

The Brighton and Hove Engineerium

I was lucky enough to become apprenticed to one of the finest mechanical engineering companies in the country, namely W.H. Allens of Bedford. It was during the middle 50's when the true values of real skill were, I believe, still taught in the clear understanding that they would not only continue to be marketable, but even more importantly, that they provided men and women with the constant and limitless combination of physical and intellectual challenge which inevitably leads to a near complete sense of job satisfaction.

It is intolerably dangerous to sit back and accept the general media and often educationist view that all this is a thing of the past. That, for example, we must accept the role imposed by the economies of world engineering and therefore, we must cut back the emphasis on the training of young people to acquire high degrees of skill and craftsmanship.

I find myself even now in danger of understanding an increasingly wide number of people to be naively assuming that in any event silicon chips are, in their turn, to become as effective as Arkwright's Wheel of 1770 or Brunel's mass production Block Making Machinery of 1804 in obviating man's need to be capable of making things or indeed working at all! It is almost as if the fashionable trend in general education unique in this country, having realised the danger and folly of its anti 'bench' or 'shop floor' teaching, is finding momentary respite in the hope that all will be solved for humankind in the age of electronics.

As always in engineering, the constant advance of our knowledge in the use of materials has removed many of the tedious facets of mass produced items. However, not everything is made of 'plastic', and fortunately there will always be a real and increasing demand for those who have been actively and enthusiastically encouraged to become highly skilled.

It is an easily demonstrated historical fact that in most cases a particular skill cannot survive a gap of two generations and we therefore simply adjust ourselves to a world of greater compromise, less quality and above all ever decreasing individuality.

The word engineer comes from the Latin *Ingeniatorem* which means, simply, ingenious at the art of devising. That is to say, he or she is not primarily either a political creature or indeed an accountant. Sadly their status and role has been worst manipulated, eroded and threatened by both politicians and accountants, neither of whom can readily understand or quantify skills which are painstakingly passed on from successive generations.

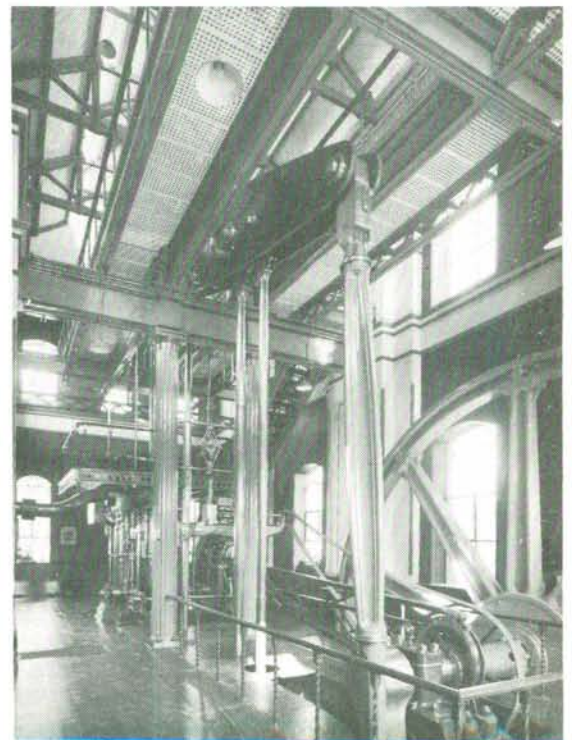
One of the most encouraging and delightful side effects of these trends is the expression of natural instinct to make things well, to indulge not in sentimentality but instead the art that works. As the standards in consumer engineering have declined, a sort of mass movement for the preservation of all aspects of our heritage has surged up from the most unlikely sources. Skilled or unskilled men and women from every possible walk of life have taken on the most awe-inspiring tasks of restoration and conservation. Not only is this a means to satisfy

their own creative abilities at whatever level, but it is an attempt to preserve as an almost last ditch attempt, something, just something, that reflects for future generations those alternative values upon which their lives are so deeply based. Interestingly, in a country where the status of the engineer in particular has been so badly undermined, we lead the world in industrial archaeological effort and enterprise.

In the last fifteen years there have emerged on the one hand more and ever improving State museums and on the other an equally remarkable professional and individual mass of independent museums. The latter category, now grouped under the Association of Independent Museums, comprises everything from stately homes battling with the almost impossible odds against survival to industrial monuments, railways, agricultural and local folk collections. Most are charitable trusts while some are owned privately by individuals or clubs and societies.

In all cases the objects are to procure, preserve and present our heritage in the belief that by so doing we can help with both education and the whole process of sociological understanding.

The compound, rotative Eastons and Anderson beam pumping engine of 1875 restored at the Engineerium in early 1976, and steamed every weekend.



The galleried exhibition hall with the 1889 French Corliss horizontal engine saved from Paris in spring 1976.



The museum world however, is not without its own problems including money, expertise, fashion in presentation and so on. For instance there is an alarming trend away from objects towards for example the 'Science Experience Centre' where the emphasis is on sales of trivia and food all to be had sitting within a transparent moving motorcar engine to the strains of visual effects and audio-litter! In other words the designer and architect are becoming relied upon more heavily as substitutes for expert knowledge concerning objects on view, and the self-conscious need to 'present' to a highly competitive 'market area' – the public.

These are naturally over simplified generalities. One of the most constantly encouraging sides of my job is my continuous exposure to the massive and brilliantly patient work going on amongst technical and craft teachers. I feel that much of their work and the huge responsibility placed on their shoulders has, in the last ten years, been carried out under formidable and demoralising odds. It is for this reason and my experience concerning the suggestions made earlier that I founded the Brighton and Hove Engineerium to try to help the general situation in however small a way.

The entire exercise is based on the mid 19th century Goldstone Pumping Station nestling within the hills of Hove and overlooking Hove park. In 1974-5 the two beam engine houses, boiler house, chimney, coalstore and workshop were due to be demolished with a view to land development. By moving quickly and in some cases possibly a little deviously, we were able to reverse the fate of Goldstone with a view to producing an entire theatre of events which is devoted not only to encouraging young people to enquire into and respect engineering, but to underwrite the work of those already deeply committed whether consultants, designers or skilled practical men and women. (Plate 1)

The Station and its original contents were derelict, having lain silent and unheated for nearly 25 years. With a working capital of £300 and a collection of some thousands of engineering artifacts, work started in October 1975 and the restoration of the buildings and plant, plus conversion of the coalstore into the galleried

exhibition and special exhibition halls, was completed by October 1976. (Plate 2). Assistance came from the Historic Buildings side of the Department of the Environment, the Southern Water Authority Recreation and Amenities Division and loans from Christie's, Hoares Bank and private individuals. All of that money was spent on capital works; it was augmented by shareholders and constant revenue earning activities, which continue to produce the necessary fifteen or so thousand pounds a month in order to continue expansion and educational works.

I strongly believe that a project of this nature, whilst being in a position to accept capital or revenue monies from all existing National and Local Government and private industrial sources, should do everything in its power to earn its keep at the same time as providing amenity and educational facilities.

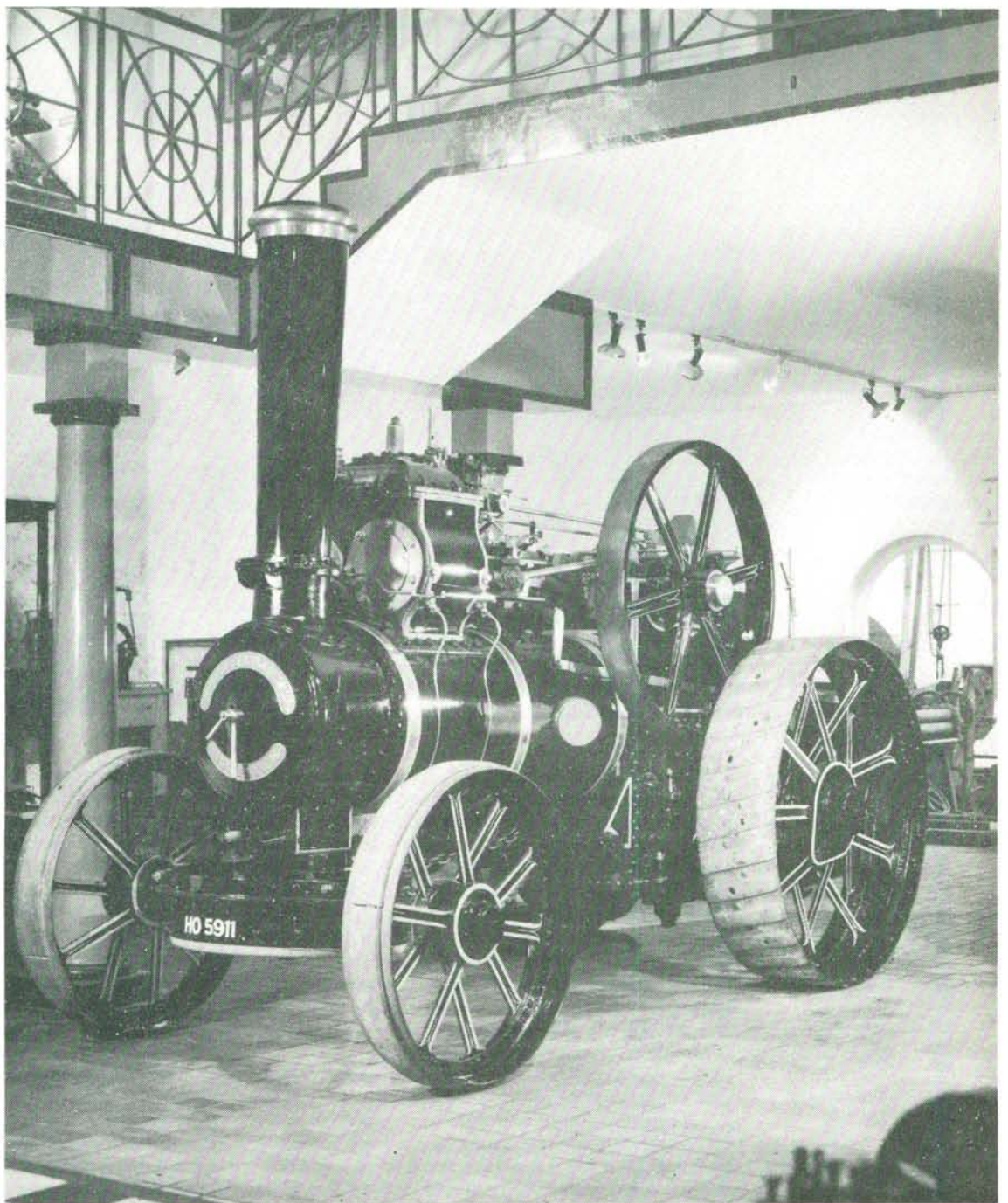
To this end, we as a team actively engaged in five totally dovetailed exercises formed within the general envelope of what is therefore not only a museum, but hopefully a platform from which a large number of different contributions and perhaps influences emanate.

That is to say the Engineerium provides an amenity and educational facility; experienced engineering restoration expertise for national and private collections alike; practical courses in the history of engineering using the work throughout as a never ending series of unique projects; Christie's sales of mechanical antiquities and the current work of model engineers from all over the world; and finally, consultation on museum design, stately home public opening, film work, engineering design and work on books and brochures and technical publications.

In fact these activities not only dovetail but are basically totally interdependent.

Each department, which may earn revenue at perhaps one particular season is then supported and is enabled to develop in its off peak period by the activities of one or more of the other areas of involvement. Above all, the constant exposure to external problems and influences and the amazing variety of work they provide, finishes the whole

The 1892 Fowler compound traction engine rebuilt completely during 1977.



with a constantly growing fund of ideas and strength.

For example, right now, international industrial archaeology is suffering badly from two problems as a result of its relatively recent recognition as a subject. Firstly many museologists are Arts based and find curatorship of mechanical artifacts a new and unsure science, and secondly and as a result of this, there are no laid down standards or guide lines concerning restoration and conservation techniques. Building up the framework of these principles through sheer quantity of experience and discussion interplay is vital at this point in history if we are effectively to preserve our industrial heritage in a meaningful and responsible way.

Therefore at the Engineerium, we have inherited a number of related problems and it seems, with luck and a great deal of hard work, we will be able to grow into, and provide for, relative solutions.

I am reminded of James Nasmyth (1808-1890) who so perfectly explained the necessary characteristics of the engineer when he said 'It is one of the most delightful results of the possession of the constructive faculty, that one can build up in the mind mechanical structures and set them to work in imagination, and

observe before-hand the various details performing their respective function, as if they were in absolute material form and action. Unless this happy faculty exists 'ab initio' in the brain of the mechanical engineer, he will have a hard and disappointing life ahead of him. It is the early cultivation of the imagination which gives the right flexibility to the thinking facilities. Thus business, commerce and mechanics are all the better for a little healthy imagination'.

That simple and clear observation is the best I have ever found to silence those who cannot justify the value of familiarising young people, in the most intimate and constructively personal way, with the results and artifacts of their engineering forefathers, whether good or bad.

Our restoration work covers everything from stately homes to beam and triple expansion pumping engines of vast size, (Plate 3) traction, railway and fire engines of middle size, (Plates 4 & 5) and models and mechanical antiquities of great delicacy and minute proportions. The skills required, include happily a full spectrum covering engineering and architecture design and interpretation, and following on from these, all the engineering and building

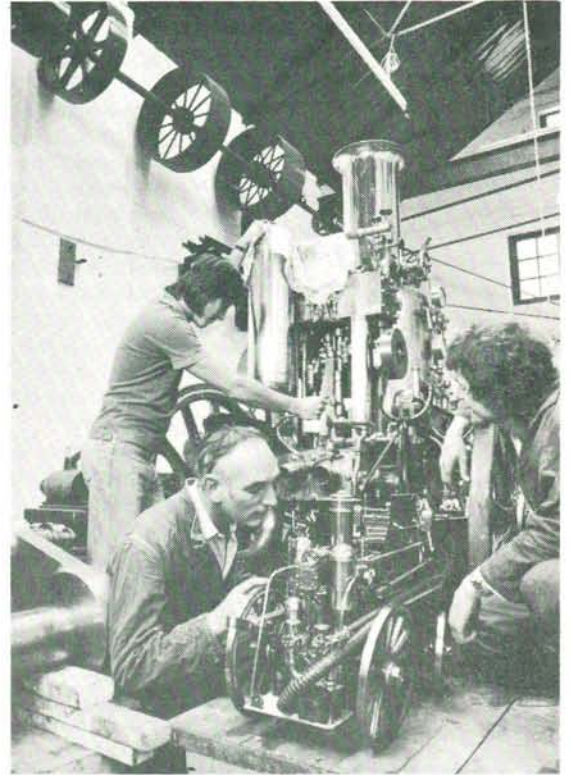
The 1890 Shand Mason horse drawn steam fire engine and model by Coates (1886) during restoration in the Museum's 19th century machine shops.

skills. Importantly, students are aware of this budgeting of each project and their commercial revenue earning support of the museum. There is, therefore a very realistic atmosphere from start to finish which directly influences all stages and degrees of procedure and involvement. This in turn directly poses the whole question of the rationalisation concerning the supposed juxtaposition between quality and quantity.

At present our male and female students come from three main areas. Firstly, between school and work with a view to answering the fundamental questions about engineering. Secondly, from industry, in order to teach apprentices and technical students about their engineering history, and broaden their overall experience. Thirdly, students come from universities and museums all over the world to learn restoration techniques as relevant specialist subjects which will eventually become their full time occupation. Courses vary in duration on the individual circumstances, but even here, we have been fortunate in always being able to provide enormous variation in the sizes of projects. It is extremely important that an individual or group should see a project right through. In addition to work both at the Engineerium and in the field, we send participants to view other museums and private collections with Engineerium Membership outings or as specially orchestrated tours so that they can see what other people have done and are doing.

There is, of course, no question that with the help and keen atmosphere which is self-generated by each project, the Engineerium itself gains in terms of both capital and restoration works. A recent course provided for 12 apprentices and technicians from the South Eastern Electricity Board resulted in the restoration of the electrical engineering collection and its installation. If this work were quantified as a normal museum exercise it would have cost £15,800. It was completed by all concerned in exactly four weeks.

In order to expand the whole exercise, we are now planning a new exhibition and workspace building with more than four times the size of the existing facilities. We have been given a 1906 Tangye inverted vertical triple expansion pumping engine approximately 50ft by 60ft by 26ft wide — in itself a vast removal, restoration and installation exercise with empty cylinders alone weighing 8-10 tons. The southern end of the building on three floors will contain a large, modern engineering machine and fitting shop, paint shop, pattern shop, design office, audio visual and service amenities. Its northern 'L' shaped end will provide a canteen and two extra galleries not only to exhibit the parts of the collection not yet on view, but importantly for nationally owned objects for which it has been impossible to allocate space other than storage. Essentially, all the main aspects of design, construction and installation will be done by the Engineerium staff, course participants, members and considerable 'cash in kind' industrial help. In this way, apart from direct quality control, the necessary capital sums raised will, perforce, become revenue



backup for the running of the whole: outside consultancy if you like, but on our own grounds.

We have a long way to go, and I naturally silently hope it will never be finished. A less silent hope is that if we can make a demonstrably good example of this way of using a 'museum' others will follow throughout the world and we will avoid the danger of shutting up second-hand objects behind glass, inferring automatically that the skill and ingenuity that created them lies there encapsulated and unattainably extinct. It is neither.

If in the end, the silicon chip does emerge victorious in its war against the natural creative ability in man, then again I believe it is not unrealistic to assume that the value of all aspects of our work will become even perhaps higher as a vital therapeutic amenity of the greatest possible importance.