

techniques and structure with the result that the price of steel on the open market rendered steel making by Platt Brothers no longer a viable proposition. Consequently the forge was closed down and, in due course, the site was cleared to provide a sports ground for the Company's employees. This comprised a football pitch, bowling greens and tennis courts, also a large pavilion to house a billiard room, dance and concert hall and refreshment bars. A rifle club was formed for which a shooting range was laid down on the site which, during the second world war, proved an invaluable asset to the Company's own and other detachments of the local Home Guard. First world war requirements had also given rise to advances in the capabilities of machine tools and more and superior types of these were introduced into the Company's Works. This policy precipitated a dispute, in 1921, with those employees who were members of the Amalgamated Engineering Union (AEU) for precisely the same reason which had been at the root of the dispute in 1851, namely the manning of machine tools. A lock-out of AEU members ensued to enforce the management's contention that it alone had the prerogative to decide how and by whom machine tools were manned and at the end of thirteen weeks the Union conceded. The economics of the supply of other items had altered, for instance most nuts, bolts and screws, and the Company moved away from its policy of self-sufficiency in everything to one of purchasing such items on the open market. With the closure of the forge the Company's need for coal and coke diminished and, as has already been mentioned, mining at Butterworth Hall Colliery, which was the most difficult of the collieries to work, terminated in 1929. In that year the total workforce of the Company had dropped to 12,000.

Though trading conditions were difficult, both before and after the formation of the Merger, sight was not lost of the necessity to keep the range of product machines in the highest class through progressive development or by substituting entirely new models when it was apparent these were needed. Greater attention had to be paid to guards and other measures applied to the machines to meet the safety legislation growing in many parts of the world. Machines equipped with electrical controls and driven by their own electric motor, in place of a belt from a lineshaft, were gaining in popularity, for example, these features were contributory to the later of the two models of Ringframe introduced between the first and second world wars. Nasmyth, an inventor independent of the textile machinery making companies, had extended the usefulness and economics of the cotton combing process in that the Comber he had invented could process cottons of a much shorter length of fibre than could the Heilmann machine. Platt Brothers, Dobson & Barlow and Hetherington had taken up manufacture of his original

model machine and when he was to embark on the development of a new model he was invited to do so at Hartford Works where every facility was put at his disposal. One machine which was sorely wanted was an automatic loom (one in which the supply of wet yarn is changed automatically) for the Platt Brothers 'Lancashire' type loom had become completely outclassed and had lost out in markets everywhere. An automatic loom manufactured by the Toyoda Loom Works, in Japan, was proving to be an exceptionally successful machine and Platt Brothers entered into negotiation with that company to obtain rights to manufacture the machine. Japanese technicians arrived at Hartford Works to assist in the laying down of the production plans and plant but the preparations proved to be very protracted with the result the loom never reached commercial production. Nevertheless, Platt Brothers had paid Toyoda some ninety thousand pounds for the patent rights, designs and know-how which moneys were put to found the Toyota motor car company. One project which did prove highly successful for Platt Brothers was the concept of the 'Single Process Lapping' system for the Blowroom (although it was not until after the second world war that the full benefits accrued). This system, which might be regarded as an early and simple form of automation, enabled a blended lap (for feeding to the Card) to be prepared without manual intervention, after the bales of cotton had been fed to the line of opening, cleaning and blending machines, until the lap was taken (doffed) from the lap forming position on the scutcher (the manual intervention had been required to effect blending). The sequence of machines incorporated in this system were some of the first to employ electrical controls as an inherent requirement. Dobson & Barlow had become engaged in the manufacture of machines for the production of rayon yarns (artificial silk) which marked the first venture, by a British maker, into machinery for producing 'man made' continuous filament textile yarns. An allied machine for producing cellophane film had also been put into manufacture. In the years after the Merger was formed a limited amount of rationalised allocation of the product machines was made amongst the Operating Companies. Platt Brothers ceased to make sizing machines, the manufacture of these being vested in Joseph Hibbert. Mules, now almost confined to woollen spinning, and Reeling Machines (Reels) were allocated to Asa Lees. Hetherington was closed down and its operations absorbed into Hartford Works. Further rationalisation was impeded by the advent of the second world war and not until 1945, when that war was over, could it be pursued with the vigour which was obviously necessary.

In 1935 the last resident of the four mansions in Werneth Park died. This was Dame Sarah Lees who had reached her ninety-third year. She