the latter should wish to try it. The construction of the dam by the Frank N. Skene Company, developed a most serious engineering problem that was readily solved however by Joel D. Justin, principal engineer of the board of public works. This was the bridging of the "quick sands."

BUILDING A DAM ON SINKING SAND A RIVER'S STORY

Construction of Susquehanna Obstruction at Dock Street Marvel of Engineering

SOME "DENTAL" WORK

Quick-Sands Bridged by Use of "Floating" Foundations of Concrete For Piers

Overheard the hottest July sun of years blazed down on the little knot of men far out on the river's bosom.

"We're down three feet below the foundation level now, Cowden," said one of the men to the inspector. "And we ain't touched bottom yet."

The drill plunged again. Down, down another two feet or so through the yielding bottom of the river went the steel rod.

"No use, we can't reach anything," finally reported a dripping workman of the flat. "We've hit a bed of quicksand!"

That, in brief, is the story of one of the stiffest engineering problems the board of Public Works had to face—and solve—in the construction of the great river-wide hollow concrete dam across the Susquehanna at Dock street. It is another one of the big public improvements that has helped place Harrisburg on the map of the world. Incidentally it's another reason why Harrisburg is planning to celebrate ths week—and setting aside three days to do it.

The First Big Improvement

The river dam although only now in course of final completion was one of the first big improvements Harrisburg planned for when it first awoke from its civic snooze in 1901. That was the year that the city decided to do something big and when the people quit authorizing the floating of improvement loans that time, some ninety thousands more than a million dollars had been provided for.

True, $310,000 went toward the construction of a filter plant, $365,000 for the extension of the sewers, $250,000 for creating a park system, $100,000 for paving street intersections and $65,000 was set aside for the dam.

The Purpose

The purpose originally was to back the water sufficiently to cover the mouths of the sewer outlets along the river. The construction of the interceptor however eliminated this nuisance so far as accumulation of filth in the low water was concerned, but the building of the wall and steps presented another equally serious problem that had to be solved after all. The solution was reached through the medium of the dam. This was to back the stream up to a sufficient depth to cover the low and exposed ground along the river shores on the outside of the wall. So in 1913 the big job was begun.

Frank N. Skene, of New York got the contract. His bid was $51,780, although the "extras" growing out of the difficulties incident to the bridging of the quicksands ran the bill up to about $77,000. Council recently provided some $15,000 additional to finish the big work.

New Type of Construction

Just a word about the character of the dam. It is unique for this section of the country and its construction was watched with unusual interest by engineers. How the great 3300-foot long obstruction will serve the purpose for which it is intended, will be watched with scarcely less interest.

Instead of a solid breast work the dam is built with a sloping face, curving over a concave top. The dam in fact is merely a thick, solid shell of concrete. The system of construction was well worth watching. Sectional forms of frame were sunk at 10-foot distances on the foundation rock of the river. Upon these, piers were built.

The Pier Bases

The base for each pier was concrete, laid on the cleared rock floor of the river and through this bed or base, great bars of serrated reinforced steel was driven to a depth of four feet. The moulds for the piers were placed over this base and when the piers finally settled the extra durability of the reinforced steel was assured. All told the drilling into live rock totaled some 10,000 feet. Between the piers, great one-ton slabs of concrete were laid in grooves. The first slab was placed at the "toe" of the breastwork and fitted snugly in position. On top of this slab, was placed another; atop of that, another, and so on until the concave arch was reached. A single curved piece of concrete finished this off. No cement was used to keep the slabs in place; the big blocks of material fitted tightly in place, 'tis true, but the pressure of the everlasting tons of the waters of the Susquehanna rolling along to the sea, held as no cement in this world would ever hold. On the lower side of the obstruction the hollow spaces between the piers will doubtless provide mighty comfortable quarters for the lucky lazy fish who might want a place to loaf.

The Gray Shadow

The job went along swimmingly as it were, even through the extraordinarily deep, swift waters of the western shore—"Well's water" as it is locally called.

Long strings of coffer dams were used and the fact that some 1500 bags were passed into service for this purpose alone, may suggest some idea of the size of the job. Building the dam across the deeper waters of the western side of the river, was pushed ahead with little trouble and only one real catastrophe. One day a workman slipped into the swirling waters and the fact that he wore heavy rubber boots offset the fact that he was one of the best swimmers in a whole ward of expert watermen. His body was not picked up for days afterward.

The "Pot Holes"

It was when the contractors reached the stream about midway from the city shore that the heart-breaking end of the venture developed.

What the engineers called "pot holes" were discovered in the bed of the stream.

Quicksands that swallowed concrete, foundation stones, by the tons and yet swirled hungrily for more are "pot holes." Whereupon the section across this stretch had to be crossed much after the style an expert dentist uses in swinging a false tooth between two real ones—"bridge work," they call it.

On Sinking Sands

The excavations in the quicksands were made as far as possible and when after half a dozen feet below the original surface no sounding could be reached, another coffer dam was constructed and tons of stone were dumped in. Upon the temporary footing concrete was poured until a solid foundation on the sinking sands was established. Then on this concrete base the regular pier forms were started much as if solid rock had existed beneath. And the "floating" section of the dam was held more firmly in place by the construction of the additional piers in the row on either side.

What It Takes to Build a Dam

So, the ingenuity of Joel D. Justin, principal engineer of the Board of Public Works, solved a real river problem, and incidentally questioned in a mild way the Sunday school hymn of the house that was built on sinking sands.

In conclusion, if figures mean anything, a final word as to the quantities of material that were used in building the river dam might not be amiss. More than 1450 cubic yards of concrete, 110 tons of reinforced steel, 300 square yards of rip-rapping, 1000 cubic yards of stone filling are a few items.

Reviews History of City During Last 50 Years

Interesting addresses on the expansion of Harrisburg were given at midweek prayer services in Ridge Avenue Methodist Church, last evening by Dr. Silas C. Swallow and Wilmer Crow.

Speaking on "Harrisburg as It Was, as It Is, and as It Should Be," Dr. Swallow went back fifty-three years and reviewed the growth of the city to the present day, he then suggested additional improvements. After pointing out the advancement of the city on many lines since the days of the Civil War, he said the city still needed a new courthouse, city hall, larger church congregations, more pastors, Sunday Schools and superintendents, a new hotel and more jail room or fewer saloons.

In his talk on "What Can Christian People Do to Make Harrisburg Better," Wilmer Crow said the people should not forget their shortcomings and they should not forget the importance of intellectual and moral qualities that need development.

POST OFFICE EFFECTED BY BIG CELEBRATION

In observance of the great Municipal celebration activities, to-morrow work will be restricted at the Post Office. The Central, Hill and Maclay stations will be closed from 9:30 o'clock in the morning until noon. The 10 a. m. and 1 p. m. collections will also be omitted.

Presidents of Board of Trade and Chamber of Commerce

1900—1915

1900—Frank R. Leib
1901—Maurice E. Eby
1902—George A. Gorgas
1903—E. J. Stackpole
1904—Benjamin M. Nead
1905—L. H. Kinnard
1906—Herman P. Miller
1907—William Jennings
1908—Charles A. Disbrow
1909—Dr. Galen Hain
1910—Francis J. Hall
1911—S. S. Eberts
1912—J. Horace McFarland
1913—Henderson Gilbert
1914—George B. Tripp
1915—Henderson Gilbert

WHAT HARRISBURG HAS DONE FOR ITS SCHOOLS IS TOLD BY DR. F. E. DOWNES

City Superintendent Tells Som e Facts at Big Educational Mass Meeting at Tech Which Formally Opens Celebration

City School Superintendent.

What Harrisburg has done for the development of its public school system in the past fifteen years was interestingly told last evening by Dr. Frederick E. Downes, city superintendent of schools, at the big educational mass meeting and public school exhibition which marked the formal opening of the great Municipal Improvement celebration in Technical High school.

Dr. Downes' talk was in the nature of a comparation between the schools of to-day and of fifteen years ago. Attendance of scholars and the increase in the years, the improvement in the salary rates, the expenditures and the various important events in the school history were interestingly brought out.

In concluding his talk Dr. Downes touched upon the need for a new high school, wide extension of evening instruction, introduction of manual work for boys and girls in the grammar grades and the inauguration of a more comprehensive and effective scheme of physical education.

Fifteen Years

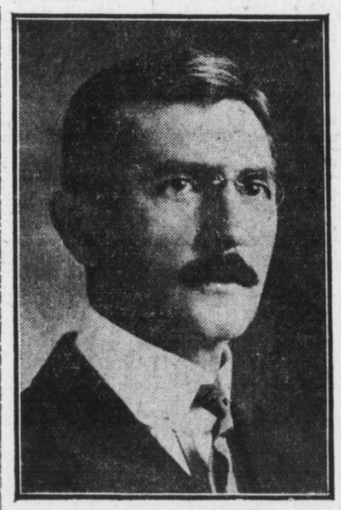
Dr. Downes said in part:

"In the school year 1899-1900 the average daily attendance in the schools was 6809; in the year 1914-15, 9562, an increase of 40 per cent. in fifteen years. The number of high school students increased from 615 to 1379, or 124 per cent. The number of teachers increased from 190 to 308, or 62 per cent. The average salary of male teachers in 1900 was $83.10; in 1915, $131.15, an increase of 58 per cent. The average salary of female teachers during the same period increased from $49.28 to $73.90, or 50 per cent. The total amount paid for teachers' salaries increased from $99,202.32 to $260,012.71, or 162 per cent. The total expenditures for schools fifteen years ago was $184,661.83; last year it was $451,036.41, an increase of 144 per cent. The assessed valuation has increased 105 per cent. during this period; the value of school property, now $1,450,000, 94 per cent.; the number of school buildings 12 per cent.; and the number of school rooms 63 per cent. The average number of pupils per teacher, based on the total of teachers, was 51, in 1900, as against 37 in 1915, a reduction of 27 per cent.

Manual Training In Schools

In November, 1900, manual training for boys was introduced in the Central High school. The work was optional and was taken that year by 140 students. The introduction of this work, the demand for it on the part of students, and the success of it, led four years later to the establishment of the Technical High school.

In 1901, a school for delinquents was organized in the Harris building. A system of physical education was also worked out by the Superintendent and adopted during the same year, and the Cameron Annex was erected at a cost of $30,000. In September, 1903, the present Teachers Training School was established, with eleven students. September, 1904, the Technical High school began its work in the old DeWitt building, the site of the present structure. The total enrollment for the year was 87. During



DR. F. E. DOWNES

the same year the Camp Curtin school was completed at a cost of $108,000. This is the largest elementary school in the district, containing 24 classrooms.

The High School Orchestra

"The first high school orchestra, the forerunner of the present excellent high school organizations, was organized in the Central High school in the Fall of 1904, as was also the card system of discipline, in present use in that institution.

"The Lincoln school, the second of the more modern grade buildings, was dedicated in April, 1905. The cost of this building was $62,000. Since 1900 there has practically been no time when important building construction has not been under way. Twelve new buildings have been erected in practically as many years, at a total cost, not including grounds and equipment, approximating $800,000; and still another, costing $90,000, is under way. More than 50 per cent. of the entire value of the school buildings of the district is represented by the school construction since 1902.

Changes Grading System

"During the same year the entire system of grading was changed in the elementary schools, and a model school was established in connection with the Teachers Training School. District supervision was begun in the Fall of 1906. Also, night schools for adult colored were organized at this time.

The year 1907 was marked by the equalization of salaries below the high school. An increase in the maximum salary schedule of from 7 to 50 per cent. made this important change possible.

Teachers' Department

A retirement plan for teachers was adopted April 3, 1908, and went into operation the following September. As a result of this important action, 22 teachers of long service or physically incapacitated are now being cared for by the district, in reward for their faithfulness, and the sum of $45,000 has accumulated in the retirement fund. Harrisburg was the first city in Pennsylvania to take advantage of State legislation on this subject. Medical inspection in our schools was also organized officially in the Fall of 1908, with the employment of physician and nurse. Here too we find Harrisburg in the van of progressive movements.

Inaugurate Patrons' Day

During this same eventful year, 1908, Patrons' Day was inaugurated in the schools, a detention school for delinquent juveniles was opened. Salaries were again advanced in the year 1909-1910; half pay, with certain time limitations, for teachers when ill was provided; fire drills were rendered thoroughly efficient in all schools.

In the Fall of 1910, a special school for mentally deficient pupils was opened, the city again becoming, by this action, a pioneer in educational progress.

The Start of the Open-Air School

In September, 1912, our first open-air school was organized in the Lochiel building. Here unfortunate pupils suffering with tuberculosis are housed, provided with necessary winter dress, nourished with wholesome food, provided with medical care, and at the same time taught the regular branches of the elementary schools.

The first contribution to the city library was made in 1913, and annual cotnributions have been continued to the present. A second open-air school was organized, university extension work begun by the teachers, and parent-teachers' associations formed. A total of eleven parent-teachers' organizations are now maintained in various school buildings.

Domestic Economy In Schools

In 1914 district supervision was extended, the number of supervisors being increased from two to five. In this revision a course in household economy was provided for, and 175 girls began work in the subject of cooking. An advisor for high school girls was chosen and a beginning was made in the matter of vocational guidance. Dental inspection, with two salaried dentists in charge, was also begun in 1914.

What the Crack of a Track Starter's Gun Really Started

An institution that is the outgrowth of the last fifteen years and that has done much to put Harrisburg on the map as a city of college men and college athletics is the Harrisburg Track Athletic Association. The story as told by one of its members is as follows:

"Twelve years ago and prior to that time there was no place in the city where there was a regulation track for the Central high school athletes to prepare for the Penn relays. In the early Spring the runners were taken up along the river in Front street above Maclay, where there was a cinder path, or else the old covered Market street bridge was utilized. Neither of these places afforded an opportunity for circular tracks. With the opening of Spring the lads were taken to Reservoir Park and the gravel walk around the top of the reservoir was used. With the formation of the Park Commission rules and regulations were formulated to control the conduct of persons using the city parks. One of the rules was that the shooting of firearms was prohibited.

"One afternoon, while Dr. C. B. Fager, who was then connected with Central high school, was acting as starter with a squad of Central athletes, he was stopped by a park policeman, who threatened to arrest him unless he refrained from shooting the pistol. Superintendent Mulford was appealed to and he gave his further consent to the use of the park for running purposes and the gun was popped for the next two days without interruption from the police. But the "cop" had started something.

"The necessity for a regulation running track was felt and in several days Dr. Fager, Superintendent Mulford and V. Grant Forrer went to the island and the present quarter-mile track was plotted. An organization was then formulated and Dr. Fager was elected the first chairman, and has acted in that capacity ever since. The membership is composed of college men."

Some Things Done

Some of the things the association boasts of are the placing of the Pennsylvania intercollegiate track and field meets in this city for three years. Then the colleges decided to hold subsequent meets at one of the colleges. The local committeemen instituted the grammar school meet, which is held under their auspices. It also fosters the Pennsylvania interscholastic high school meets that are held every Spring, and is the only organization of college men in the State that does this, all others being usually held under the auspices of the high schools or colleges. Expenses for these games are met by contributions from associaiton members and citizens of Harrisburg.

The association will help celebrate the municipal improvements by awarding medals to the winners of the events scheduled for the track meet at the Sycamore playground to-morrow afternoon. The officers of the association are: Dr. C. B. Fager, Jr., chairman; G. W. Hill, Jr., secretary, and R. G. Cox, treasurer.

Some members of the past and present are: Ross A. Hickok, B. Ed. Finnegan, J. M. Bombright, the Rev. S W Herman, B. W. Demming, George W. Kehr, W. O. Hickok, 3d, A. H. Hull, C. S. Davis, Vance C. McCormick R. G. Cox, John Y. Boyd, W. R. Douglas, V. Grant Forrer, Wellington G. Jones, James A. Bell, Francis J. Hall, G. W. Hill, B. F. Meyers, 3d, Dr. J. Harvey Smith, F. L. Mulford, John Fox Weiss, E. C. Taggart, the Rev. J. Stockton Roddy, J. Montgomery Trace, Dr. C. B. Fager, H. L. Bowers, Daniel M. Dull, W. S. Steele, G. M. Oves, Mercer B. Tate, Dr. Harvey F. Smith, A. S. Patterson, H. A. Boyer, C. W. Davis, S. S. Leiby, F. E. Langenheim, F. E. Downes, A. R. Ferriday, Robert Wadsworth, R. D. Beman, the Rev. T. B. Johnson, Robert Free and M. Harvey Taylor.

Hang Out That Flag!

Every flag and piece of bunting in the city should be hung on the outer wall at once. This is the time for universal rejoicing in Harrisburg and the rest of this week should be given up to a wholesome, rational celebration of what has been accomplished for all the people.

2,000 ATTEND BIG EDUCATION MEET AT TECH HIGH

Formal Opening of Municipal Celebration Marked by Educational Session

THINGS THE KIDS DO

Dainty Foods, Wood Models, Drawings, Compositions, Inspected by Hundreds

Featured with addresses by the city superintendent, president of the board of school directors, former educators of the city and county, a concert by the combined orchestras of Central and Tech High, while rooms and corridors were lined with charts and maps illustrating the progress made in the city's public school system during the last fifteen years, the municipal celebration was formally opened in the Technical High school last evening. About 2000 persons were in attendance.

The program consisted of three parts—the concert by the combined school orchestras from 7.30 to 8.00; the educational program from 8.00 to 9.00, and the inspection of exhibits from 9.00 to 10.30. So delighted were the patrons as well as the players themselves, with the renditions of the combined orchestras under Prof. George W. Updegrove, that there is already talk of similar concerts during the holidays and next Spring. The orchestra was composed of 30 pieces.

Tell of School Progress

The educational program, held in the auditorium, was in charge of H. A. Boyer, president of the school board. On the rostrum were seated the speakers, Superintendent Downes, Chairman Boyer, the board of school directors and the district supervisors, the Rev. James F. Bullitt pronounced the invocation. In an address on educational progress, giving a chronological review of the city schools during the last 15 years, Superintendent Downes dazzled his listeners with amusing statistics of how the school system has progressed. His address is printed elsewhere in the Telegraph.

Prof. J. Howard Wert, principal for many years of the old boys' high school located at the place now occupied by Tech, was the next speaker. He stated that educational advancement is a continuous evolution, and that in enjoying the improvements of the present we should not forget those whose labors in years past have made these things of the present a possibility. Prof. R. M. McNeal, former county superintendent and at present connected with the State Educational department, was also reminiscent in his talk. "There is an increased interest in seeing that the work is practical, and that will fit the youth for better citizenship. The city has caught the spirit and has provided equipment for this end. Present public sentiment as carried through these plans suggested years ago," were among his remarks.

Home Makers vs. Home Breakers

Attorney W. L. Loeser was the final speaker of the evening. He emphasized his remarks by using two young ladies from the domestic science department of the Central High school, and two of the Tech boys, as illustrations. "Young ladies must be trained to be home makers and not home-breakers, and the youth of the land must be so prepared that their education will fit them for making the world better for their having lived.

In the library was exhibited the displays from the domestic science department, the music department, and the Latin display arranged by Miss McNiff. The first floor corridor contained the displays of medical and dental inspection, the work of the open air schools and a statistical and chronological chart showing the advancement of the schools from 1900 to 1915.,On the second floor were the grade drawings. In the third floor study hall was a commercial exhibit from Central High school. Besides many specimens in penmanship, typewriting, book-keeping and shorthand there were many testimonials as to what the business men of Harrisburg think of the Central graduates, and a list of where many of them are employed.

The Committee

The following committee had charge of the school publicity and exhibits: F. E. Downes, Chairman; D. D. Hammelbaugh, photographical and statistical; C. B. Fager, Jr., Technical High school; C. S. Rebuck, department of medical inspection; E. F. Keller, commercial; J. J. Brehm, supervision of exhibits; H. E. Todd, supervision of construction; E. G. Rose and G. W. Updegrove, music; Katherine McNiff, ancient languages; Mary H. Hogan, drawing, and Frances Hamilton, domestic science.