

tons; hemp, 29,740 tons; wheat, 823,995 bushels; oats, 1,386,597 bushels. The increase in the weight of wool would, at previous year's prices, have added only £18,000 to the total value of this line, so that to the extent of over £1,000,000 the enhancement is due to increased values. This is a factor which has also affected sheepskins in an equal degree, adding fully £90,000 to the total of that item. The value of exports from Wellington for the year was £2,956,246, an increase of £169,448 over the figures for 1904.

Across the Atlantic in Four Days

If any evidence were needed to prove that these are go-ahead times it has been furnished (says an exchange) by the new turbine steamer 'Virginian,' of the Allan line, which has so recently knocked a whole day off the Atlantic record—reaching Cape Race, in Newfoundland, four days and six hours after leaving Moville, in Ireland. One cannot help wondering what our good forefathers of two or three generations ago would have said if they had been told that many a child then living would be able to cross the Atlantic in a few hours over four days.

Why, it was the talk and wonder of the world when, in 1819, the good ship 'Savannah,' of 350 tons, fitted with an auxiliary paddle steam-engine—the first of all ocean-going steamships—made the passage from New York to Liverpool in 26 days. In those early days of steam navigation it was stated as a thing to marvel at that 'some steamboats actually voyaged from Glasgow to Inverary, partly through a strong sea, performing the journey of 110 miles in 60 hours, and touching at stopping-places with almost the regularity of a stage-coach. No serious accident has as yet occurred, and if the boilers of cast-iron should give way, a piece of cloth is firmly wedged into the hole and the vessel proceeds without any danger to the passengers.' But the 'Savannah' was not destined to hold

The Supremacy of the Atlantic,

for after she had led the way so gallantly two other vessels put her performance quite into the shade. One of them was the 'Sirius,' a Cork packet-boat of 703 tons and 270 h.p., with the wonderful speed of eight and a half knots an hour, and the other was the 'Great Western'—the largest and most powerful ship then afloat—of 1310 tons and 700 h.p.

It was on April 1, 1838, that the 'Sirius' started from Queenstown on her venturesome voyage (she had never before been out of the Irish Channel) across the Atlantic, and four days later her big sister and rival, the 'Great Western,' left Bristol in pursuit of her. Never was a more gallant race on the high seas; the little 'Sirius' fought every league of the way, her engineer stoking his fires with everything he could lay hands on, and she anchored in New York Harbor just two days before her pursuer on the 23rd, the larger vessel having brought the Atlantic record down to fourteen and a half days, or nearly half the time taken by the 'Savannah' some years earlier.

This was the first of 61 trips across the 'herring-pond' made by the 'Great Western,' and before she was withdrawn from the service she had reduced the passage to within a few hours of twelve days. Her plucky little rival, the 'Sirius,' never repeated her performance; she was sent back to her humbler Irish Channel work, and a couple of years later went to the bottom of the sea outside Queenstown, carrying many of the passengers with her. It was in this year (1810) that

The Pioneer Cunard Steamers

began to run—four wooden paddle-vessels, each about 230ft long, of 1100 tons and 700 h.p.; and of these the 'Britannic' made her first outward trip in 12 days 10 hours, while her return passage was made in the phenomenal time of 10 days.

The year 1874 saw the production of the 'Germanic' and 'Britannic,' of the White Star fleet, vessels which, however small they might appear in comparison with the leviathans of to-day, were giants indeed compared with their pioneers, the 'Savannah' and 'Sirius.' These boats quickly made the ten days' record look very foolish, the 'Britannic' reducing the time for the eastward passage to a shade under seven days eleven hours. But the 'Britannic' in turn had to yield the palm to still swifter vessels. The 'Servia' reduced the record to ten minutes under seven days; the 'City of Paris,' of more than twice the 'Britannic's' tonnage and nearly four times her horse-power, knocked more than a day off the 'Servia's' time, crossing in five days nine-

teen hours eighteen minutes; and to-day there are several vessels, such as the 'Deutschland,' 'Lucania,' 'Campania,' and 'Cedric,' which can bridge the Atlantic in a few hours over five days. In view of this startling breaking of records, one feels little surprise on being told that before long an Atlantic passage that occupies more than four days will be considered slow.

It may be interesting to note that several of the old clippers made some remarkably quick passages. Half a century ago the 'Red Jacket' crossed from New York to Bristol in thirteen days; while the 'Dreadnought,' in 1862, anchored at Queenstown nine days and seventeen hours after leaving Sandy Hook, thus proving that in her day sails were no mean rivals of steam.

The Lead Pencil

The six lead pencil factories in the United States employ more than 2000 persons, pay £140,000 per annum in wages, turn out 12,000 gross daily, the annual output being worth close on £500,000. These factories make as many pencils as all of Europe combined, and yet despite the importance of this industry (says an American exchange), there are few who can tell how this indispensable little article is made.

Structurally speaking, the lead pencil consists of an outer shield or covering and of an inner piece of round solid graphite. The wood, which is of prime importance, must be durable and compact, straight grained and soft, so that it may be alike easy to polish and whittle; if it is fragrant, so much greater its value. Now of all the trees in the world our Virginia or red cedar, which grows so luxuriantly in the South, particularly in Alabama and Florida, is the only one whose wood meets all these requirements. Our pencil manufacturers own their own cedar mills, but the European makers, much to their dislike, are obliged to purchase their pencil covering from us. In order to place themselves on an equal footing an attempt was made to transplant the Virginia cedar. Germany devoted 100 acres to that purpose some forty years ago, but the climate proved unfavorable and a few stunted trees with wood as hard as oak, proclaimed the experiment a rank failure.

On the other hand, we go to foreign markets for our graphite, the best qualities of which come from Eastern Siberia, Mexico, Bohemia and Ceylon. Our largest factory, taking advantage of the cheaper labor market abroad, has all of its graphite prepared in Germany and sent here ready for use. Nor is cheap labor the only consideration, for the German graphite makers, like the wood carvers of Switzerland and the toy makers of Nuremberg, follow the trade from father to son; take to it quite naturally and leave the rest of the world behind in expertness.

Pencil lead consists of a mixture of clay and graphite, both undergoing a careful and separate treatment before they are united. The raw graphite, after being reduced to a fine powder in a mortar, sifted and freed from impurities by mineral acids, is washed and fired to a bright red heat. The next step is to add water to the preparation, and pour it into a vat, where the heavier particles sink. From this vat the water carries the lighter particles into another at a lower level, and then on into one or two more, where the heavier particles drop to the bottom and the finer particles are carried over. The graphite drawn from the last vat in the series is in a state of extremely fine division, and its value reserves it for use in the best pencils only.

The clay, purged of sand and iron, goes through somewhat the same process, and then it is mixed with the graphite, the proportion varying all the way from equal parts to two of clay for one of graphite—the amount of clay depending strictly on the degree of hardness or softness wanted for the pencil leads.

When the particles of clay and graphite are thoroughly incorporated and ground together they are placed in bags and squeezed to the consistency of dough by a hydraulic press. The formless substance, ready to be shaped into pencil rods, is forced by a piston in continuous threads through the many apertures of a strong upright brass cylinder, each of the apertures being of exactly the same size as the leads that are to be fitted in the pencils. The long threads of graphite are received and arranged on straight grooves of a wide board and left to harden until they become as stiff as rods. Afterward they are cut into requisite pencil lengths—seven inches as a rule—packed with charcoal in a covered crucible and submitted to a high furnace heat.