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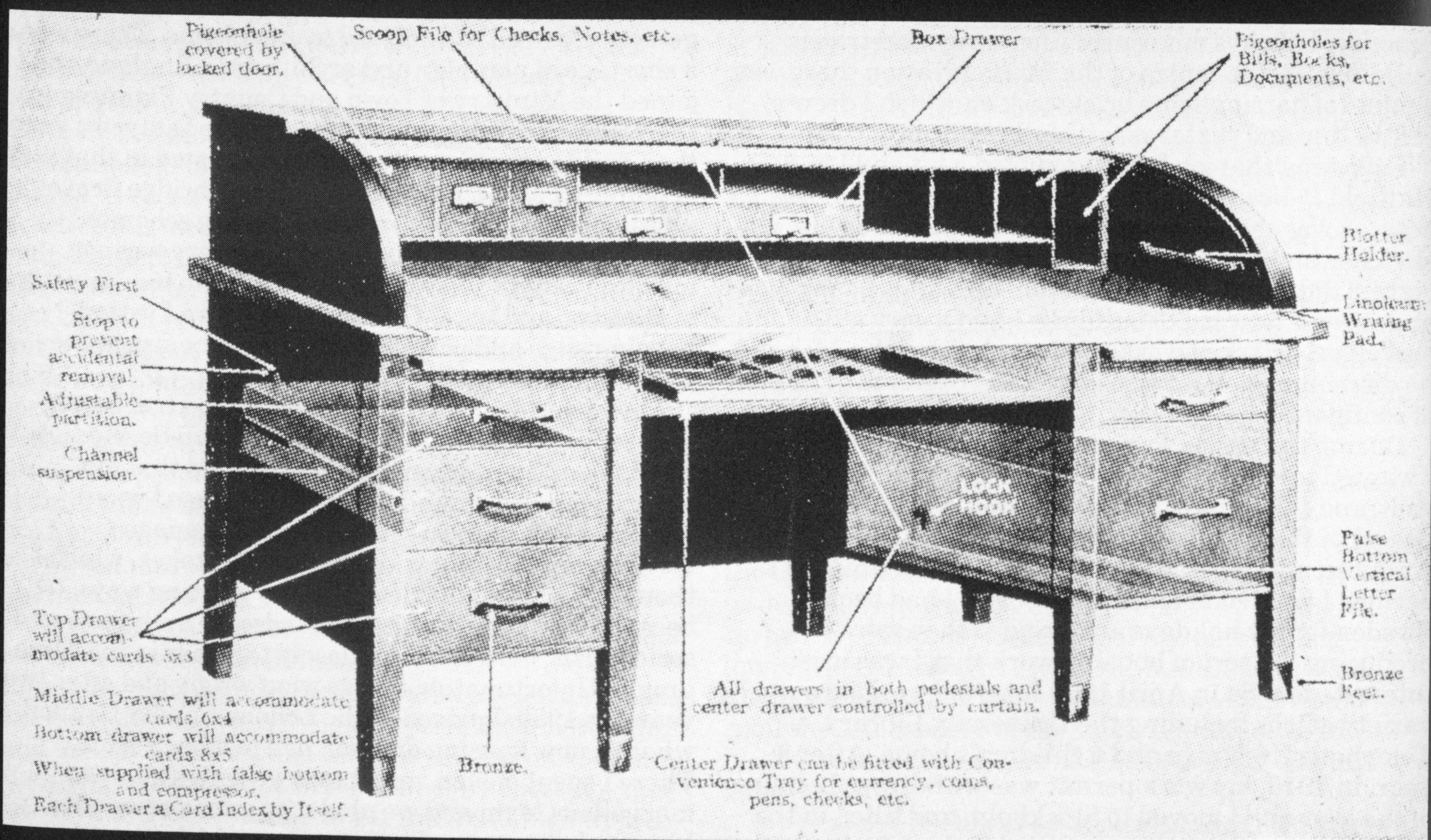
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Forty discusses the impact of the American management consultant F W Taylor – the man responsible for the invention of time and motion studies – and considers how Taylor's ideas were understood by modern architects

# Adrian Forty Taylorism and Modern Architecture

Those of you who have looked at Le Corbusier's writings of the 1920s, may have come across some of his articles in the journal, *L'Esprit Nouveau* which he illustrated with drawings and photographs of contemporary American offices and their furniture and equipment – such as desks and filing cabinets. Now Le Corbusier's reason for introducing these objects was that he saw them as symbols of "The Modern" – like his better known examples of aeroplanes, cars, ships and grain elevators – and he argued that they provided a model of rationality and aesthetic purity for the new architecture. But what were the claims of these filing cabinets, office desks and so on to be modern? What was so special about an American filing cabinet as to make it an appropriate image of modernity? Well, part of the answer to that question, as you will have probably guessed from the title of the lecture, is that these objects were the fruits of Taylorism and I think that before I go any further I should just spend a few minutes describing the theory and practice of Taylorism.

I am first going to speak about the history of Taylorism and explain its relationship to the other, perhaps, better known American production system, namely Fordism. Frederick Taylor was an American production engineer who, in the 1890s, became interested in ways of reorganising work in order to increase productivity. The Taylor system was developed and elaborated in the period between 1895 and 1915 and it became well known through his articles, through his acolytes and finally through his book *The Principles of Scientific Management*.

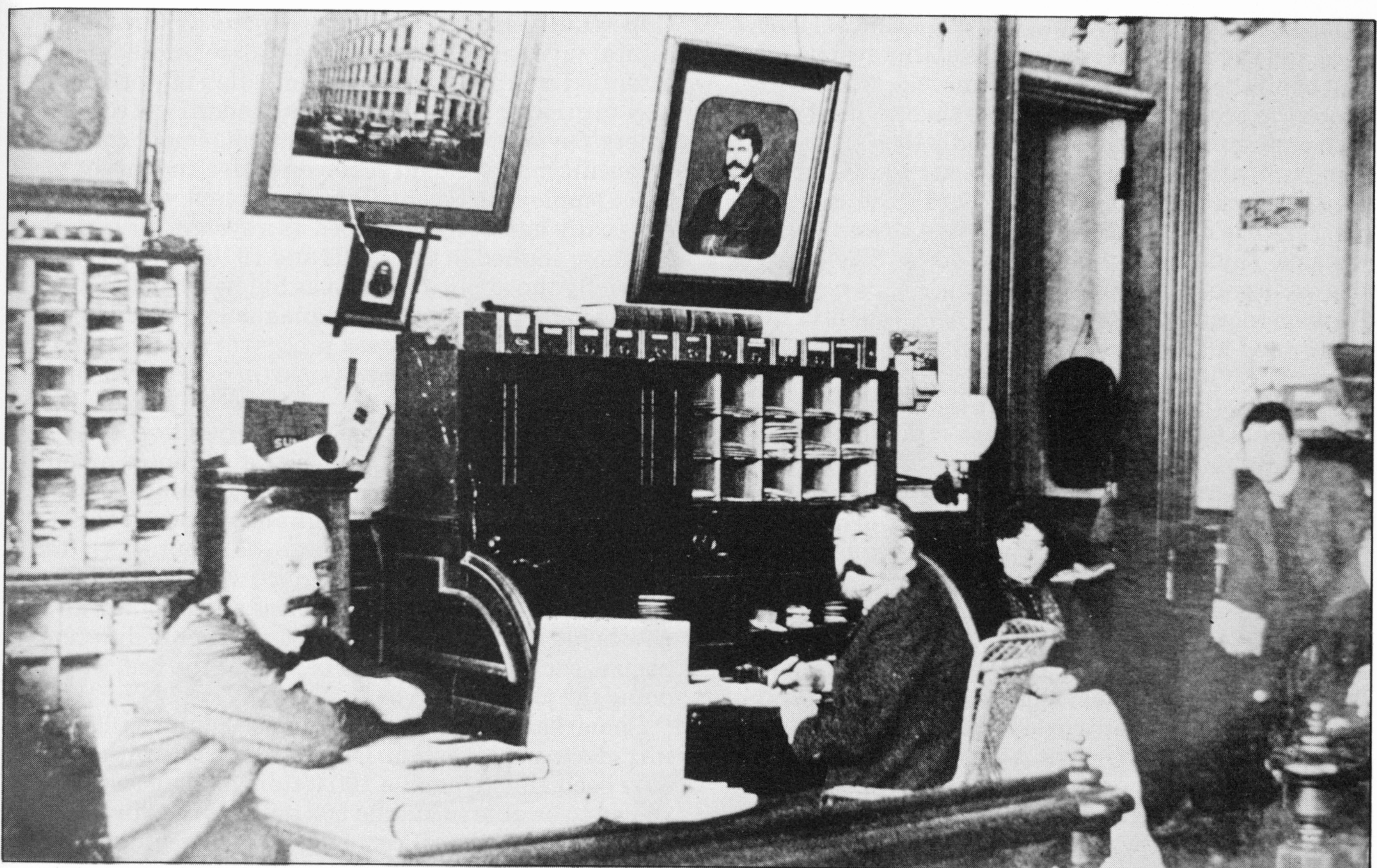
Scientific Management is the name by which the Taylor system became known. In its application the Taylor system went something like this. First of all, expert managers were introduced into factories, which in itself was an innovation because hitherto the managers of factories had either been the entrepreneurs themselves or foremen promoted from the shop floor. These managers then studied the work routines of all the operatives – they studied what the workmen did; how they did it; how long it took them to do it. This minute analysis of work was the key to the Taylor system. The premise was that each job could be broken down into a series of basic actions. For each job and each action, the Taylorists set out to identify, in Taylor's own words, the one best way, of carrying it out. In the course of their analysis, the Taylorists saw that some previously complex jobs involving many actions, could be broken down into a number of different tasks which could be carried out by different people.

Having identified the one best way for each job, the

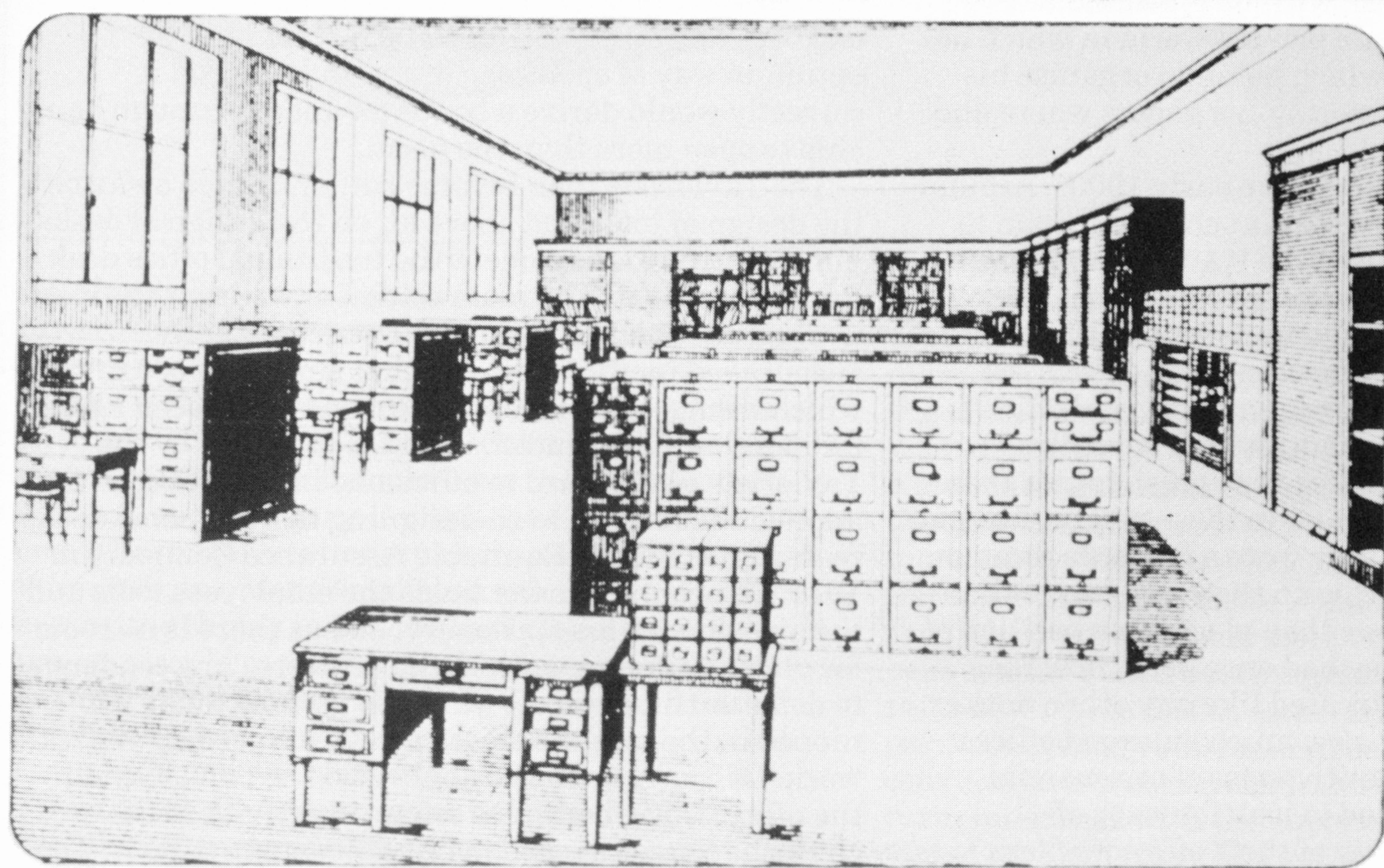
managers would then teach the worker to use it and because the one best way was also the least tiring way, it was expected that the worker would be glad to learn it. The manager then timed the rate at which the worker performed his task and from this the Taylorist manager calculated a norm, which determined the worker's basic wage. If he exceeded this rate, he got a bonus and if he failed to reach it, his pay fell below the subsistence level. This process of timing the work and setting the norm is what became known as the time and motion study. Through the application of this system – the breaking down of work into separate activities and the setting of norms for these activities – the Taylorists promised truly amazing results with enormous increases in output, and that was the great feature of the system.

There are a few general points that I would like to make about Taylorism. First of all, Taylorism was presented as a system which benefited both the employer and the employee through higher wages. One of its attractions therefore as a system of management was that it appeared to offer a solution where production was increased without involving any confrontation between capital and labour – everybody benefited equally. The second point about Taylorism is that it rested upon claims to a scientific status. The analysis of work and the identification of the one best way were presented as scientific and therefore supposedly value-free methods. It is an open question of course whether the method was value-free or whether the one best way was best for everyone. The third point is about who the Taylorists were. The Taylorists were invariably experts drawn from outside the traditional entrepreneurial class or from the shop floor. They were a new group, middle class professionals, technocrats, who applied reason to create efficiency. Fourthly, the result of the whole process of applying scientific management was to take over a part of the craftsman's traditional skill, his knowledge and his capacity to organise his work for himself and to put it in the hands of an expert – or a filing cabinet, if you like. The effect is that brain work is removed from the shop floor and placed in the hands of management. The fifth point I would make about Taylorism is that it was not generally presented as a comprehensive theory or necessarily even through words. Taylorism was best known through a few slogans like 'The one best way,' but above all through symbols – through the time chart, through the stop watch and through certain pieces of equipment – in particular what I am going to talk about here, the office desk. So much for Taylorism. Now a word about Fordism.

2 American office, circa 1900.  
3 Taylorised American office from  
*L'Esprit Nouveau*, no 23, 1985.



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Fordism, as you know, was the invention of Henry Ford and the main characteristics of this system were first of all the moving assembly line, the track along which the product moved and was then worked on by each craftsman in turn, and secondly the standardisation of the product. Henry Ford introduced the single product – the model T Ford – the standard car. Now the main difference between these two systems, Taylorism and Fordism, is that Taylorism was exclusively a system of management whereas Fordism required actual physical investment in the factory and it involved entrepreneurial decisions about the product. Taylorism is completely unconcerned with the product. It was conceived as a neutral system which could be applied in any case – it didn't require any kind of entrepreneurial decisions to be made.

What I want to do, having outlined the principles of the system, is to look at the development of design in American offices in the early part of this century and to chronicle the impact of scientific management upon them. Around the 1900s, clerks in offices were regarded as having a relatively high social status and were considerably better paid than factory workers. They had regular contact with their employers and would frequently be entrusted with quite important business matters. Moreover it was usual for clerks to be responsible for the entire process of transactions from beginning to end. Now the kind of furniture they had in their offices was rather well suited to this way of working – the roll-top desk with its pigeonholes created for the clerk a little private world in which he was autonomous and in which he could organise his work much as he liked – storing his papers where and when he wished.

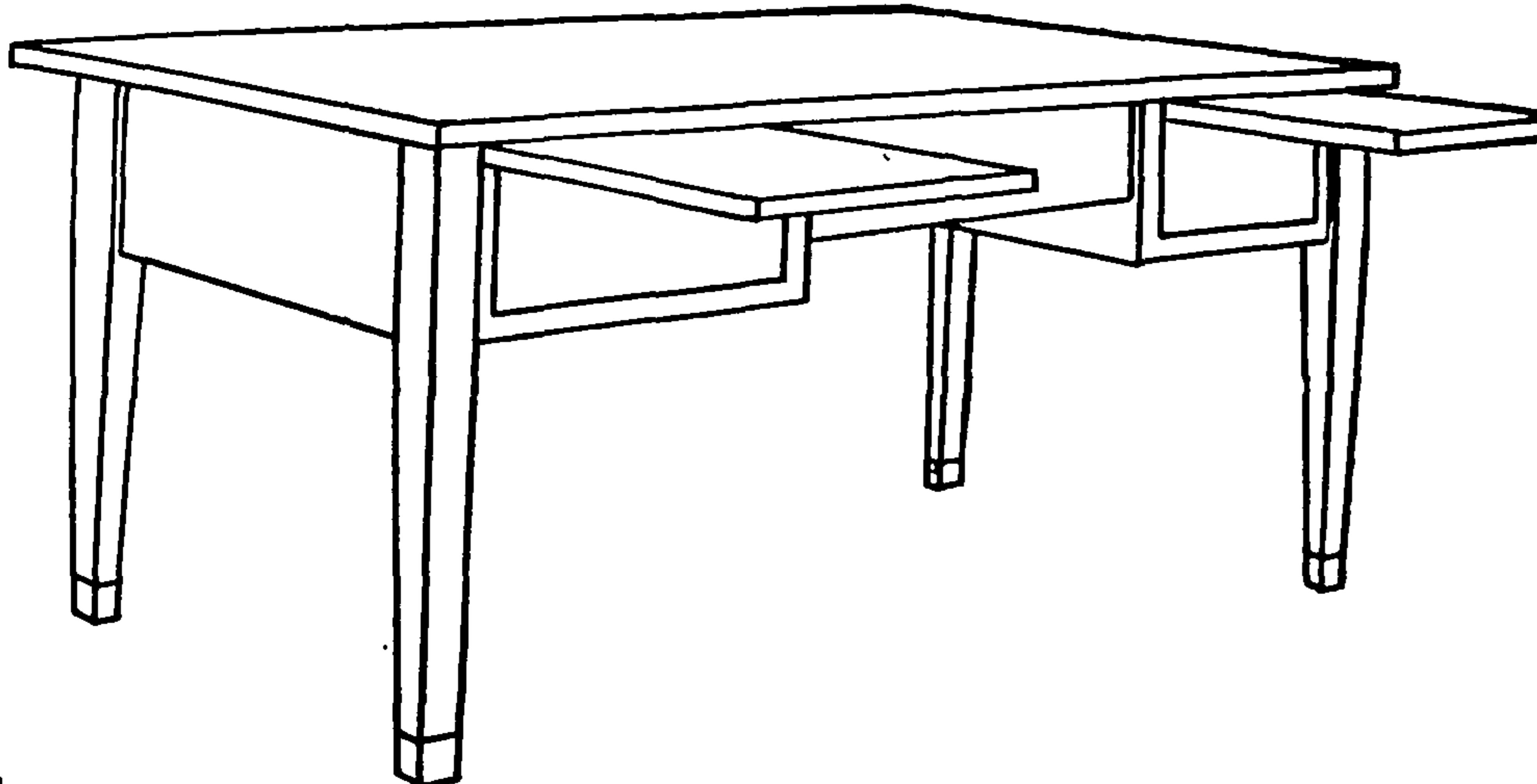
So that was the situation in the early 1900s. Around that time various fairly important changes began to occur in offices which caused the status of male clerks to decline. In particular we find women being introduced into offices, which undermined the status of male clerks. The second important change was the expansion generally of business activity and office work as a sector of the economy which made the clerical departments of offices very much larger than they had ever been before, and in these newly enlarged offices clerks found that they were a far more common breed and had less contact with their employers than previously. No longer were they placed in a position of trust as frequently as they had once been, now they found themselves being treated like any other worker. Furthermore, with these now much enlarged offices and the increasing competitiveness of commercial activity, employers started to look for ways of increasing the productivity of their office workers.

Opportunities for increasing productivity through new capital investment in offices was fairly limited so attention was given to the organisation of work as the way to greater profits in business and this, of course, is where Taylorism and scientific management came in. Scientific management seemed to offer an answer to office employers. Scientific management which originally had been developed as a system for factories was now applied in the 1900s and 1910s to offices.

Briefly the application ran as follows. First of all, just as in factories, we find management experts coming in to study the work process of the clerk and to identify all the separate activities of each person's job – and for each activity the one best way of doing it was then established. Many tasks which had previously been done by one person were now distributed amongst as many people as possible – each one doing one basic activity – so the clerk who might have opened the letter, read it and decided what to do about it, written out an order, opened a file, filed it away or done whatever was necessary – all those stages of work were now being distributed amongst a number of different people, each of whom would be taught the best way of doing the job.

Remarkable results were promised as a result of introducing this system. Offices which had hitherto only been able to handle 100 letters an hour, were shown to be able to handle 500 as a result of dividing up the tasks in the office and teaching each worker the one best way of doing it. Even letter opening had its one best way – the worker could be taught the optimum way of opening a letter and if he did it correctly would derive a bonus payment, through being able to open more than the norm.

The Taylorists then became rather carried away on the design of tools and above all on the design of desks. For scientific management the traditional office desk had many faults. The main criticism was that the clerk worked unsupervised at a desk which actually encouraged inefficiency – all that storage space into which things could disappear and never be seen again for months. That kind of desk was regarded by the Taylorists as a hazard to efficiency in the office, so they applied themselves to re-designing it. Take some desks re-designed for the Equitable Assurance Company in 1911. The centre drawer holds the employees tools and the side drawer his stationery, and as there is no room for placing current work in the drawers, 'any tendency to defer until tomorrow what can be done today is nipped in the bud'. So this is a desk to speed up clerical work. Of course with the application of Taylorism to the office, filing became a separate activity so the clerks no longer needed to have any space to do it. The



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desk simply became a flat surface to work on with some drawers to hold the necessary stationery and writing implements.

In the sort of office where furniture like this was introduced, clerks would be taught a desk system. This meant that each clerk would have to keep the necessary tools, writing implements, India rubber, pencil sharpener, stationery etc in an identical position in the desk; in order to make sure that each clerk was keeping the things in the one best place, the office manager would come round with a stop watch and time the clerk and see how quickly he or she could find a pencil sharpener or whatever it was, and if he failed to grasp the pencil sharpener in the norm set for finding it, then the desk system had to be re-learned. So in effect the office management had taken over not only

the outside but the inside of the desk – everything around the clerk had been exposed to the control of the manager. The flat top desk itself eased supervision in the office. The supervisor could see what the clerks were doing all the time – they could see whether they were making darts or doing noughts and crosses, so that the actual process of work could be supervised more easily. The drawback of course was that all these flat top desks in the office stimulated conversation – that while work became more visible, social contact between the clerks became greater and endangered the rates of work. In fact in some offices one found partitions being reintroduced deliberately to break up conversation between clerical workers, but that, in turn, interfered with the supervision so you can see the sort of problems they had got into.

4 The "modern efficiency desk" for the Equitable Assurance Co. 1911.  
5 Clerical filing desk from *Office Management*, 1927.

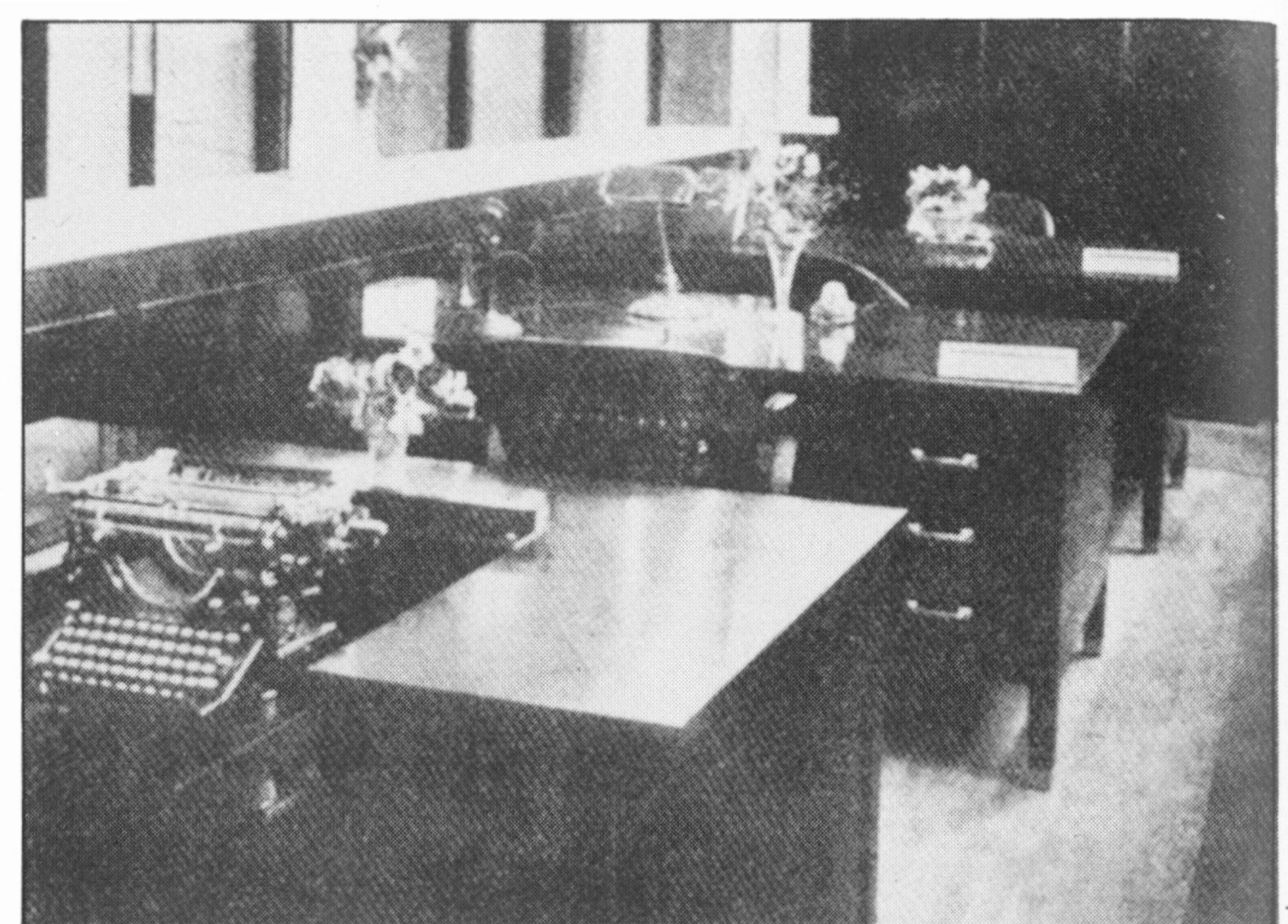


6 Edison Phonograph, 1890s.

What I have shown is the application of Taylorism to the desk. At the same time, the other principle behind scientific management – the division of labour – was also applied so that clerks who had once done many jobs found themselves doing only one, or a fraction at least of their previous work, and this encouraged the development of furniture of specialised types. For example the typing desk. Scientific managers were very keen on typing because it was something you could measure very easily – you could measure the rates at which typists worked and set norms for it very effectively. There were clerks who did nothing else but file things away – hence we find specialised desks being produced for the task of filing. “One clerk with a modern tub desk can handle as many cards as with the card drawer cabinet; thousands of waste motions made by pulling out and putting in the drawers of the cabinets are eliminated. Many managers have a horror of discarding equipment but the saving usually effected by installing modern equipment often justifies the initial cost, not to mention the satisfaction of better work offering benefits to both the employer and also to the worker.” Another example is the Larkin Building in Buffalo designed by Frank Lloyd Wright. The Larkin company sold soap by mail order and the Larkin Building was designed as a clerical office for handling the mail order side of the business. I don’t have the evidence for this, but it appears to me that the offices were designed on Taylorised lines with storage systems and desks with specially designed little racks for forms and invoices, and curious seats attached to the desk on a swivel.

One other thing that the Taylorists did (or tried to do) was to get rid of the office messenger. All this kind of clerical work depended upon some lad bringing bits of paper to the clerks and then taking away the bits of paper when they had written on them. Now if the clerk or messenger happened to waste time talking to somebody or going and chatting in the messenger’s office, then the whole rate of work in the office could be interrupted and broken down. The messenger therefore was a rather crucial figure in the success of the application of Taylorism. The obvious solution to this was to apply the Ford system and replace the office messenger with a mechanical conveyor.

In redesigning the tools of the office, not only were these tools made specific to the newly divided tasks of office work as a way of increasing efficiency, but they were also designed to convey the idea of efficiency. Let me explain this. Late 19th century office furniture such as dictaphones, although purpose designed for the office, were also decorative objects. When the Taylorists arrived in the office they weren’t very happy



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about this because they wanted their new scientific management offices to be seen as being efficient, and in order to do this, they adopted the imagery of factory equipment. Factories were recognised as being places of great efficiency, therefore if the imagery of the factory could be introduced into the office then, the scientific managers argued, offices would be recognisably efficient – recognisable both to visitors and employees.

This point about the imagery of efficiency I think becomes particularly apparent when we compare what happened to office design and furnishing in the 1950s and 1960s. There were office designers by that time who were extremely concerned to discard any reference to factories in the design of offices, and I think the underlying reason for this was that factory work had become rather better paid in many cases than office work and office employers did not want to have to bid up office wages in order to keep clerical workers from moving into factories. So they solved that particular competitive differential by changing the environment of offices and making them into places which were wholly unlike factories – places which they could present as being very much nicer to work in and hence keep their clerical workers.

To go back to the designs of the '20s, Le Corbusier illustrated in his *L'Esprit Nouveau* articles furniture from the City National Bank of Tuscaloosa, USA, pieces of furniture which I think we would now recognise as being saturated with Taylorism. Not only are these desks which Le Corbusier identified as modern, saturated with Taylorism, not only do they make use of the new visual language of efficiency, but, in particular, and this is the point I would like to stress, these new designs were part of a process of change in the social and economic relations at work. Clerks who had once been craft workers in the sense that they had been responsible for the direction and organisation of their own work, had now become process workers with responsibility only for one stage of the work. While these new designs of desk were not a cause of the de-skilling of clerical work, they were certainly a part of the process and one of the most enduring symbols of it.

Having described the course of this development in America, I would now like to come back to Europe and discuss the way in which all of these objects were received and understood by Europeans in the 1920s. In Le Corbusier's case, as I have said before, he seized upon these as being symbols of The Modern. He described them as standard types, as tools which had evolved out of universal human functions – their form based on the shared physical characteristics of human

beings. He presented them as rational responses to objective human needs and, as such, saw them as having a timeless perfection. He presented the designs of all these various pieces of equipment as having a rational rigour common to all of them – which gave them a style which was significantly free from tradition and expressive of the modern spirit. What is rather significant is that nowhere in his interpretation and accounts of these objects does he mention Taylorism. Instead he perceives them as being timeless, universal and value-free objects with a universal significance. Now this is not because Le Corbusier was ignorant of Taylorism. On the contrary like most European intellectuals and politicians of the 1920s Le Corbusier was well aware of Taylorism and Fordism.

The Taylor system had been adopted certainly in German industries well before the First World War. During the course of the war, Taylor's ideas had been widely adopted in the war industries of all European countries and dramatic results, with enormously increased output from these industries, had convinced many people of the merits of the Taylor system. At the same time Taylor's writings, his articles and his book were translated into both French and German. So by the early 1920s only a backwoodsman would not have heard of Taylorism.

In the 1920s, the prospects Taylorism offered were much enlarged. It came to be seen not simply as a means of re-organising industry but also of changing the entire social order. The point was because Taylorism seemed to offer increased wealth all round to both capital and labour at the expense of neither. It was thought therefore that Taylorism could resolve the relationships between capital and labour without involving any redistribution of power or property or any social upheaval. In effect the Taylor system was well suited to the politics of social democracy – you could have change without having to pay for it. One can't underestimate the enthusiasm and hope with which Taylorism was taken up in the 1920s especially in Germany where there was a national movement for rationalisation which was in part inspired by Taylor's ideas.

Architects in European countries were as keen on the benefits of Taylorism as anyone and indeed I would suggest one could even read Le Corbusier's *Towards a New Architecture* as a Taylorist inspired text: the theme of the book is, as Le Corbusier suggests, that changes in building design and production will bring about universal social benefits and by that means, social revolution can be avoided.

But to go back to the office desks and Le Corbusier's

view of them, Le Corbusier knew about Taylorism and he appreciated its effects – though like many of his contemporaries, he was fairly unrealistic about them. There is one place for example where he acknowledges that Taylorism will deprive the craftsman of the individual satisfaction of making the whole product himself, but he goes on to argue that because the end product made by a Taylorised factory would be so much better than any individual could make on their own, that the craftsman would be able to enjoy a collective pride in his work that he would not have had before. This seems a fairly unrealistic argument that would not I think go down well at Fords if one tried to suggest it there. But at any rate, it does suggest that Le Corbusier was aware of the alienating effects of scientific management even if he was a bit optimistic about the end results.

On the other hand, when he discusses the desks and the office equipment he takes no account whatsoever of the part their design played in the social relations of work. Instead his appreciation of them was wholly idealistic – that is to say, he presents them as signs of a generalised modern spirit. This modern spirit is not something that can be said to have existed in any objective way – the modern spirit was a creation of the intellect, not something that could be found in the physical world and that is what I mean when I say it is idealistic.

The only respect in which Le Corbusier did see the development of these designs as a social process was as part of the process of evolution towards the perfection of tools. This is an idea which Le Corbusier was rather fond of and applied to all sorts of objects, arguing that there was a process of development which caused artefacts to evolve towards their perfect state. As a theory this, again, had idealistic overtones for it suggested the presence of some higher metaphysical being guiding desk design towards some particular destiny.

Now there is no particular reason for us to expect Le Corbusier's interpretation of the desks to be historically accurate – that, after all, was not what he was interested in. He was much more concerned with the promotion of a particular design aesthetic. However, I do think that Le Corbusier's interpretation of American office furniture is worth considering because it is so thoroughly symptomatic of the way that the whole subject of design has been treated by intellectuals in this century.

Perhaps I can now start to draw together some of the ideas behind what I am saying. I am trying to make clear, from the account I have given of the development of American office furniture, that one of the things that

design does is to mediate social relations. I don't think I would be going too far in saying that one of the most basic features of design, of buildings as well as washing machines, is that it makes concrete the relationships between different groups of people whether they be maker and consumer, employer and employee, man and woman, old age and youth, different races and so on. It is this process of mediating relationships between different groups of people that I mean when I describe design as a social process. The negotiation of these relationships strikes me as being a fundamental part both of the activity of design and the understanding of its finished product. Now by and large this aspect of design is not something that has received a great deal of discussion. Insofar as the social nature of design has been discussed at all it has been mainly in the way that Le Corbusier did it where designed objects get treated as the product of universalised idealist concepts like the Modern Spirit or, if you like, Post-Modern Spirit or perhaps just Spirit of the Age. I do not consider these to be useful concepts, lacking as they do, any material existence.

When I discussed Taylorised office furniture, I went out of my way to stress that the development of the designs was the result of specific changes in the organisation of work and of a re-adjustment in the relations between employers and clerical workers. The new desks were not just some generalised modern product – they were instruments of change in clerical work and also symbols of that change.

One criticism that some of the reviewers of my book, *Objects of Desire*, have made is that what I am saying about design is totally obvious, to which I can only agree. I think that it is. Yet if it is so obvious that design is about social relations, it is not a view that has made very much headway in present day discussions about design where idealist concepts like Modernity and Spirit of the Age and so on still seem to loom very large.

Indeed I think that the continued use of such idealist concepts is part of the reason why design has had such a poor showing in intellectual debate. Films, television, literature – even sometimes architecture – get taken seriously in discussions about the production and interpretation of culture, but poor old design limps a very long way behind, handicapped by this terrible disability of only ever getting considered either in purely aesthetic terms or in terms of these idealist concepts. Until these idealist concepts are dismissed from the debate about design and its social nature is recognised, I see very little chance of design getting the serious attention which I believe it deserves as a part of modern culture.