

THE  
BIRTH  
OF  
INDUSTRIAL  
DESIGN



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FOURTH YEAR INDUSTRIAL DESIGN

1984



Researching into the origins of my chosen profession, has been both a fascinating and satisfying task. Rather akin to someone who has traced back through his ancestry, in search of an identity. What I have found, has strengthened by belief, that I have chosen the right career. I felt an empathy with those first pioneers, as they struggled to establish a profession in the face of conservative manufacturers and engineers, protective of their own profession.

In acknowledgement, I would like to mention those whose help I have received during the course of researching and writing this thesis.

The Library Staff of the National College of Art and Design, and especially Mr. William Garner, whose help and guidance has been invaluable throughout.



# INTRODUCTION



This thesis deals with the complex set of trends, events and individuals, which gave birth to the Industrial Design profession in America. Beginning in the early 1900's with the rise of the consumer society, through the twenties, to those heady days just before the Great Depression. By this time the 'Big Four', Raymond Loewy, Norman Bel Geddes, Henry Dreyfuss and Walter Dorwin Teague, had arrived on the scene. Their subsequent efforts helped establish Industrial Design as a worldwide profession. Raymond Loewy said in his book, 'RAYMOND LOEWY INDUSTRIAL DESIGN'. "Those who take for granted today's way of life will perhaps understand the colossal efforts that were made to orient a nation of one hundred and fifty million people, (at the time) in the direction of everyday aesthetics of our modern physical world - the later look of the American way of life, which has been everywhere copied. Since there was no concept of Industrial Design, I think historical research will indicate that what was achieved, was the work of a handful of pioneers."

The formation of a consumer society took place in a relatively short period of time. Its growth was accelerated by an ever increasingly sophisticated advertising campaign. It was the advertising agencies who recognised industry's colossal capacity for production and the dangers of not having an outlet for it. However, as the influence of advertising grew so did the public's awareness of style and fashion. This in turn led to the need for restyling of products to make them more competitive. It was Henry Ford and his Model T, which provided the best example of this. As the need for restyling became more poignant, the demand for a new 'breed' of designer became apparent. What was needed, was a blend of the businessman, engineer and artist. Many drifted into design as an extension of a previous profession, but only a very few developed organisations large enough to command the patronage of big business.



# ADVERTISING AND CONSUMERISM



The Industrial Design profession evolved from a great flux of trends and influences, both social and economic, and of course certain momentous individuals. These in turn were intertwined with one particular phenomenon, that being the transformation of America into a consumer society. Typical of the fantastic growth of this phenomenon were the sales of automobiles. In 1910 there was one car for every one hundred and eighty four persons, by 1930 there was one car for every five. It was the automobile along with Henry T. Ford and his assembly line which helped to promote the advantages of high volume production. There were also technical spin-offs to other types of industry, such as synthetic finishes, and the comparatively cheap sheet metal, which helped to give a major boost to the home appliance industry.



This advertisement for the 1924 Standard Ford Coupe, suggested that the business woman of the day had not only her own office and telephone, but her own wheels at her disposal. American Design Ethic.

From 1819 to 1929, Industrial production doubled, while purchasing power rose by nearly a fifth. The glorious circle of production and consumption was aided by the widespread introduction and acceptance of credit buying. Here again this was something which was initiated by the automobile

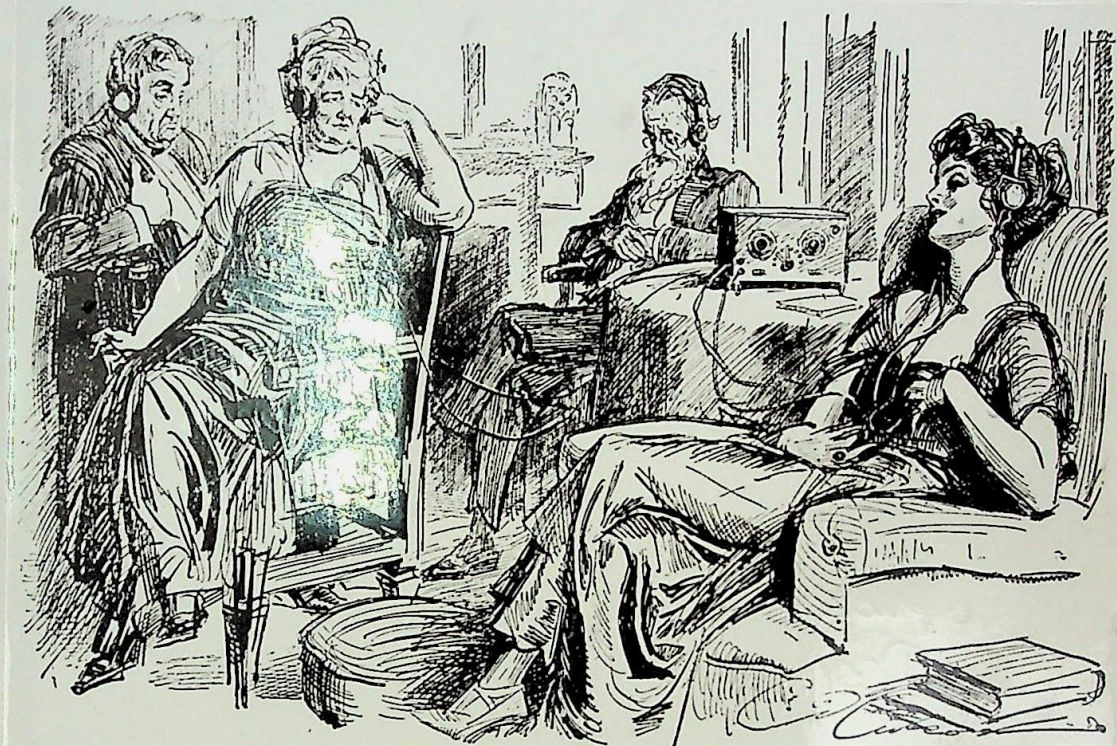


industry. In 1919 General Motors set up their own finance corporation. The widespread introduction of credit led to a greater material prosperity, especially for those who hitherto could not afford the luxury of paying one lump sum. An interesting sidenote to this was that in a social study, conducted at the time by Robert Lynd, he concluded that, "... immediate gratification was eroding the Protestant ethic of hard work, thrift and hardship."

The thirst for material possession seemed to grow and grow, as did the flow of manufactured products. With technical advances in materials and production, and the widespread adoption of the assembly line, goods which once were only within the reach of the wealthy, were made accessible to those on lower incomes. This meant the opening up of vast untapped markets, as is amply illustrated by the fact that washing machine production doubled between 1919 and 1920. Indeed, by 1931 two thirds of the city dwelling families possessed a washing-machine. Goods which seemed to improve and quicken the tempo of life were consumed in ever growing quantities. Goods such as sandwich grills, toasters, canned foods, commercial bakery products, factory rolled cigarettes, safety razors and fountain pens, all increased their sales dramatically in the twenties. The theme of consumption spread throughout the United States, due to the fact that the cities and rural areas were, with the aid of the automobile (once more), not as isolated as they had been. In the latter half of the 19th century and the early part of the 20th century, rural dwellers purchased their consumer goods by mail order catalogue. The mail order catalogues along with the railways, which carried the goods, were an important part in the American marketing system, and continued to remain so, for some time. There was a growing two-way traffic between city and the country, with urban dwellers going out into the country for a Sunday drive and



rural dwellers coming to the city on shopping trips. To them the range of goods on display, in the city, must have made those in stores at home, look old fashioned and shoddy. Soon the homes of many rural dwellers were filled with all the products and appliances that had initially been associated with urban living.



WHAT ARE THE WILD WIRES SAYING?

Although Herbert Hoover, Secretary of Commerce in 1922, could not believe that the American public would not put up with 'advertising chatter' on the wireless, the public was enraptured with radio and heeded its appeals to buy in return for the free programmes that it offered.

C.D. GIBSON, drawing published in Life, 1922.

American Design Ethic.

The cinema, radio and press all played an ever increasing part in stimulating consumption. By 1930 there were twenty



thousand cinemas and ten million homes which had a radio. Through these mediums, peoples' attitudes and values were, to all intents and purposes, conditioned along certain lines. A government report of the time went so far as to say, "... the American public was steered by 'mass impression' through an all pervasive system of communication from which it is difficult to escape." Advertising became a multi-million dollar business, whose job it was to 'oil the wheels' of industry, by persuading the public to buy. As an example of the growth in advertising, magazine advertising alone rose from \$25 million in 1915 to \$100 million in 1920. This dramatic rise was reflective of the revolutionary change which had taken place in the business of advertising.



PENCIL SHARPENER - 1934  
Raymond Loewy

New methods and approaches were being devised, on the basis of sound psychological theories. As far back as 1905 Ernest Elmo Calkins had put forward the idea that an advertisement should not just state the merits of particular product as was usually done, but rather should act as a subtle force arousing a particular desire, and if that desire did not exist, to create or instill it. Albert T. Poffenberger, a lecturer on advertising psychology at Columbia School of Business, put forward the idea that advertisements should manipulate human desires at their most basic level. His theory was, that the advertisement should 'stimulate a reflex response', by awakening a desire - such as sex, success,



domination or conformity - that could be relieved through buying a given product. Calkins defended his profession from criticism by putting forward the moralistic notion that advertising was a force for good, since it brought about 'a rapid interchange of commodities and money and brings within easy access and at easy prices, the vast number of articles.....which make life less difficult, smoother, more restful, more efficient and more worthwhile'.

Advertising emphasized modernity and promoted change and novelty, purely for its own sake. Advertising executives used the art trends of the time as a promotional ploy for even the drabest of products. Cars appeared in impressionist landscapes, while clothes, cosmetics and jewellery were promoted with the aid of cubist illustrations. Advertising helped create and continued to reinforce a feeling of a rapidly changing society and mode of living. According to advertising executive Robert R. Updegraff, "Those entrepreneurs who suffered failure amidst prosperity, did so because they had ignored America's complete change in tempo - including such developments as buses, tabloids, air mail, refrigeration, pale ginger ale, traffic lights, public discussion of personal hygiene, four wheel brakes, skyscrapers, co-operative apartments, vending machines, wirephotos, oil heaters and the celerity with which the nation accepted halitosis and four out of five of us embraced the fear of pyorrhoea." Updegraff further stated that business men could not afford to ignore this phenomenon and wait for their products to become 'absolote', because of the ever quickening product ageing process. If the businessmen wanted to succeed or even survive, they must emulate a "new crop of business geniuses who had caught the new tempo and jumped in at the right time to capitalize on the switch to colour, the acceptance of radio, the short skirt, the lure of the lurid in literature, the breaking down of prejudice



against Sunday amusements and the public's discovery that it could have its 1940 luxuries today, on the installment plan." This apparently confident picture of the future on the part of Updegraff, was balanced on the other hand by his concern for businessmen who were failing in their quest for the 'consumers dollar'. A realisation of the very finely balanced relationship between consumption and production began to dawn on the minds of manufacturers and advertising executives alike. However, sophisticated, advertising proved to be no longer any use on its own. Some manufacturers actually began to restyle their products as opposed to applying a simple veneer of colour. The restyled products were made even more distinctive, more modern and above all, more competitive. Restyling soon brought a new profession into being - Industrial Design.



# RESTYLING



It was the motor industry which provided firstly, the best example of the need for restyling, and secondly, the one which took place on the greatest scale. The first hint towards a need for change in the automobile industry came in 1915 when Earnest Elmo Calkins stated that a car should be sold like clothing, i.e. on the basis of its style, in other words the car should be an advertisement for itself. In 1916 while still rather an undistinguished body engineer, William B. Stout reflected this notion by stating that, "Art is the science of eye appeal." (20th Century Limited - J.L. Meilke). Stout argued that, "If one builds into a commercial product an appeal to the eye, the first point of salesmanship is established, i.e. impression."



THE FORDOR SEDAN OF 1927

The last of the Model T Fords

American Design Ethic

The stage was fast approaching where the public no longer regarded the car simply as a means of transportation, but as symbolic of individual taste and style. Stout said that the,

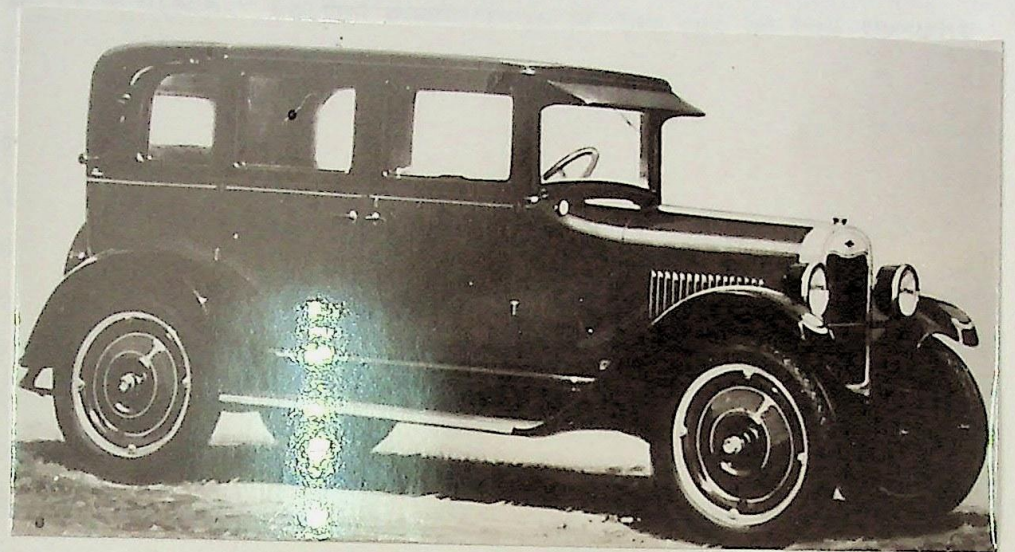


'car of the future' would use art lines to suggest the action of its mechanism. He claimed that aesthetic principles would have to be applied with the same importance as that attached to engineering principles. In doing this he claimed designs would be forthcoming which would have an appeal, directly derived from images of speed, power, comfort, luxury, safety and economy. Stout envisaged the opening up of wonderful opportunities for artists who would style the cars of the future. Despite Stout's early optimism it was 1927 before any significant numbers of art-trained designers entered the automobile industry. As long as the very functional and boxy Model T remained the leading production car, style remained limited to luxury cars. Ironically, it was the Model T which eventually, indirectly brought about change. Owing to the inexpensiveness of the Model T, the market gradually became saturated as the twenties wore on. The year of peak increase was 1923 in which 24% more cars were registered than in 1922. By 1927 the annual increase had dropped to 5%, while production actually fell by a fifth, and replacement purchases began to exceed first time purchases. Used car lots overflowed with Model T's competing in price with new ones, while replacement customers often chose a higher priced competitor for features not included on the Model T.

Ford's main competitor, General Motors, had turned to style to try and gain an edge on Ford, as well as providing features such as, longer wheelbase, six cylinder engine, and standard transmission with hand shifting. General Motors' president, Alfred P. Sloan Junior, encouraged by the success of the stylish but inexpensive 1923 Chevrolet, began experimenting with style throughout the firm's line. The introduction of synthetic lacquers from Du Pont in 1924 made colour choice important to the customer. H. Ledyard Towle, a General Motors colour consultant proclaimed,



that he could make a 'stubby' car look lower and longer through studied use of colour. Eventually it was realised that this could be best done by actually redesigning the body. In 1926 Sloan hired Harley J. Earl away from a Los Angeles custom body shop.



GENERAL MOTORS CHEVROLET OF 1923

Turned the tables on Ford's dominance of the low cost market, proving that form and appearance had power in the marketplace. American Design Ethic.

After arriving in Detroit as a consultant to the Cadillac division, Earl created the 1927 La Salle with a new concept in mind, that of unifying the various parts of the car from the stand point of appearance, of rounding off sharp corners and of lowering the silhouette. The resultant design won Earl an appointment as Director of a new Art and Colour Section, with responsibility for restyling the whole General Motors line. While General Motors sales increased, Fords began to drop. When General Motors introduced colour



in 1924, Ford's followed suit. However, even this did not rescue Ford's failing position in the market place, as the public insisted more and more, that a car just had to look stylish. In 1927 after fifteen million Model T's had come off the assembly line, Henry Ford, the man who had once supposedly said, "They can have any colour they want so long as it's black," halted production of the car he had thought would last forever.

After an eighteen million dollar retooling programme, Ford launched the first Model A on October 21st, 1927. With the new Model A, Ford met his challengers headon, while still maintaining an edge pricing. The new Model A's longer wheel-base and lower road clearance combined with a choice of seven body styles and eight colours, brought Ford back into line with their more fashionable competitors. Henry Ford had to go back on an earlier comment that, "He would not give five cents for all the art the world has produced." Instead he stated that, "The new Ford has exceptional beauty of line and colour, because beauty of line and colour has come to be considered, and I think rightly a necessity in a motor car today." Henry Ford's experience was described in 1929 by Ralph Abercrombie in a paper entitled 'The Renaissance of Art in American Business', as 'the most expensive art lesson in history', a lesson other manufacturers could not afford to ignore. The changes which took place in the first thirty years of the 20th century were summed up very eloquently by Calkins in 1927, when he said, "We passed from the hand to the machine, we enjoyed our era of the triumph of the machine, we acquired wealth and with wealth, education, travel, sophistication, a sense of beauty, and then we began to miss something in our cheap but ugly products. Efficiency was not enough. The machine did not satisfy the soul, man could not live by bread alone, and thus



it came about that beauty, or what one conceived as beauty,  
became a factor in the production and marketing of goods."



SEARCHING  
FOR  
A  
STYLE



The advent of restyling was the final step towards the birth of Industrial Design. It brought with it the phenomenon of annual model changes, as well as creating an inherent design philosophy, i.e. designing for obsolescence; a design philosophy which was to influence all future designers. Since then, almost every product designed has made at least one other obsolete, and designed in the knowledge that one day it too, will be made obsolete.

Before going on to look at the individuals who made up the initial membership of the profession, it is important to note the events and personalities which influenced the new profession. The first important point to note was the fact that 'designers' had up until the early twenties been solely involved in the crafts related areas, such as textiles, jewellery, ceramics, furniture, wallpaper and commercial illustration. Utilitarian mass produced products were almost always designed by engineers, while designers produced custom work for wealthy patrons.

The first step towards up-grading the level of mass produced goods was taken by John Cotton Dana, Newark's city museum director. On being appointed in 1909, Dana decided not to form a traditional art museum, instead, he exhibited manufacturing processes and local industrial products. Such things as cases of minerals were placed on display. Dana even went so far as to put on display a room full of bath tubs. However, Dana's efforts and those who followed his lead, simply served to underline the low standard to which mass-produced goods were being designed. Richard F. Bach, who in 1918 began a similar programme to Dana's at the New York Metropolitan, professed that there were no good designs available to Americans of modest incomes. At the mercy of artistically untrained manufacturers, they suffered 'the curse of the average'. The majority of the mass-produced goods were usually bastardisations of historical styles.



In the early twenties, a general feeling arose among designers and architects, that there was a need for a contemporary style, reflective of the age. The 'Architectural Record' of 1925 commented, "... the time has arrived when skilful imitations of the past begin to pall." In that same year the Paris Exposition provided a glimpse of a radically new style. Critic Helen Appleton Read described the pavilions of the Exposition as being like a, "cubist dream city." The architects of the exhibition, according to two faculty members of Indiana University had discarded "the entwining algae, gigantic vermicelli and contorted medusas of Art Nouveau for the inorganic figures of geometry and geology - bodies bound by plane surfaces," which to them seemed an attempt to harmonise "art and mechanism."



INTERIOR OF THE PAVILION OF ELEGANCE  
PARIS. Twentieth Century Limited

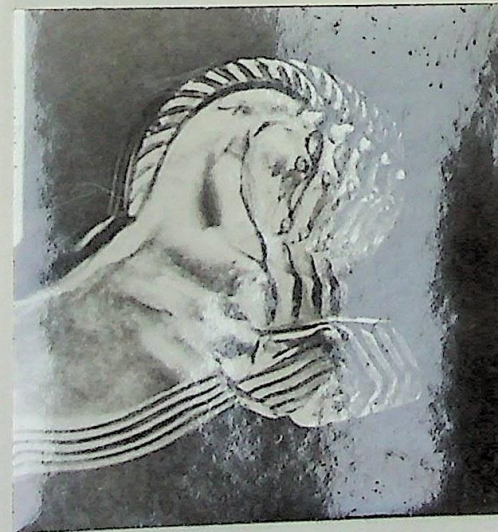
However, the reality of the Exposition was expressive



of a lush decadence, hardly the basis on which to build a thoroughly modern style, capable of unifying all material artifacts from mass produced consumer products to architecture. Typical of the exposition was the Pavilion of Elegance. Jeffrey L. Meilke wrote in his book, 'Twentieth Century Limited', that its rooms were furnished with a cluttered exoticism, contrasting wall panels of rare polished woods, zebra skin rugs, sculptures of other worldly plants and wooden mannequins with abstracted Greek faces and flowing gowns - all created a hot-house effect, hardly expressive of a stripped down machine age.

Although none of the objects on show at the exhibition were mass-produced, all of them being one-off items for wealthy patrons, some of them reflected in texture or motif the machine and its products.

The work of Edgar Brandt and Rene Lalique stood out in particular. Brandt's ironwork shaped by hand, gave the appearance of unmatural precision, while Rene Lalique's glassware was so flawless as to suggest, 'machined production.' One of his designs for a car radiator grill, was a 'relief of five leaping horses.' So clinically repeated are each of the figures that what is being suggested is the idea of mass and unerring production.

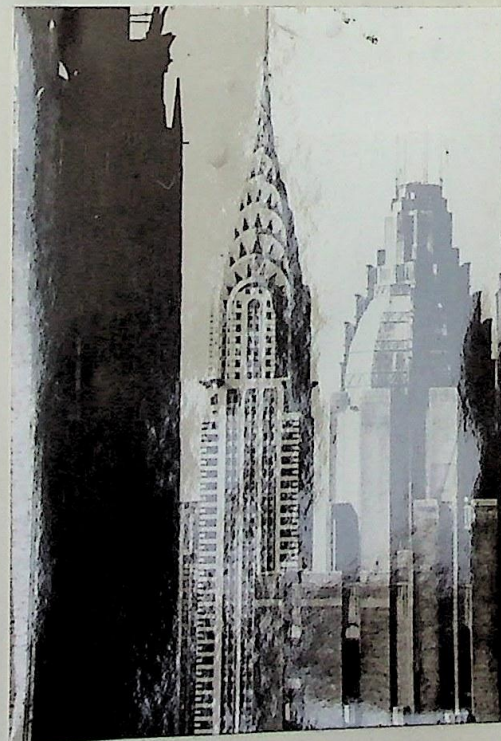


RENE LALIQUE AUTOMOBILE  
RADIATOR ORNAMENT  
Twentieth Century Limited



The influence of the exposition on American design, was limited mainly to unique items. Some were produced in limited quantities, however, these could only be afforded by the wealthiest of consumers and were produced to the level that hand crafted products would allow.

The American Post Exposition rage for the modernistic, helped establish an elite immigrant craft movement. Kon Weber from Berlin concentrated on furniture and commercial interiors, in Los Angeles. Joseph Urban of Vienna at first devoted himself to theatre interiors. Winold Reiss who came from Karlsruhe in Germany, served as an ensemblier of large public interiors, and from Switzerland came William Lescaze, architect and interior designer. Although they called themselves Industrial Designers, they too, like native American architects and decorative artists, primarily produced custom-made objects and unique ensembles. According to John L. Meilke, "by developing modernism in America, these immigrants helped provide a design vocabulary expressive of the tempo of America's new machine age that could be applied by others to consumer products." Namely the new breed of Industrial (mass-production) Designer.

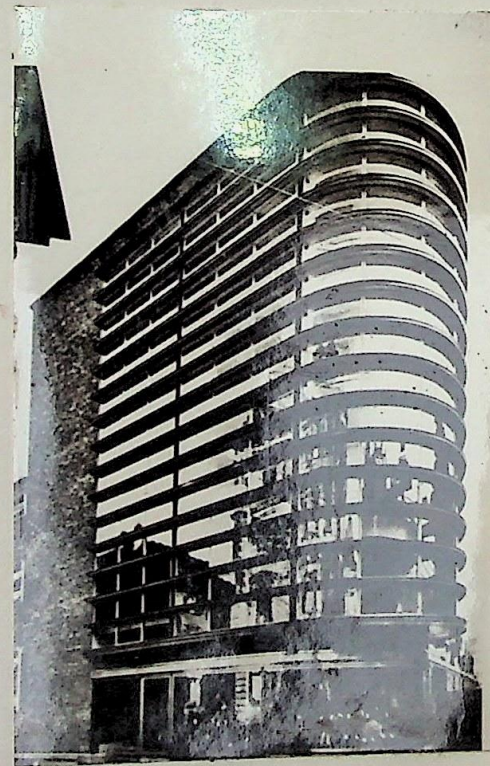


WILLIAM VAN ALLEN CHRYSLER  
BUILDING, NEW YORK, 1930  
which represented the  
culmination of the Modernistic  
style in Architecture.  
Twentieth Century Limited



The European influence on the new design direction was furthered through the likes of William Le Corbusier and Eric Mendelsohn, both of whom were leading architects of the time. Le Corbusier's famous seminar, 'Towards a new Architecture', was based upon American industrial architecture. Le Corbusier claimed that the "American engineers overwhelm with their calculations, our expiring architecture."

According to Le Corbusier people were living in a malaise, because their environment which was usually hundreds of years old, did not correspond to modern life. Le Corbusier put forward the idea that what was needed was a coherent architectural/design style, reflecting the 'engineers aesthetic'. He viewed society as a machine, "...profoundly out of gear." This would provide a feeling of calm order and neatness.



ERIC MENDELSON - SCHOCKEN  
DEPARTMENT STORE, 1926-1927  
Twentieth Century Limited

Le Corbusier wanted a progression from the organic to the inorganic, from the natural to the artificial, from the



natural to the artificial, from the random uncertainties of life to the reliability of the perfect machine. Eventually a new environment, patterned on the smooth functioning of the machine, would produce a race in the image of the architect/designer, 'intelligent, cold and calm,' and presumably unquestioning as its members fulfilled their functions in a vast social machine.

However, despite a very functionalist reputation, Le Corbusier helped steer American designers towards an expressionist machine aesthetic, according to which consumer products, transportation machines, buildings and interiors would reflect attributes of the machine - speed power precision, machined surfaces and impersonality.

When American Industrial Designers later began to 'stream-line' their designs, designs which ranged from pencil sharpeners to trains. They were developing a theme which had been touched on by Le Corbusier with his famous Weissenhof suburb of 1927, which also gave birth to the International Style. It is the similarity of these buildings to sketches done by Le Corbusier of Ocean liners, which makes him one of the first architects or designers to express the notion of transportation machines in stationary objects.

The influence of Eric Mendelsohn was similar to that of Le Corbusier, except that Mendelsohn's interpretation of the machine aesthetic was altogether much softer and more human than Le Corbusier's antiseptic 'aesthetic puritanism'. (20th Century Limited).

Mendelsohn first came to light in America, in 1929, at the Art Center's Contempora Exposition of Art in Industry, where photographs and models of his completed works, along with some of his visionary sketches were put on display. Typical of Mendelsohn's work was the Schocken department store, in Stuttgart of 1926 - 1927. This building along with Mendelsohn's sketch for an optical factory done during the first World War,



illustrates his use of sweeping horizontal curves. He used these to help express the essence of the transportation machine - speed rather than explicitly reproducing aeroplane and automobile forms as did those American architects and industrial designers who followed him in the thirties.



ERIC MENDELSON - 1917  
SKETCH FOR AN OPTICAL FACTORY  
Twentieth Century Limited

So, now the new Industrial Design profession along with the other design professions had a common focus for their appeal to the public, a coherent machine style provided a sense of security amidst change, as well as feeling that things were under control.

However, in moving from architecture to product design, the machine aesthetic assumed new dimensions. Industrial design as opposed to architecture concerned itself with mass production. Designers could not escape the fact that they created for the machine. For Industrial designers the machine aesthetic involved a concern for the machine as a production tool, as well as a source of inspiration.



# THE NEW DESIGNERS



Of the many individuals who drifted into the new profession, only four eventually developed methods efficient enough, and staffs large enough to accept commission from major corporations. However, at the very beginning many individuals from various backgrounds dabbled in the profession at various levels and with varying degrees of success.

One of the first approaches to Industrial design was established by manufacturers who acquired the name of a designer, through bodies such as, the Art Center, the Metropolitan Museum or through one of the advertising agencies. These agencies were pushing strongly the advantages and benefits of employing Industrial designers.

The typical request from these manufacturers was for the Industrial designer to supply them with superficial sketches, which would guide the production engineers in beautyifying a product. Such sketches often provoked annoyance from the manufacturers because the Industrial designer knew nothing of the production.

The great vision of an overall harmony of the environment as was at first seen in its most severe terms, by Le Corbusier, was in the late twenties and early thirties unconsciously making itself known to the public. Around them objects and articles of everyday use began to harmonise.



JOSEPH SINEL

PACKAGING - 1930

Twentieth Century Limited



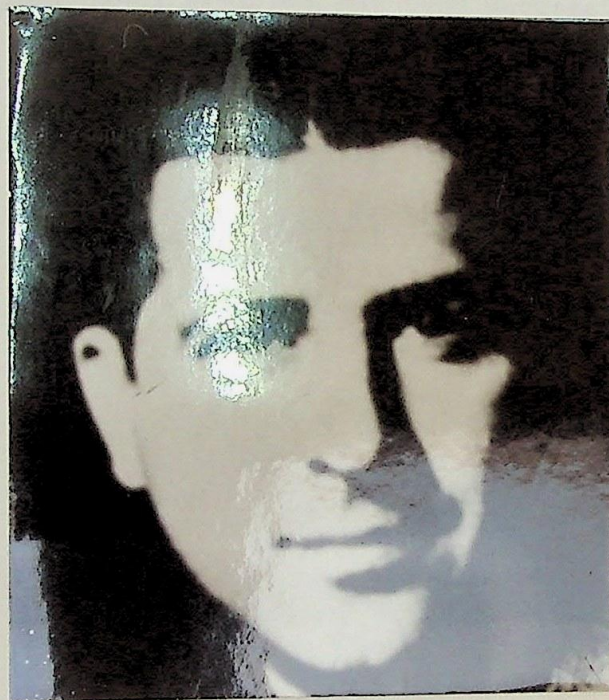
Radio cabinets were styled like skyscrapers and electric fans made to suggest the notion of an aeroplane motor. According to John L. Meilke, "Without this web of cross references provided by a common style, industrial design would not have demonstrated its importance to business men."

In the beginning when craftsmen or artists transferred to the new Industrial design profession, they felt the need to justify their apparent attraction to 'Mammon's Camp'. Most professed a desire to help carry through the great vision of harmony in design. However, the ideas of modernistic design and business soon began to overlap and what was a trickle of artists and craftsmen, soon became a great body in search of employment processes. Indeed it was often the case that designers were completely impractical. It was only those designers who refused to provide superficial sketches, and insisted upon familiarising themselves with the manufacturers production facilities, who eventually emerged as heads of large, successful design offices. The expressed concern for function as well as appearance by those ultimately successful designer also market them out as being more professional and practical than the majority.

However, it was the initial importance attached to appearance which helped establish the profession. Some large firms employed designers familiar with the modernistic style. For example, in 1928 Ray Patten was hired by General Electric to supervise in-house design of domestic appliances. Donald R. Dohner who had taught design at Carnegie Institute of Technology, took up the same position at Westinghouse in 1930. George Sakier who had studied painting in Paris and worked as a commercial illustrator for Harper's Bazaar and interior decorator, became director of a Bureau of Design in the American Radiator and Standard Corporation.



Many designers, who preferred to work alone, rather than with a back-up staff of draughtsmen and engineers, were never able take on large commissions and tended to be restricted to such things as labels and packages with the occasional small appliance. Typical of this type of designer was John Vassos, a Greek who came to America in 1919 and studied at the Art Student's League. His most noted piece of work was a recyclable cosmetic bottle for the Armand Company which became popular as a hip flask during prohibition.



JOHN VASSOS  
American Design Ethic

Joseph Sinel was another such example, he was a New Zealander, who had gained a knowledge of typography and calligraphy in Britain. When he came to America he worked for a time in advertising before going on to a career specialising in packaging. These designers and the others who found themselves specialising in package design helped to promote the idea of product re-design itself. Since a

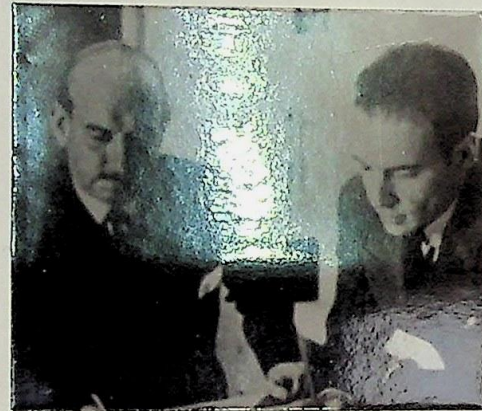


new box or label required no retooling, executives readily accepted advertising agencies' demands for package redesign, but refused to actually redesign the product itself. However, the packagers success in boosting sales speeded manufacturers' acceptance of product redesign itself.

The four designers who did emerge in the thirties as acknowledged leaders and who regularly won commissions from large corporations, had no ties to the traditional decorative crafts. Walter Dorwin Teague had worked for more than fifteen years as an advertising illustrator, while Norman Bel Geddes and Henry Dreyfuss had been successful stage designers. Raymond Loewy had become one of New Yorks leading fashion illustrators.



Walter Dorwin Teague was regarded as a typical businessman whose business was design. Teague was born in 1883, the son of a Methodist preacher in Pendleton, Indiana. In 1902 he went to New York, and for five years studied at the Art Student's League, supporting himself by painting signs and drawing for mail-order catalogues. In 1908 he joined the art department of the Calkins Holding Advertising Agency. Years later Teague told Earnest Elmo Calkins, that it was one of the most fortunate moves of his life. It was there that Teague learn't of the importance of striving to improve public taste, something which Teague placed great importance on all through his career. After



WALTER DORWIN TEAGUE  
AND HIS SON -  
W. DORWIN TEAGUE JUNIOR  
Twentieth Century Limited

leaving the Calkins Holden agency in 1912, he set up his own shop as a free-lance artist, specialising in doing advertisements for luxury goods with a refined dignity. Teague's work of that period was characterised by his 'Teague Borders', which were derived from a fascination with French history, culture and classical forms. Around 1920, Teague came under the influence of Jay Hambidge, who espoused the wondrous harmonies that could be achieved in all forms of design through application of the classical Greek theory of Dynamic Symmetry. Teague went on to apply



this theory in his future illustrations as well as influencing his later conception of Industrial Design. The obvious limitations of the very specialised field within which Teague worked and the level to which he had developed his style, began to tell. In 1926, he set about looking for a more expansive design role. In that year he travelled to Europe to study the work of Le Corbusier, Walter Gropius, Robert Mallet-Stevens and the modernistic decorators of Paris. He returned home a whole-hearted disciple of modern design. Teague coalesced a whole plethora of aesthetic ideals into what he visualised as being a coherent modern style with harmony in all its parts.



WALTER DORWIN TEAGUE. A 1923 ILLUSTRATION FOR AN AUTOMOBILE ADVERTISEMENT. American Design Ethic.

The first solid evidence of Teague's new direction was the replacement of the French period decor of (1926)

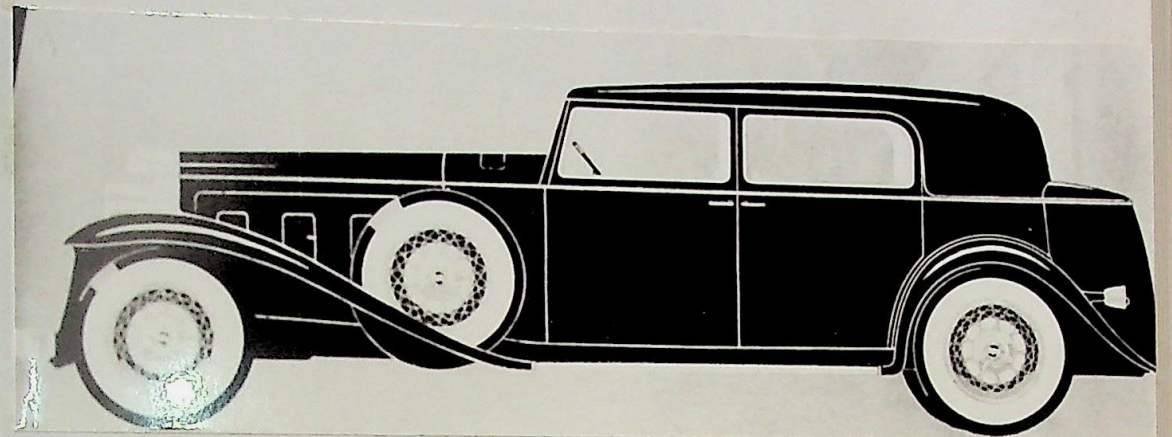


his office with a restrained mixture of modern elements - flat white walls, tubular chairs and cabinets in the Paris style. Underlining his customary thorough approach, Teague amassed massive files of clippings from two French design magazines, Mobilier et Decoration and Art et Industrie. Once more, Teague reflected the scholarly approach that had yielded his advertising borders. Teague was never an originator, what he did was to gain a solid knowledge of what others propounded and to use this to his advantage in a typically business-like approach, which endeared Teague to his clients. Prospective clients received his 'Outline of Industrial Design', listing his goals as improved appearance, greater ease of service, and economy of manufacture. Every design job included a study of a products functional and structural elements, as well as its manufacturer's production capabilities, sales methods, and advertising techniques. Teague received his first commission, for two cameras late in 1927, from Addph Stuber of Eastman Kodak, who had obtained his name through the Metropolitan Museum. Teague was initially asked to simply supply sketches, but insisted on inspecting the factory, and on collaborating with Kodak's production engineers, to ensure feasibility. This pragmatic approach to design, won him Kodak's business for the next thirty years and brought him a success denied to designers unable to adapt themselves to practical business needs. It was on the eve of the depression that Teague was rewarded with a commission to design the Marmon 16 luxury auto, which marked his emergence as a fully-fledged Industrial Designer.

While Tague typified the designer as a businessman, his colleague, Norman Bel Geddes seemed more of a creative genius. His reputation as "bombthrower Geddes, the man who has cost American Industry a billion dollars", provided



Industrial design with a mystique essential to its development. His breathtaking, streamlined visualisations in his book, 'Horizons', captured the imagination of the public.



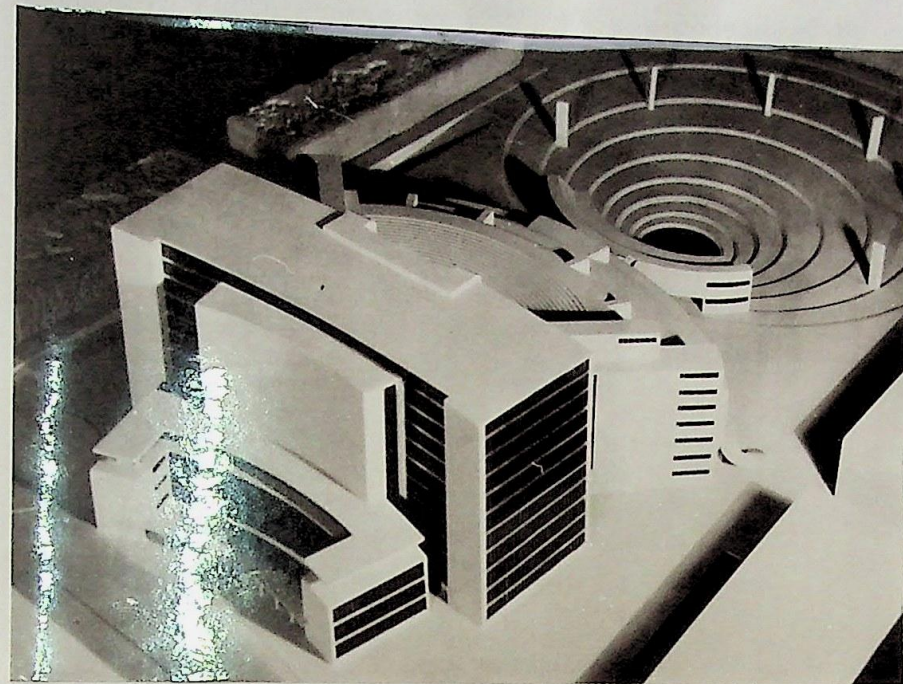
WALTER DORWIN TEAGUE'S 1932 MARMION 16 - WAS ONE OF THE CLASSIC DESIGNS OF THE ERA. American Design Ethic.

By popularising streamlining, when only a few engineers were considering its functional use, he made possible the design style of the thirties. His career had far more immediate professional and cultural impact than those of his more practical colleagues.

Bel Geddes was a stage designer, by profession. It was in this discipline that he first exhibited both the extent of his ego, and monumental scale on which many of his ideas seemed to have their basis. In 1919, he created an opera set in which a ship, with a cast of forty was launched down a ramp of ball-bearings. For 'The Miracle' in 1923, he rebuilt the interior of New York's Century Theatre as a medieval spectacle. His most grandiose project as with many of his later Industrial design proposals, was not carried through because it involved building a special theatre.



Logically the next step for Bel Geddes to make, was toward the area of Architecture. In 1924, Geddes met Eric Mendelsohn, who gave him a sketch of his famous Einstein Tower, as well as a copy of his 'Structures and Sketches'.



MODEL OF PROPOSED UKRANIAN STATE THEATRE  
BY NORMAN BEL GEDDES - 1931

THE PROJECT AS WITH MANY OF BEL GEDDES WAS NEVER  
CARRIED THROUGH - Horizons

It was these visionary sketches which eventually led Bel Geddes to popularization of streamlining, as an industrial and architectural style. However, Bel Geddes' great ambitions in this area were thwarted by a group of angry unemployed architects, who forced cancellation of nine architectural designs for the Chicago Century of Progress Exposition, on the grounds that Bel Geddes lacked certification. It was a great disappointment to Bel Geddes to find that the profession was in fact closed to him and that some of his most ambitious ideas would never be realised.



One of these was a revolving restaurant for the Century of Progress Exposition.

Bel Geddes' next move was closely associated to his original discipline, stage design, but it helped to pioneer a generalist principle of Industrial design. After a walk down Fifth Avenue in 1927, he was convinced he could provide drab shop windows with 'come on', by treating a window as a stage, the merchandise as the players, and the public as the audience. His expressionist window for Franklin Simon, the beginning of a two year association, focused on projecting a storewide image of sleek, refined elegance rather than on selling specific merchandise.

In 1929, Bel Geddes hired Frances Rensor Waite, a young woman who admired his theatre work. She became his second wife in 1933, but more immediately she helped him professionally by introducing him to her uncle, Stanley Rensor, president of the J. Walter Thompson advertising agency. The ensuing partnership meant the agency providing Bel Geddes with clients, as well as a commission for a combined auditorium and conference room, for its office in the Graybar building. For this Bel Geddes claimed to have embraced 'the new simplicity', to create a room, 'machine-like' in its efficiency. Although its deep horseshoe chairs, reflected the exposition style, he avoided exotic ornament for severely contrasting strips of brass and black glass on off-white walls. Grey carpet was relieved only by turquoise upholstery and drapes. With concealed lighting operated by twenty second dimmer switches, omnipresent phone jacks, an automated movie screen and a ventilation system replacing contact with the outside environment - all of which eliminated random irritations, understood then as 'friction', the room embodied control. It expressed the function of an agency-lubricating the consumer society.

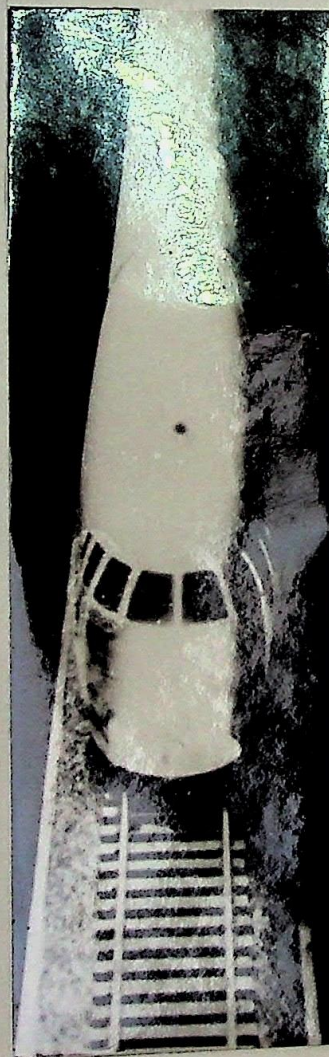


None of Bel Geddes pre-depression designs proved commercially viable, but they did win him flamboyant publicity. A metal bedroom suite for the Simmons Company done in chrome and black lacquer won praise among the fashionable, but the firm soon returned to production of an imitation wood finish, which had more popular appeal at the time - a striking comment on the public taste of 1929.

In his book, 'Horizons', of 1932, Bel Geddes discusses the subject of furniture, in relation to the material of construction. He says, "For a long time wood has been looked upon as the natural material for furniture. Tradition and custom favour it, so much so, that until recently, manufacturers of metal furniture could not hope to compete for popular

preference with the manufacturers of wooden furniture. But metal is now a promising and progressive rival, and its use in making furniture, is, I believe destined to be far more extensive than now."

Another such abortive project for another agency client, The Teledo Scale Company was a commission to design a grocery counter scale. The company, however, declined to take the idea into production, but before parting with the 'valued' services



NORMAN BEL GEDDES - LOCOMOTIVE NO.1  
Model of speculatively proposed  
Locomotive. 1932. Horizons



of Bel Geddes, they asked him to re-design their factory. This project too, never materialised beyond a sheaf of impressive renderings. Given a brief to design something 'out of the ordinary', even 'weird looking'. Bel Geddes



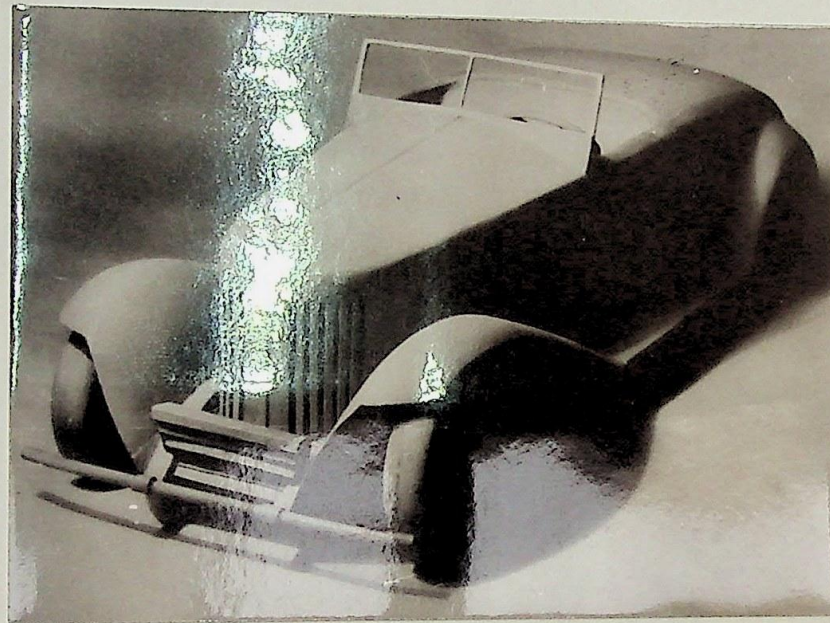
NORMAN BEL GEDDES  
PROPOSED GROCERY SCALE  
FOR TELEDON SCALE CO.  
rendering by Al.Ledenfrost  
- 1929 -  
Twentieth Century Limited

opted for a pastiche of Frank Lloyd Wrights' prairie architecture and Mendelsohn's streamlining. Bel Geddes stated afterwards that the project, which would have included an airport, for executives, as well as athletic fields for the employees, was one of the most satisfying experiences of his life.

Bel Geddes followed up with yet another failure. He received a commission to design five cars from the Graham-



Paige Company, in 1928. Each of the cars were to be more radical than the last. The company proposed to introduce them over a period of five successive years, in order to accustom the public to change. Bel Geddes carried out the commission with typical flamboyance. The fifth and final car in the range, claimed Bel Geddes, was the 'Ultimate Car', technically and aesthetically perfect. Bel Geddes said that what he strived to do was to create 'a single unit of uninterrupted flowing lines'. However, by the time Bel Geddes



#### NORMAN BEL GEDDES - THE ULTIMATE CAR

By the time Norman Bel Geddes discussed the design in his 1932 book, 'Horizons', he misrepresented it, as being the most radical of the five.

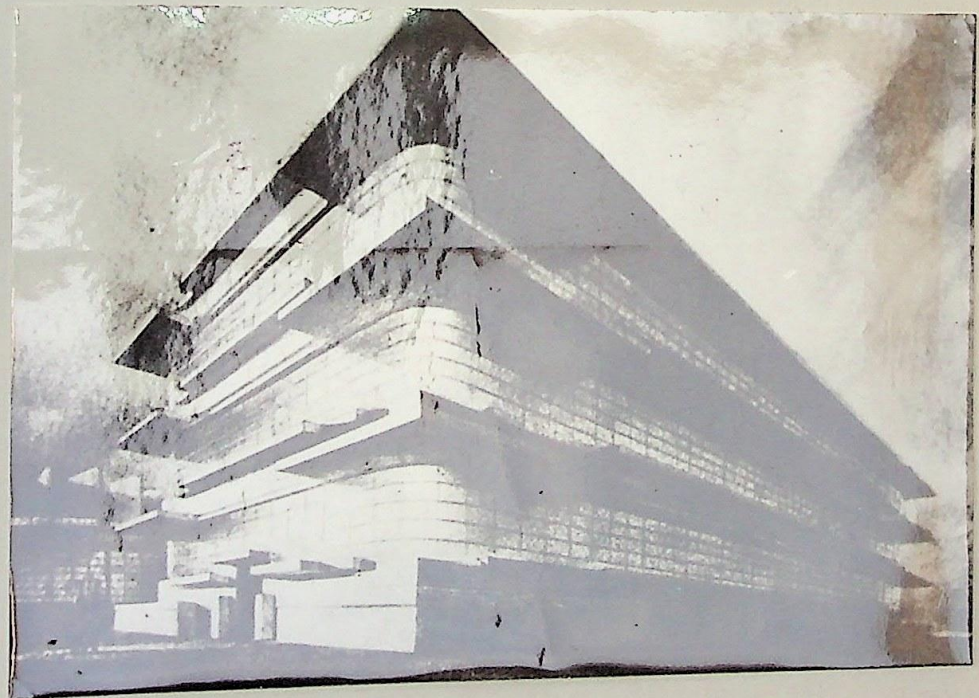
Horizons

discussed the design in 'Horizons' in 1932, his streamlining had so far surpassed it, that he misrepresented the 'Ultimate Car', as the least radical of the five. In 'Horizons',



he states, "As the only ideas contained in these five models, that have so far appeared (to my knowledge) in other cars, are in this Number 1 model, I am not illustrating the other four here." A natural showman, Bel Geddes learned quickly how to gain publicity, even from his failures and thus boost his own reputation as well as that of his fledgling profession. 'Horizons', provided manufacturers with dramatic evidence of what could be done. By the beginning of the Depression, Bel Geddes had switched most of his energy from theatre to Industrial Design. He had entered the field of 'utilitarian art' as he described it and dedicated himself to turning 'frankly commercial objects', into satisfying 'objects of beauty'.

Henry Dreyfuss, unlike Bel Geddes, represented the face of conservatism. Rather like Teague his approach to clients was both professional and well thought out. Cultivating this



NORMAN BEL GEDDES RENDERING OF ASSEMBLY BUILDING IN FACTORY  
COMPLEX - PROPOSED FOR TOLEDO SCALE CO. 1929  
Twentieth Century Limited



image he made a hallmark of his plain brown suits, worn to counteract the image of a designer or artist as an impractical dreamer. Dreyfuss never indulged in what he called 'poppycock publicity', by speculating on future design styles, nor did he reach success through producing any 'real far-out Bahausy stype designs', as one of his more purist colleagues, George Nelson put it. However, Dreyfuss's designs all expressed Dreyfuss' interest in the relationship



HENRY DREYFUSS  
Twentieth Century Limited

between product and the people who would be using them. His official credo recognised that, WHAT WE ARE WORKING ON IS GOING TO BE RIDDEN IN, SAT IN, LOOKED AT, TALKED INTO, ACTIVATED, OPERATED, OR IN SOME WAY USED BY PEOPLE INDIVIDUALLY OR EN MASSE." Unlike Teague or Bel Geddes, Dreyfuss accepted society as it was. He considered each commission a discreet project and worked to ensure that consumers would find his product designs, suited for their intended uses.



Thus their lives would be improved, made more efficient and less irritating, and his clients would benefit because he believed the public instinctively recognised good design. Even Bel Geddes who criticised fellow designers, Teague and Raynond Loewy, found no fault with Dreyfuss. He liked him, "I think he is honest, straight from the shoulder, there's nothing phoney about him, he's square, just a good human being."

It was this honesty which characterised Dreyfuss' Industrial Design career, right from the start. Initially, like Bel Geddes he trained and worked as a stage designer, but in 1927, Oswald W. Knauth, vice-president of Macys' department store offered Dreyfuss a position as a stylist. The job-profile involved, suggesting design changes for merchandise sold in the store. His sketches would be submitted to manufacturers, who would have to change their products or find their business with Macys terminated. After spending two days in the store, Dreyfuss turned down the job because he felt that a stylist should work in co-operation with the manufacturer at the inception of a product, to gain a complete understanding of limitations of materials and processes. Working through a department store he could only provide cosmetic touches, conceived in ignorance of factory conditions.

In 1928 he established a consultancy, initially most of the commissions he received were minor articles, such as - snaps, buckles and door-knobs. These sort of jobs brought in little money and even less publicity. After moving his office to Fifth Avenue, his list of commissions increased in prestige, if only to a very limited degree. Things such as plastic cigarette lighters, keys, watches and canning jars, were his stock and trade. All, most manufacturers wanted him to do, was to apply veneer of style to products already designed by engineers, but Dreyfuss'



association with Bell Telephone Laboratories proved that he considered himself more than just a stylist.

In 1927 Bell had introduced the first telephone with receiver and microphone in one hand-piece. However, the design looked so awkward even though engineers had measured four thousand people, that outside help was sought. So, in 1929 Bell offered a thousand dollars to each of ten designers, including Dreyfuss, to sketch the 'ideal telephone'. Despite the potential publicity of associating with a national corporation, Dreyfuss turned down the offer because he thought the re-design of the telephone should be conducted in collaboration with company engineers. A year later after design's furnished by the other nine, had proven impractical because they failed to consider functional requirements, Bell hired Dreyfuss.

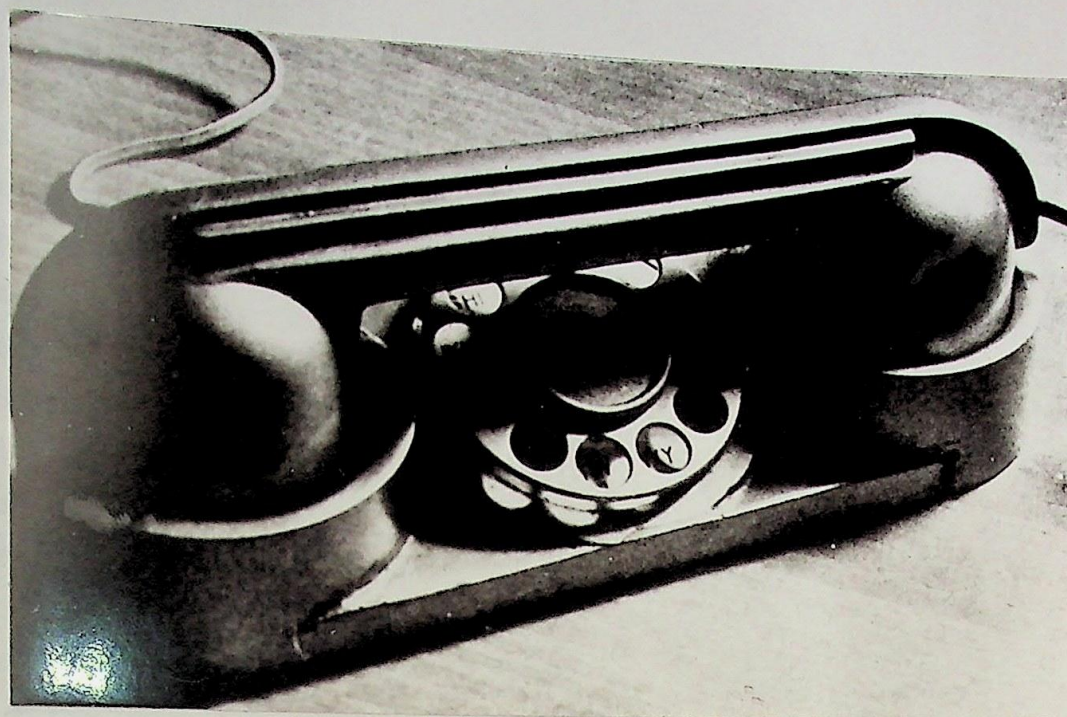
Henry Dreyfuss began work on the telephone in 1930, and it



HENRY DREYFUSS -  
DESK TELEPHONE FOR  
BELL TELEPHONE  
LABORATORIES - 1937  
Twentieth Century Ltd.

was introduced in 1937. The design remained standard until 1950, when another Dreyfuss model replaced it.





GUSTAV JENSON MODEL OF DESK TELEPHONE PROPOSED FOR BELL TELEPHONE. However the account went to Dreyfuss whose solution paid less attention to style, than to function. American Design Ethic.



In his approach to style, Dreyfuss largely ignored European theorists like Le Corbusier and Mendelsohn. He aimed for simplicity with many of his designs, such as the telephone, it possessed simplicity of line, without echoing the usual idioms. Others did reflect the modernistic or the streamlined style. Dreyfuss neither contributed innovations to the modes, nor accepted the conventions of other designers. With typically conservative restraint, he used their motifs when appropriate, and ignored them otherwise. His attitude derived not from ignorance, but from a desire to fit a products form to its function.

One of the oddest commissions yet, most revealing of Dreyfuss' talent for understanding the psychological nature of the user, was one he received from R.K.O. The company sent him to Sioux City, to find out why a new theatre was losing money to a more dilapidated competitor. After lowering prices, to no avail, Dreyfuss watched people walking past the theatre, for three days. The reason, he was convinced was, that farmers feared tracking mud on a plush red carpet, that ran from the lobby out to the sidewalk. When this was replaced with a plain rubber mat, the theatre enjoyed 'full houses'.

Dreyfuss' conception of Industrial Design, did not include a scheme for restructuring the environment, nor did he pursue publicity for himself and his profession. He dedicated himself instead to the practical task of simplifying the relationship between people, and particular elements of their environment.

Raymond Loewy, the last of the 'big four', was the only foreign-born, among the major American designers. A native of Paris, Loewy was born in 1893, and at the age of seventeen, entered a school, devoted to preparing students for engineering school entrance exams. Although never actually attending



engineering school, the three years of specialised study adequately prepared him for industrial design's technical aspects.



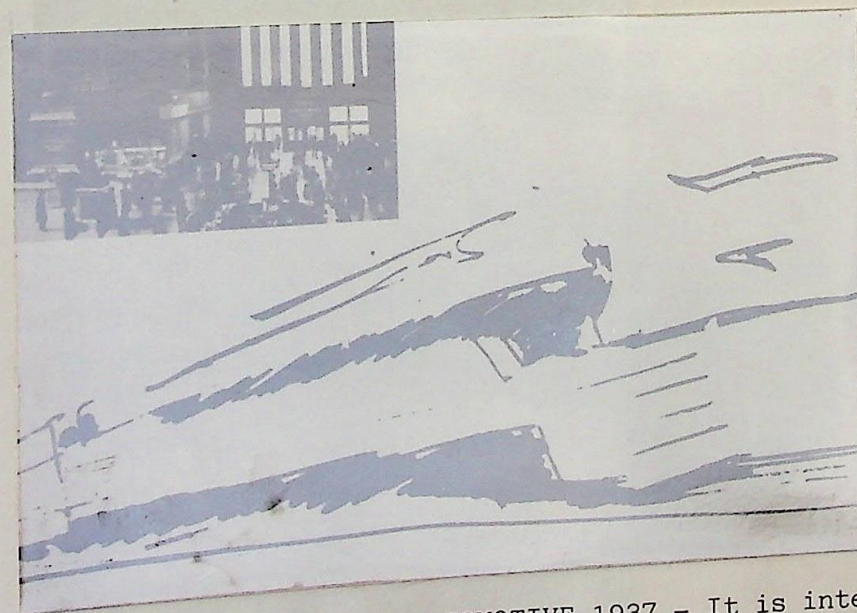
RAYMOND LOEWY - ADVERTISEMENT IN HIGH FASHION OF THE DAY  
Published in Vanity Fair. American Design Ethic.

After the First World War in which he was cited for bravery, Loewy emigrated to America. It was a career with General Electric, as an electrical engineer which was Loewy's aim, but as luck had it, a chance meeting on board the ship with the British Consul in New York, changed all that. A sketch by Loewy of a fashionable young woman on the ship, so impressed the Consul, that he gave him a letter of introduction to Conde Nast, publisher of Vogue. Loewy was started on a very successful and financially rewarding career, as a fashion illustrator. However, as he recalled some years later he 'got very restless' and wanted to do something 'more meaningful'.



From childhood, Loewy had been used to comfortable and pleasant surroundings, even in the trenches he amused himself by creating a 'non-military ambience', using furniture from ruined houses and copies of recent magazines, including Vanity Fair. A passion for living was evident throughout Loewy's life. Bel Geddes once remarked of Loewy, that he was "much more interested in living than designing." Another acquaintance of Loewy found his passion for life symbolised by his long summer drives to Long Island, which included - the biggest white convertibles and the most beautiful blondes. In essence, he looked like a designer.

When Loewy arrived in America as a young man, he was shocked at the coarseness of the environment. He recalled in his book, "RAYMOND LOEWY, INDUSTRIAL DESIGN, in 1979, how he was, "...amazed at the chasm between the excellent quality of much American production and its gross appearance, clumsiness, bulk and noise. Could this be the leading nation in the world, the America of my dreams? I could not imagine how such brilliant manufacturers, scientists and businessmen could put up with it for so long." "Through the exciting twenties I was never able to understand why this ingenious new nation did not have a new and fresh look about it."

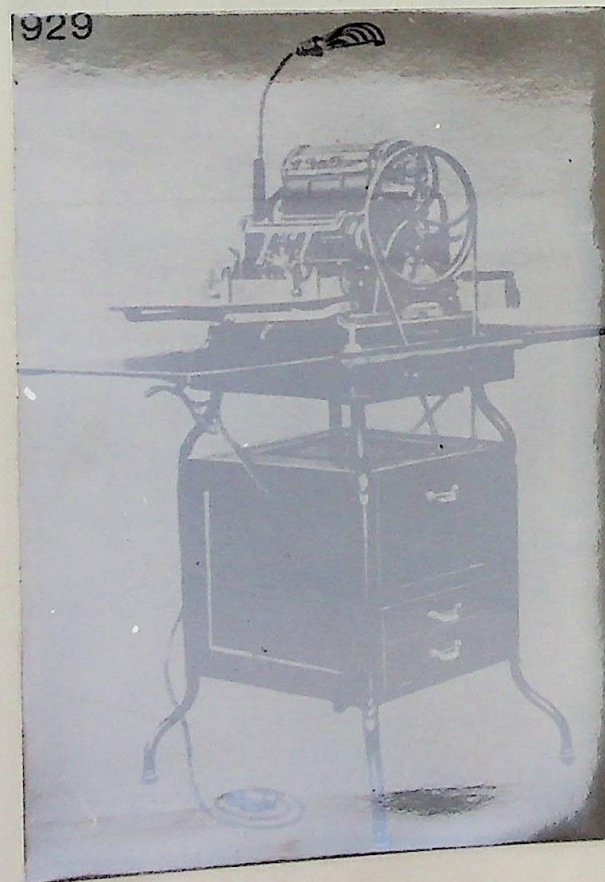


LOEWY - SKETCH FOR S-1 LOCOMOTIVE 1937 - It is interesting to note how closely the silhouette of the aeroplane resembles the Concorde built four decades later.



By the age of sixteen Loewy had designed, built and flown a toy model aeroplane. He patented the design and set up a small company to manufacture it. The aeroplane sold so successfully throughout France, that he was made an offer for his company, which he accepted. In his book, Loewy offers this story as a hint towards his eventual career. "By sixteen I had discovered that design could be fun and profitable and this lesson has never been lost on me."

Loewy initiated his Industrial Design career proper in 1929. He printed up a card and sent it to everyone he knew. It said, "Between two products equal in price, functionality and quality, the better looking will out-sell the other." In addition to sending out the card he made an effort to talk to as many top executives as he could, hoping that aside from those who kicked him out, some would say, "Show me what you mean by that."



GESTETNER DUPLICATOR,  
BEFORE REDESIGN BY  
RAYMOND LOEWY  
Raymond Loewy.



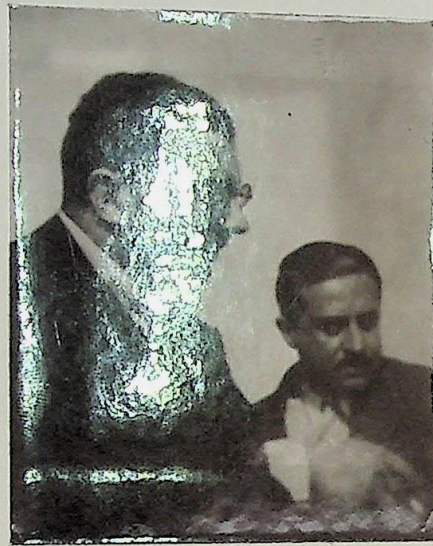
In 1929 one did just that. Sigmund Gestetner an English mimeograph manufacturer, asked Raymond Loewy to design a new model for him. Gestetner, on a short visit to New York wanted a new model to take home with him five days later. Loewy recalls in his book, *INDUSTRIAL DESIGN*, how Gestetner came to his apartment with the model he was currently manufacturing and selling, "Which looked and smelled awful.. Working in my living room, modelling in clay on a tarpaulin, I designed his new machine for him in less than a week." The novice designer applied clay to the existing model to show he would, "...encase the gadgety organs of the machine within a neat, well shaped and easily removable shell."



GESTETNER DUPLICATOR  
AFTER REDESIGN BY  
LOEWY, 1929  
Introduced in 1933.  
Raymond Loewy.



Previously the duplicators exposed gears and levers, saturated with ink, had collected dust and made operation messy. Loewy's design eventually made of bakelite, eliminated the 'machine's print shop aura' and importantly lowered manufacturing costs. Long projected legs that might have tripped the careless, were replaced by short, straight ones. His goal was functional simplification and through that, visual improvement.



GESTETNER ADMIRING THE CLAY  
MODEL. Raymond Loewy.

The Gestetner job earned Loewy two thousand dollars, for three days work, more importantly it convinced him of industrial design's potential. However, possibly owing to the depression the design was not manufactured until 1933, and as a consequence Loewy gained no immediate publicity from the project. As Loewy recalled the first years were difficult and he often felt a, "...dark, muddy despair," handicapped by a strong French accent he had a difficult time convincing businessmen of the advantages of product redesign.

Towards the end of 1929, Loewy became an art director for Westinghouse in charge of radio cabinet design, and from there he moved to the Hupp Motor Company, in 1931.



He was employed as a consultant on textiles for upholstery, a position he parlayed into being assigned the design of an automobile. Loewy had already been thinking of automobile design. In 1928 he filed for design patents covering two bodies, a headlight and a radiator. Sleek and low, both bodies exhibited a continuity of line. Hupp hired Loewy as a body designer after seeing these designs, but nothing significant resulted for several years. Although Jack Mitchell of Hupp's advertising agency supported Loewy, he had difficulty convincing the firm's engineers that his ideas were practical. His contributions suffered radical transformations in final production plans. However, he eventually won over engineers with a privately built body on a Hupmobile chassis, completed in 1932. Loewy recalled later how the exercise cost him twenty thousand dollars, "...but it was worth it." The 1932 Hupmobile prototype



LOEWY. MODEL OF 1934 HUPMOBILE. Raymond Loewy



won atyling awards in Paris, Monte Carlo, Nice, Cannes and Le Touquet. The manufacturer widely mentioned these awards in promotional literature for years to come, as well as granting Loewy a much greater part in the design of 1934 Hupomobile. This association gave Loewy a glimpse of the frustrations industrial designers were to experience in dealing with engineers, protective of their own trational prerogatives. More important, it opened to him the field of transporation design, for which his office would become best known during the thirties.

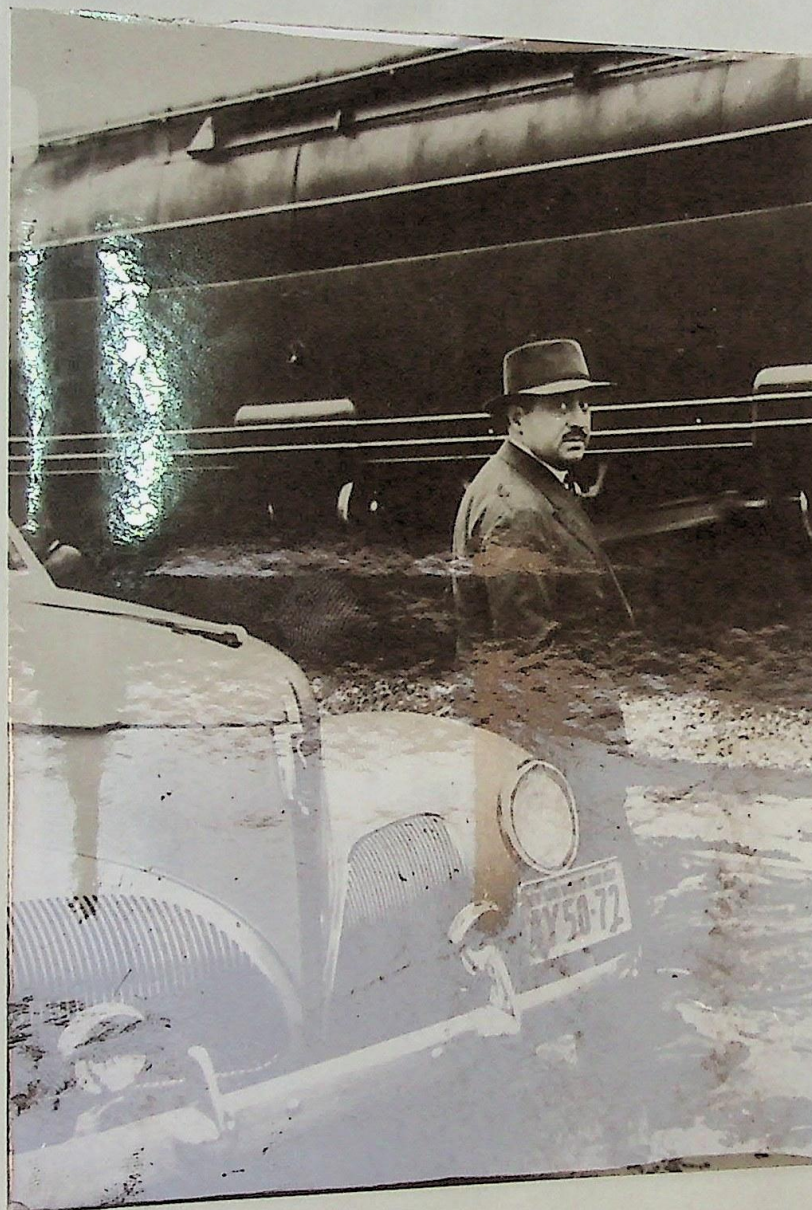
In 1929, however, prospects looked grim to Loewy. He had completed one major design, the Gestetner Mimeograph which had not gone into production. His relationship with Hupp had possibilities, but had so far proved unsatisfying. To top everything off, the stock market crash swept away his savings from fashion-illustrating, a career he had given up for the uncertainties of Industrial design. In the following general depression in confidence, he lost most of the design accounts he managed to attract. Loewy and other fledgling desingers who had ridden the final nervous crest of the prosperous twenties, could not forsee of course that in a few years, manufacturers would be beating down their doors for help, in reversing the plummeting sales curves. As the depression deepened and manufacturers became more desperate, so they turned to more radical methods.

Most manufacturers had previously feared what Teague described as, "The imagined vagaries of long-haired artists," but in the middle of the depression with nothing left to lose they were forced to try anything. As the decade wore on, confidence in the new designers began to snowball. The list of clients retained by the "Big Four" grew quickly.

They responded with a gleaming, streamlined style, purged of modernistic excess and calculated to restore an optimistic



faith in big business and its technological innovations. They inspired others who decided to enter the profession on their own and also provided experience for young draughtsmen, designers and architects, who institutionalised Industrial Design in the forties and fifties, by opening their own offices.



RAYMOND LOEWY POSING WITH THE 1939 STUDEBAKER CHAMPION  
AND THE PENNSYLVANIA RAILROADS S-1 LOCOMOTIVE 1939.  
Raymond Loewy.



# EPILOGUE



From its humble beginnings the Industrial design profession has spread throughout the world. In 1980 there were said to be ten thousand practising Industrial designers. Most of these working in consultancies. The notion of a design consultancy, as it was first developed by Teague, Loewy, Dreyfuss and Bel Geddes has been carried through without change to this day. Today consultancy designers, just as in the thirties, are expected to be able to apply their talents to things as diverse as a disposable razor to an automobile.



CARD OF THANKS FROM APOLLO XI  
CREW TO RAYMOND LOEWY.  
LOEWY WAS RETAINED BY N.A.S.A.  
AS A SPECIAL ADVISER.  
Raymond Loewy

In each of the countries Industrial design has become established, one can identify a similar evolutionary pattern to that which brought it about in America in the 'thirties'. For example, Italy, a country ravaged by war was able to establish a sound manufacturing base, owing to the subsidies afforded to it by the allies. The increase in manufacturing output and the accompanying rise in living standards, brought about a greater demand for consumer goods. The need for industrial designers became great. The Italians with their



historically inherent sense of good aesthetics had few problems finding them. In the sixties and seventies Italy became the design centre of Europe, for many of the specialist fields which go to make up Industrial design, in particular, automobile and furniture design.

Italian Industrial designer Giorgetto Giugiaro, is one of the very few contemporary designers, who could possibly be compared with any of the 'Big Four'. The similarity between Giugiaro and his famous predecessors, is that firstly, he is the head of a large design consultancy known as 'Ital Design'. Founded in 1968, it has promoted the same generalist principle of Industrial design as did the 'Big Four' consultancies. Typifying this is Giugiaro's latest design for a new pasta, 'palatable', proof of real design versatility. Giugiaro has worked on prototypes for such companies as Alfa Romeo, Volkswagen Golf, Lancia Delta, the Fiat Panda and the Fiat Uno. He has worked on motorcycles, truckcabs, buses, boats and the interior trim for the Sikorsky helicopter. Further Giugiaro designed products chairs for Tecno, watches for Seiko, sunglasses for Polaroid and cosmetics for Kanebo.

Giugiaro as did Loewy before him enjoys the glamorous lifestyle, that is the option of a very successful Industrial designer<sup>1/2</sup>. Both men also have the distinction of having worked for the Russians, Loewy as advisor to their major industries and Giugiaro on the Lada car.

In the nineteen thirties, architects and designers strove toward the ideal of a coherent design style. Many designers regarded it as their moral duty to create for the public, an environment with a sense of order and a feeling of security amidst rapid change. Without consciously noticing the resemblance of a stepped back radio cabinet, to a setback skyscraper or of an electric fan to an aeroplane motor, a consumer received reinforcement for purchases,



from subliminal perceptions of continuity in the man-made environment. This trend had carried itself through to the present day. One only has to look around and see the same images and suggestions in buildings, auto-mobiles and consumer products. The streamlining of the thirties has today been replaced by a design style commonly known as 'Hi-tech'. Here again as in the thirties the style provides people with a feeling that everything is under control, even though things appear to be changing rapidly. In all objects, the public are being given a glimpse of the future. They can feel confident and comfortable in the knowledge that they have seen into it and it is good. Sometimes however, designers seem to want to suggest that the twenty-first century is already here. Careful manipulation of form and material even in the most mundane of objects, can create an almost 'Star Wars' aura.

The qualities required of an Industrial designer today are almost identical to those needed in the earliest days of the profession. To be successful, an Industrial designer, must be a blend of the businessman, artist, engineer and more so than ever, he or she must have the determination and tenacity to succeed in a competitive world. These were the qualities which characterised Teague, Loewy, Dreyfuss and Bel Geddes.

Today Industrial design students are educated in the disciplines of business, engineering and artistic or aesthetic ideals. The 'Big Four' did not have the advantage of an education in their chosen profession, but rather learn't from their past experiences and their mistakes. An important lesson to take from their self-made success, is that if a designer really wants to succeed he or she must have these qualities in latent form at least. Such is their nature that design education can only hope to develop and shape what is already in existence, 'A designer is born, not made'.



## SOURCES

I have been extremely fortunate, in that the subject I chose to research, is one about which quite a lot has been written. Two authors in particular have published works which deal extensively with the era, Jeffrey L. Meilke and Arthur J. Pulos. Both provide an in-depth account and lively analysis of the years leading up to the birth of Industrial Design. I have also referred to Norman Bel Geddes' Horizons 1932 and Raymond Loewy, Industrial Design. These design autobiographies give an interesting insight into the actual events which Arthur J. Pulos and Jeffrey L. Meilke refer to historically.

Twentieth Century Limited

Industrial design in America 1925 - 1939

Jeffrey L. Meilke

Temple University Press, Philadelphia, 1980

The American Design Ethic.

Arthur J. Pulos.

Syracuse Press 1982.

RAYMOND LOEWY, INDUSTRIAL DESIGN.

Raymond Loewy.

New York. Simon and Schuster 1978.

HORIZONS.

Norman Bel Geddes 1932.

Boston. Little Brown 1932