

with deeply-recessed shafted jambs and moulded arch, and the main corridor, in which the visitor finds himself, will be eventually continued into Great Charles street in the rear. The groined arches and moulded rib rest on dwarf columns, carved capitals and spandrels, and geometrical tracery. The landing on the ground floor, which is reached from this point by ascending a broad flight of steps, is 6 ft. above the level of the street, and from it runs the wide central corridor, another corridor extending in a transverse direction along Edmund street frontage, having at each end a staircase leading from the basement to the top of the building. Further down the central corridor, the main staircase is situated, opening to the right, with an arcade of four arches on granite columns, and communicating with every story. Beyond this, the corridor passes into the back range of buildings, the doors on one side opening to a library and reading-room, and on the other to the physical laboratory. The first floor contains the chemical lecture-room, three other large lecture-rooms, chemical preparation-rooms, professors' apartments, class-rooms for magnetism, rooms for chemical collections, models, and apparatus, the lecture-rooms being exceedingly handsome and commodious. In the south-west block at the back are several large rooms for drawing. The floors above are entirely devoted to chemistry. In the front block a spacious apartment is set aside as the professors' laboratory, and there are also rooms for the study of organic chemistry, and for gas, water, and spectrum analysis. A large room, formed principally in the roof of the central front block, will be used as a museum for collections of specimens in connection with the chemical department. There are, in addition to those already mentioned, about twenty-four smaller rooms for professors' assistants, classes, &c., and on each floor opposite the principal staircase are the necessary class-rooms and lavatories. The college contains in all nearly a hundred rooms. The several laboratories will be plentifully fitted with small and large evaporations niche for the removal of injurious vapours and gases, and with the fittings necessary for the various studies. The architect, Mr. J. A. Cossins has had the valuable assistance of Mr. Hodgkiss as manager; the stonework has been executed by Mr. Prothero; the carving is by Mr. J. Smith; Messrs. Camm Brothers have supplied the ornamental glass, which is excellent in design and quality; Mr. Pearce has furnished the other glass; the gas-fittings are by Messrs. R. W. Winfield & Co.; the plumbing by Mr. Cook; the wrought-iron entrance gate (a remarkable fine specimen of iron working) is by Messrs. C. Smith & Sons, Deritend; Messrs. Hart, Son & Peard supplied the ornamental ironwork on the roof of the college, the balustrades, and the iron windows; the painting is by Mr. Potter; and some of the movable fittings by the Midland Joinery Company, the rest, including the fittings of the lecture theatres and laboratories, having been made in the college workshops, under the superintendence of the architect.—*Ibid.*

#### SCIENCE COLLEGES.

That England is still the first manufacturing country of the world is undoubtedly true, but it is equally true that each year sees our supremacy more closely challenged by foreign competitors. It is constantly argued that, inasmuch as our old supremacy was won, and for long maintained by men who had no scientific training, therefore, the rule of thumb method is the best. As well might it be argued that, because the Zulus with assegai fought for and obtained their undisputed position of military supremacy amongst all the South African nations, therefore the assegai represented all that was needful in arms. As the times progress so must each one of us endeavour to move along in his own path, at least so far as may be necessary to keep pace with the world around us. It is, however, chiefly the rising generation that the brunt of the battle with foreign competition must fall, and it is their preparation for the fight that is perhaps the most pressing national question of the times. The English manufacturer and workman have never been deficient in such skill as could be got by the daily practice of the particular art to which each might be devoted; but they have generally been lamentably ignorant of all general principles. In fact, it has been easy to find eminent engineers who were destitute of a scientific knowledge of first principles. It is true that a sort of lucky instinct often preserves these men from making fatal mistakes; but it is not safe to depend on the possession of this guiding faculty by those of less mental calibre. No one will dispute that a civilised man of very moderate mental capacity is in many things more than a match for the most intelligent savage. This is not from any superiority of his own, but because he has

the benefit of the knowledge accumulated by his race. In fact, his training has given him an advantage over a man mentally his superior. No amount of mental capacity can entirely make up for want of acquired knowledge. Now in England we have not anything like sufficient means for enabling our manufacturers and workmen to acquire a thorough technical training. Workhouses and jails are plentiful enough, but science colleges only too scarce. It is true that we have plenty of colleges for teaching dead languages, and antiquated systems of logic, but of scientific institutions devoted to useful knowledge we have scarcely any.

About the time that these lines issue from the press, the people of Birmingham will be witnessing the opening of the great college of science, founded and endowed by Sir Josiah Mason. This college is to be emphatically a college of science, and the science is to be practical. Professors of eminent capability have been appointed to the chairs of mathematics, physics, chemistry, and biology, and the programme of the first session of 1880-1881 is already issued.

No other town in the world carries on such a diversity of industries as Birmingham, and to no other could the value of a college of science be more evident. Truly in a year or two's time the Birmingham youth will have every facility for becoming highly trained. Within a stone's throw of each other will be found the Mason College for Science, the restored Free Libraries, the School of Art, the Queen's College, and probably a new Art Gallery. May the rising generation of Birmingham, while retaining the skill and energy of their fathers as workmen, add the mental culture which they will have the means of obtaining; and may every large centre of population sooner or later produce its Mason to found and endow a College of science.—*Martineau and Smith's Hardware Trade Journal.*

**PHYSICAL EDUCATION.**—Absolute health is only attained when the body is equally developed in all its organs and members. The man with muscles of steel and a diseased heart cannot be said to be in good health, and diseases of stomach, heart and nervous system are often—it may even be said usually—produced by that system of development known as training. At a recent rowing match in Philadelphia, two plucky lads in contending boats fainted as soon as the race was over. Their condition, which was apparently good, was actually abnormal, and their systems gave way because the strain which their muscles met was too great for their vital functions. Recently a similar but more serious calamity occurred at Sag Harbor. A Brooklyn lad who had taken part in a pedestrian contest, when removed from the track fell down dead. He had prepared himself for walking and running, and depleted his vital organs to build up his limbs. When the strain came the impoverished and most important part gave way. The severe muscular exercise of college athletes has carried off many fine young men by consumption, heart disease and other disorders, directly traceable to the absurd overwork required of their bodies. There is a limit of human endurance. That limit is reached when the body is impaired in one quarter to benefit special organs. The severity of the test by which athletic prizes are won seems designed rather to award the laurels to him is the least healthy, because more unevenly developed, than to the really best man.—*Brooklyn Eagle.*

**PUDDLING OF IRON.**—Mr. E. Harris, the President of the South Staffordshire Mill and Forge Managers' Association, in a paper which he had just read before the institute on the puddling of iron, said that the schemes tried to prevent smoke, save fuel, etc., might be counted by scores, but none of the recipes had been so effectual as to secure a general adoption. It was a mistaken theory to suppose that because iron was fibrous in the puddled bar it would be fibrous in the finished bar. Often enough the puddled bar was crystallized, and no matter how many times this class of iron was worked over again, fibres could not be developed. The "hot short" iron was as much to be guarded against as the "cold short," for whilst the engineer in constructing a bridge or building a vessel dreaded the "cold short" iron, the blacksmith and the boiler-maker equally feared the "hot short."

**WHERE ELEPHANTS GO TO DIE.**—The elephant hunters of Ceylon and India corroborate Sinbad's story that elephants, when they feel the approach of death, retire to a solitary and inaccessible valley, and there die in peace. Mr. Sanderson, superintendent of elephants to the government of India, admits that no living man has come across the corpse of a wild elephant that has died a natural death.