ON HER MAJESTY'S SERVICE

WASC 982 WAI 213 WASC 09829.11.1972Carnforth, John.Interpreting Industrial History Country Life article on Hagley
Museum, nr Wilmington, USA213FC



1.—AN AERIAL VIEW OF THE HENRY CLAY COTTON MILL AND THE RIVER. The mill is now the museum building

N 1776 there were 13 states; in 1840, 26; in 1900, 45; and the States, in 1840, 26, only numbered 48 in 1912. In 1620 it took 67 days to cross the Atlantic; in 1920, 7. In 1776 the population stood at 4 million; 150 years later it was 105 million. And in the sphere of industrial expansion, $14\frac{1}{2}$ million tons of iron were produced in 1810, 96 million in 1860 and 804 million in 1900. Such are the basic facts about the development of America about which many American

visitors to the Hagley Museum are probably a little shaky and about which most foreign visitors are likely to be woefully ignorant. But in a 10-minute display in the main museum building that includes three screens and narrative and other sound effects all are treated to a potted visual history of America from 1776 to 1920: statistics on politics, population, industrial production, transport and communications are all combined together to demonstrate how a 1,000

years of progress have been accomplished in 150. The brilliant simplicity of the message is based on an exceedingly complex piece of equipment that took two years to devise and construct, and if it is the star turn of the museum display, it also epitomises the great care and skill lavished on creating a balance between preservation, reconstruction and interpretation at Hagley. The opportunity was provided by Mrs. Francis B. Crowninshield in 1952, when she offered the old du Pont family

house and surrounding land as a historical site after the 150th anniversary celebra-tions of the Du Pont Co. The Company came forward with an offer of 6 million dollars as endowment, and the Eleutherian-Mills Hagley Foundation was set up to create and manage an indus-trial museum. The first trial museum. The first part of the site was opened in 1957, a year before Mrs. Crowninshield's death.

One of the great prob-lems that faced the Founda-tion from the start is that powder-making is only a tion from the start is that powder-making is only a visually dramatic industry when something goes dis-astrously wrong: the buildings are fairly small and scattered and interviewelly not some and intentionally not com-pletely solid. Indeed, most of those on the Hagley site had been damaged at sometime by explosions, and parts of E. I. du Pont's earliest mill had been swept away in the years after 1921 when Mr. and Mrs. Crowninshield were making an elaborate garden running down the hillside from the house to the river. A great deal of explanation



2.—THE "TALKING" MAP OF THE BRANDYWINE IN THE MUSEUM BUILDING

was necessary if E. I. du Pont's achievement was to be intelligible to a public unversed in industrial archaeology: models, dioramas, and the combined effects of film, sound and light all needed to be employed in order to create a picture of industrial development along the Brandywine and to show the processes of powder-making. Research had to be carried out on the ground and in archives, and, as we shall see, the research programme has continued to play a major role in the development of the Foundation. It needed to be a museum that told a story, and that it does su-

premely well. The tour begins at the Henry Clay cotton mill (Fig. 1), originally built for cotton spinning about 1814-15 and altered to its present form probably in the 1860s after various commercial

probably in the 1860s after various commercial ups and downs. Glimpses of other mills along the river that are gained from the approach road show that Hagley is part of a larger early industrial landscape, and prepare the visitor for two of the largest display elements on the site, both housed in the Clay mill. This has been completely gutted, and within the old shell have been constructed three floors: one devoted to the Brandywine, one to the development of American industry in general; and the top one to a temporary exhibition space. The Brandywine is intro-

duced in the form of a large relief map tracing its course from the mountains to the Delaware river (Fig. 2): at the press of a switch it disappears in darkness to be revealed by a series of circuits of light and tapes that explain its history from the arrival of the Swedes in the 17th century to the high point of Wilmington's prosperity as a milling centre about 1815. Then follow a series of models and dioramas that include a working model of the completely automatic flour mill that was designed by Oliver Evans who was born in Wilmington in 1755. Another shows the



4.—MODEL OF A PAIR OF ROLLING MILLS. This shows how the water which was used to drive the mills mixed the powder. (*Below*) 5.—THE BIRKENHEAD MILLS BUILT IN 1822-24 AND NOW PARTLY RESTORED. The idea of the three stout stone walls and a light roof and fourth wall was that the wall would blow out over the river if there was an explosion



differences between the overshot, undershot and breast wheels and how their design was related to the normal water pressure. This kind of display is particularly valuable because it makes static relics in the landscape intelligible.

From the water wheel one passes on to the invention of the water turbine in the 1820s and its adoption on the Brandywine in the 1840s. Then follows the first chapter of the history of the Du Pont Company, which was described last week.

The evolution of American industry on the floor above includes the conquest of America described at the beginning of this article, and an exposition of why the demand for powder increased in the way it did. It also shows how industrial organisations have developed, how concepts of management have evolved, how the unions were created and how the lives of industrial workers have improved since the 19th century. It may come as a surprise to find this section at all, but it is indicative of the strong historical feeling running through the whole project that these aspects are tackled, and its inclusion shows how closely the concept of the museum is related to changes in historiography. It also helps to counteract the romantic gloss that it is all too easy to give such a project, particularly when it is set in such a picturesque landscape and has been so carefully planted over past decades to give the appearance of private pleasure grounds and gardens.

The views of the river, of the dams and of the flumes planted up with shrubs and specimen trees add greatly to the pleasure of a visit to Hagley and is a continuation of the early-19th-century enthusiasm for the beauties of the Brandywine. But the noise and the waste should not be entirely forgotten, even if the mills never looked quite as satanic as they did in the 19th-century woodcut illustrated last week:

The first leg of the jitney ride from the museum building takes one past the remains of various stone buildings between the flume and the river, but their purpose only becomes clear when the Exhibit Building is reached. Here the old machine shop has been gutted to make way for a display devoted to powder making, which includes the two models shown in Figs. 3 and 4. The diorama of the refinery (Fig. 3) shows the first stage in which the sulphur and saltpetre were purified: the crude saltpetre was boiled in the round iron kettles, the unwanted salts dropping to the bottom and the impurities floating to the top, where they could be skimmed off. From the kettles the solution was transferred to the rectangular cooling vats, where it crystallised. The next stage was to crush the two ingredients between mill stones, and then they were sifted before being mixed in the rolling mill.

1215



the refining of saltpetre in progress

1216

COUNTRY LIFE—NOVEMBER 9, 1972

The process of mixing is shown in Fig. 4: here charges of 300-600 lb. consisting of 10 per cent sulphur, 75 per cent saltpetre and 15 per cent charcoal were mixed by hand and then incorporated by hand and then incorporated for 3 to 8 hours. Cast-iron wheels for a rolling mill were introduced at Hagley in 1822, and the model shows one of the Birkenhead mills that were built between the two earlier sites that year. There was always the risk of an explosion at this stage, and so water had to be added to cool the charges, and it was because of the risk that the mills were built with three stout stone walls and completed with a light roof and fourth wall that would blow out over the river (Fig. 5). When one has seen the

model (Fig. 4) in the Exhi-bition Building the remains of the Birkenhead rolling mills (Fig. 5) further up stream become intelligible. In one half the machinery has been restored and the roof put on, but the restora-tion has only been carried so far that the process be-comes clear after a visit to the Exhibit Building. The jitney ride then continues up to

the original area of the Eleutherian Mill to the house, the first office and the barn. Here one gets a sense of the agricultural background to much early industry. E. I. du Pont was a farmer as well as an entrepreneur, and from the start there was a duality about the enterprise. In the photo-graph of the barn (Fig. 6) a Conestoga wagon is shown outside: originally developed in the 1740s and '50s, they could carry 100 to 112 casks of powder and needed six horses to draw them. The casks were made on the place, and so a cooper's shop (Fig. 7) has been fitted up on the lower floor of the barn: here are all the tools and materials used in the trade; but not content with this, the shop goes dark at the press of a switch, the back wall turns out to be a screen of theatrical scrim and a short film on coopering shown.



6.-A CONESTOGA WAGON OUTSIDE THE BARN. These wagons, drawn by six horses, could carry 100 to 112 casks of powder

Near by is the Eleutherian Mills Historical Library, which is not on the visitors' route, but is as important to the Foundation as the museum itself. The emphasis is on American economic, industrial, business and techno-logical history and, as well as a library of some 80,000 books, there is an archive that includes not only all the du Pont records from 1802 to 1915 but a great deal of documentary material relating to other firms. Originally formed by Pierre S. du Pont, who also created the Longwood Gardens, it was brought from Longwood to Hagley when the new library building was completed in 1961. Since then it has developed a programme that leads to history degrees given by the University of Delaware and has started on an ambitious programme of publications.

Whether one is interested in history or the concept of museums, Hagley is a fascinating place, and at a time when British ideas



7.-THE COOPER'S SHOP. Here visitors can see a film on coopering thrown on the screen wall at the back of the shop

on the range and role of museums is developing so rapidly there seems particular point in drawing attention to it. Even though no project here is ever likely to be so well endowed, there are many specific lessons to be learnt from it quite apart from the general encouragement that it offers to those who are trying to create industrial museums in this country. Except for the admirable Pilkington Glass Museum at St. Helens in Lancashire, the possibilities of this kind of museum have scarcely been seen by the British public, although interesting work is going ahead at Coalbrookdale in Shropshire and Beamish in Co. Durham, to name but two sites. And if more money were available more could be more money were available, more could be done

In their recent report on the preservation of technological material the Standing Com-mission on Museums and Galleries have recommended an annual grant-in-aid of $\pm 200,000$ to be used to help with the purchase and removal of material and they have also asked for funds for capital works to be increased. Both are admirable ideas, but the sum seems very modest, considering the huge scale of some of the most worthwhile sites and projects.

the most worthwhile sites and projects. One lesson that might be learnt from Hagley is its dual use as a museum and research centre. The two parts complement each other and give the whole place an intel-lectual vitality that is most stimulating, as well as solving the purely practical problem of coping with the bulk of industrial archives. Our county record offices are admirable institutions, but they are invariably short of space, and it is perhaps worth exploring the possibility of a similar kind of dual use at certain sites outside some of our large incertain sites outside some of our large in-dustrial cities.

Enthusiasm for industrial archaeology and for the concept of preserving historic industrial monuments and sites has caught on quickly in Britain, but it seems that so few companies have been infected by it, probably because they have had little or no experience of what a positive place a museum can be. Perhaps some of those who have never considered the history of their own companies in a Hagley light could take a day off from their next trip to New York or Wash-ington and, like E. I. du Pont in 1801, stay a day at Wilmington to see the Brandywine. Illustrations : Hagley Museum.