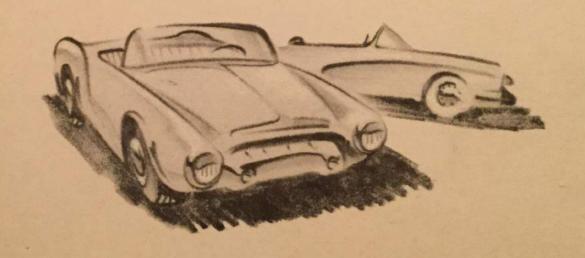


# how to draw cars of tomorrow

henry gurr



dan post publications arcadia, california

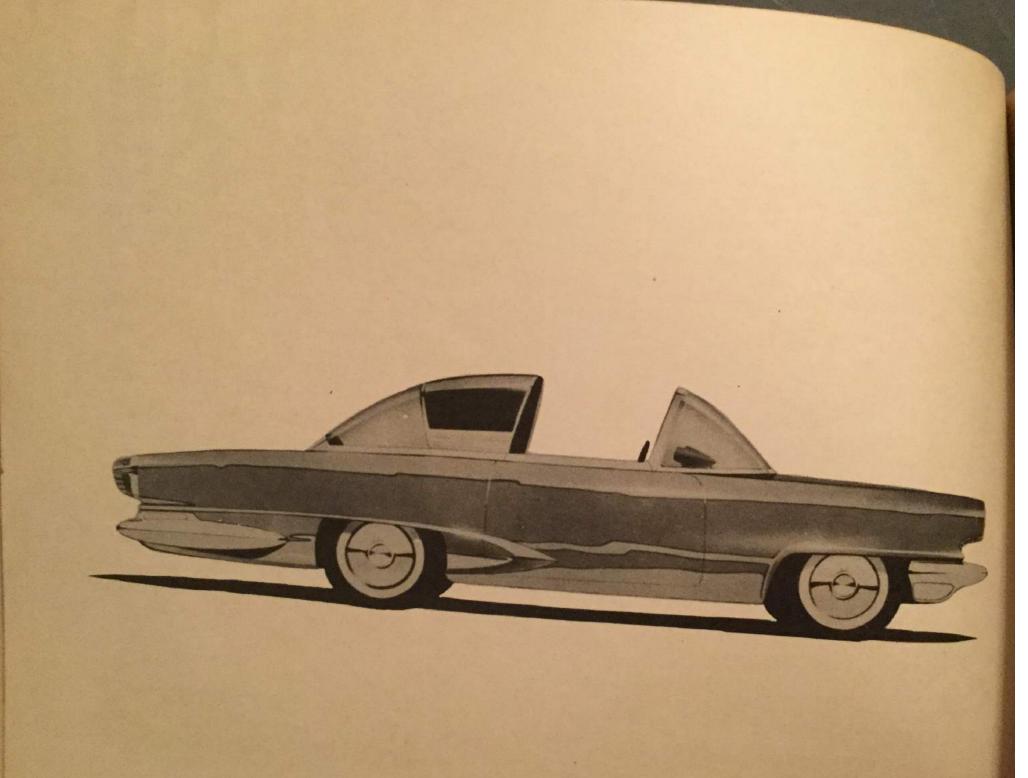
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#### foreword

Progress in motor car design has been contingent to a vital degree upon original conceptions from the vivid minds of young artists. This is the irrevocable record reflected in the past and the present of the industry.

Here is a book to light the guideposts for the pencil piddler—and, as well, for the latent professional automobile designer—that motor car styling may continue to progress.

Comprehensive primary text and graphic supporting illustrations pick up each would-be stumbling block in the potential designer's progression and make it known and understood, before following the design path to the next element toward professional finesse.

When men who love to draw cars are encouraged to "go wild" on original concepts, as they are in preliminary stages of design development, the resulting design expressions are often interesting. A selection of these dream-lined drawings, especially rendered by professionals, are shown in a salon section to acquaint the novice with the product for which he will be responsible as an advance-stylist.

By unfolding his ability through practice in each fascinating step presented, from general perspective to highlighting chrome, the reader may complete this book with confidence in his accomplishment—and his future.

The ethereal quality, arrested by the artist through these "rocket ship" renderings, sharply contrasts the futuristic design with the production design. In the case of a final dream-lined rendering which merits further consideration, mechanical limitations, seating comfort, handling convenience, safety, engineering changes, and interchangeability become prime considerations, necessarily bringing the rocket to earth.

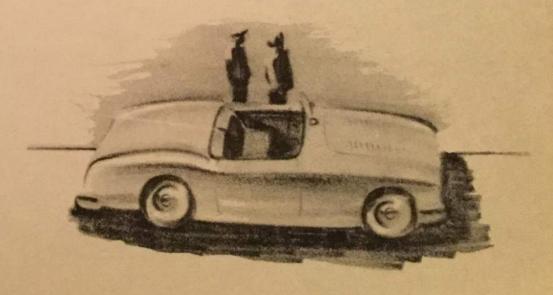
But the purpose of designing without restraint has been served, for such designs—ultimately taken into production-form—retain, in some measure, a tethered reflection of the original conception.

All in all, perhaps as many as two or three thousand sketches, similar to those shown, contribute just as many ideas toward an intricate composite finished design. Many thousands more—a by-product of the quest for drawings that hold definite possibilities for future application—are discarded along the way without further consideration.

When showing merit, a dream design may be worked up in a one-quarter or three-eighths size clay model, which affords a three-dimensional study of design possibilities. Clay also allows changing and rechanging of contours to arrive at the most pleasing line.

But the development of the design from the clay model on through the many other interesting stages to the production line—is a romance apart.

If HOW TO DRAW CARS OF TOMORROW serves simply to spark fresh interest in motor car styling as a vocation, the author's purpose will be met by encouraging development of potential talent among those who are crazy to "draw cars."





#### materials

Materials employed by the artist display designs to the best advantage when properly chosen for the stage of work and finish desired. Those listed here form a rudimentary group of the professional tools of the automobile design

pencils

stumps kneaded eraser water colors

mechanical aids

papers

fixitive & applicator

Eagle Draughting-for quick sketch and layout and hard black work

B, HB, H and 3H-for tighter work

Prismacolor wax-base colored pencils-for color effects

for shading and blending values

for crumbless corrections and cleaning

Winsor & Newton No. 1 grade brush

Winsor & Newton white tempera-for highlighting and fine line reflections

Ruling pen

Compass, with inking attachment

Straight-edge Sweeps

Lay-out pad-for preliminary sketching

Vellum-for overlay pick-ups

Black cover stock-for colored pencil renderings

Selected color stock-for special effects

for preserving drawings from smudging

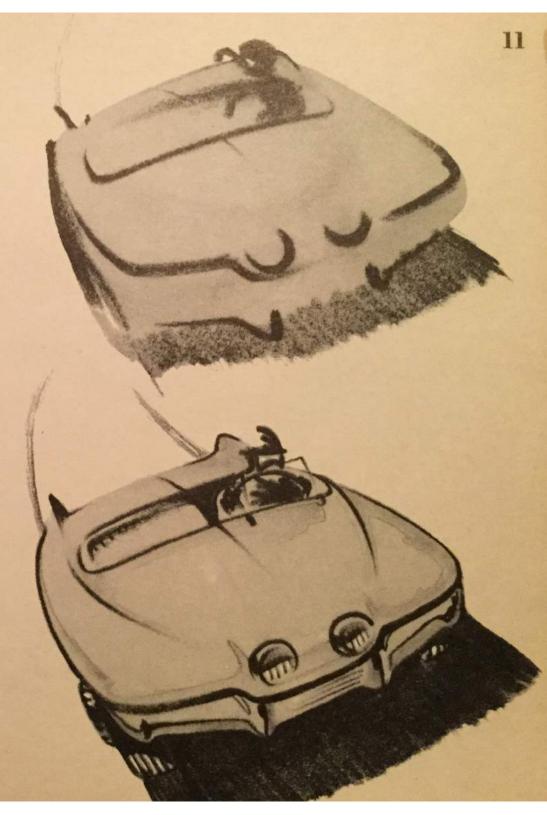
#### getting started

Any motor car, critically, in the mind's eye, becomes a design that can be reduced to several basic lines. Lines of subordinate nature diminish, as the car is analyzed for its basic element, while the primary lines of overall design become more emphatic, to lend positive—or negative—character to the whole. Even if proportions were altered, these lines would remain to instill the same character. The designer knows them as feel or character lines.

When first a new concept buds in the mind of the stylist, certain elements of the fresh treatment strike him clearly, while the details of the design are visualized only vaguely. This basic character of the design challenges the artist, and whether the vision comes while rendering an earlier design at the drawing board, or while driving, or in the middle of the night, the designer generally seizes the essence of his thought immediately on paper.

Your own brainstorms should be treated with the same hallowed respect. For actual development of a design the Eagle Draughting pencil with a large layout pad is ideal. These are the only tools that need be at hand to capture that first rough expression.

When you use them, let yourself go. Never try to save paper by confining your sketches to a too conservative size. Be a screaming extrovert; draw big. If your original idea happens to center around a grille, hood, fender cut-out, cockpit, windshield or rear deck line draw this alone. Express your main thoughts or feel lines without anxiety about details. These will fill in all but automatically, as the character lines of your detail sketches are refined with relation to a whole design.



character in existing cars

> A study of character-lines in existing cars will show what a broad range of key details these lines encompass. Two examples are treated specifically to convey a more graphic conception of the identity of character-lines.

> Since the 1948 model, Cadillac has nurtured its strong-looking grille through five successively bolder treatments; its heralded tail-fin identity has been made more-so, and its whole range of bodies has been changed once, to reach the 1952 series. Many feel-lines have been added; some have been taken away. Cad replaced one character-line with another when it dropped the graceful fore-edge curve of the rear fender, and substituted a vertical break in the form of its controversial pseudo-scoop. Yet the strength of the character of those feel-lines that have been retained fore and aft, has been sufficient for all Cadillacs since 1948 to be associated by a close family likeness.

A study of the character-line history of Studebaker's body—originally designated a 1947 model—reveals no change where Cadillac made extensive and massive revision of proportions. During the 1947-49 styling run identification changes were not appreciable and character-lines remained untouched. With the 1950 model a sloping hood faded away where an abrupt crown had been, and a new jet-do replaced the grille-do. Fenders were kicked into a forward thrust at

the nose, and up to terminate in lights at the tail. Cab area character-line changes were nil, yet the other character-line changes in the 1950 over the 1949 were such that a new identity was created. This might be explained by venturing that, while retaining practically every *important* character-line of the 1949 series, a raft of new character-lines were added to create the 1950. A 1947 forward movement was increased in pace to a forward plunge, and an overall crisper feeling in radius resulted in the 1950 revision.

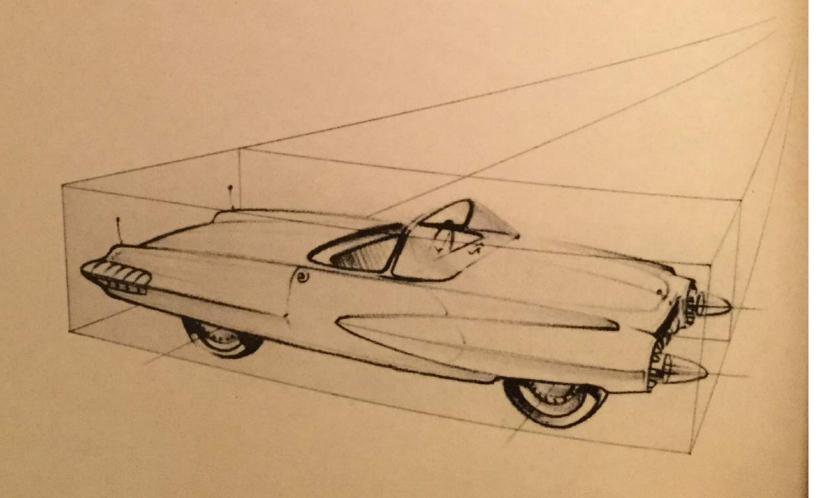
Only a rare few designs have carried lines of classic nature. To appreciate this lasting character, with an eye to reflecting work of similar impassive quality in your own designs, study with critical care the inherent lines in such recognized greats as the 1936-37 Cord, 1938 Lincoln-Zephyr, 1938 Cadillac Sixty Special, 1940 Lincoln-Continental, 1941 Packard Clipper, to name a few.

While, during the Salon Era coach-built bodies generally preceded production models in styling trends and refinement of line, the factory turn-out of the period offers a number of standouts. In 1924 it was Chrysler; in 1927, La Salle; in 1929, the Reo Royale and L-29 Cord; in 1931 the Marmon Sixteen; and in 1932, the Graham Blue Streak. A standout marque of this whole period was the Packard with its character-line a patented trade-mark of the car.

## perspective

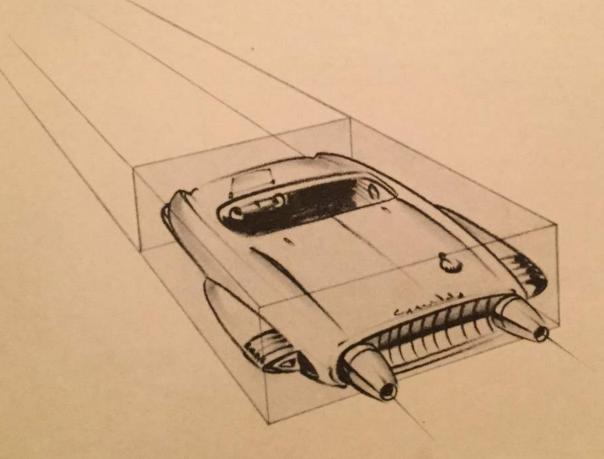
As the unmastered element in automobile design, to a novice car designer the problem of proper perspective can bring him to serious consideration of other careers, till he faces it squarely, experiments with the accepted technique, and grasps the utter simplicity of perspective drawing.

To know perspective as an ally, rather than as an opposing force, this unknown can best be mastered by approaching a few principles of perspective in their most rudimentary form. Begin a car by drawing a box with the 4H pencil on lay out pad. This will give a sharp but undistracting outlies. The box can be proportioned to coincide with the outlies planes of the car's surface, i.e., top, sides, front and rear. All parallel planes of this box will have a common vanishing point. Simply take care not to make this box too long or too wide, giving an unwanted Pullman or pancake look.



With some practice, the beginner will discover encouraging perceptibility in developing plausible proportions for this box.

By working out a variety of boxes as viewed from different angles, and slipping them under a clean sheet of layout paper, car designs can be drawn over them. In this manner the novice will soon be accustomed to drawing cars in natural perspective, and the box as a guide will no longer be essential.



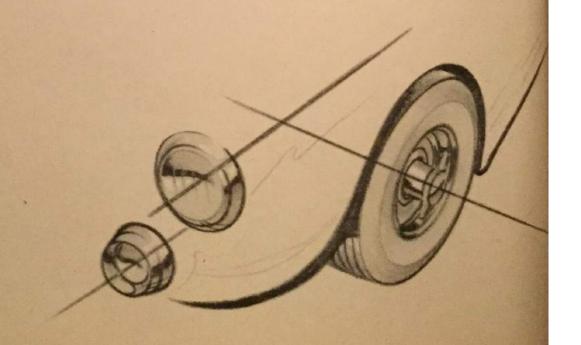
### elipses

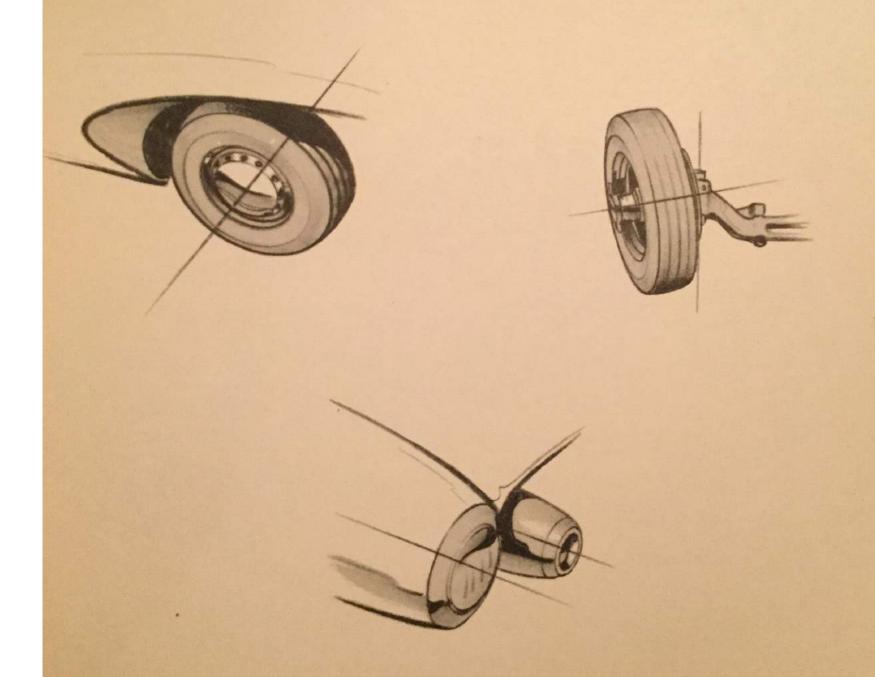
At first thought wheels and headlamps may appear as another stumbling block. After an understanding of basic principles, the technique of rendering creditable elipses can be mastered.

Recall the perspective box. Parallel lines in the same plane vanish to a common point. If a line is drawn through an axle of a wheel, or through the center of a headlight, it becomes a *minor axis* which will vanish in its proper plane.

To speed up this important phase of drawing the designer should consider investment in a set of elipse-guides. Minor and major axes are marked on the guides, eliminating guesswork and sharpening accuracy.

As with the perspective box, wheels and headlamps, too, will readily become second-nature for the practicing student of automotive architecture.





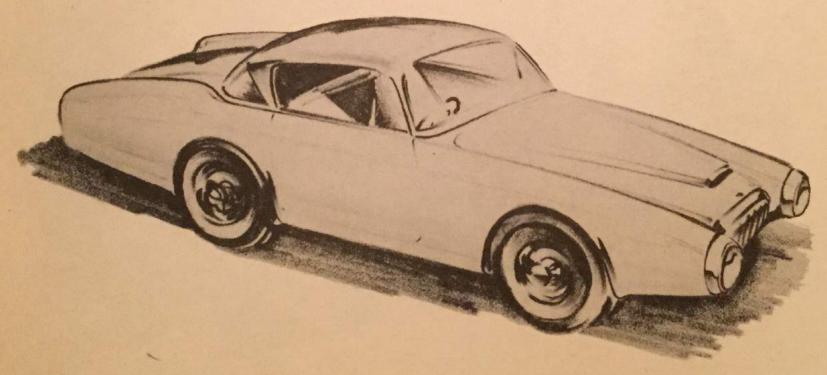
#### professional character in drawing

With a developed understanding of proportion and perspective, the progressive student can advance to a greater refinement in his drawings. Now, bold lines, fine lines, shaded lines, appear as mediums of special expression. By subtlety of line and accomplished pencil technique even the roughest of so-called roughs can be done with great finesse. Ultimate professional quality in drawing is rarely achieved except through a progression of continuously improved stages of technique.

Various forms of accent, and combination techniques will be treated. Primary is the device of making a heavier line where a fender is nearest, while diminishing as the fender carries around the car. The near side of wheels, and other parts also is treated in this manner. Care should be taken to make flowing lines that will enhance the character of the design, rather than jagged or scratchy lines that will distract the viewer and detract from the effect.

A kneaded eraser for removing unwanted lines and keeping the drawing clean becomes a great aid.

Before going into further forms of accent the beginning designer should spend himself with practice to master lines of diverse character.



#### lighting

In looking at any shiny object light rays are reflected back to the human eye. Variance in intensity of these rays gives *form* to the object.

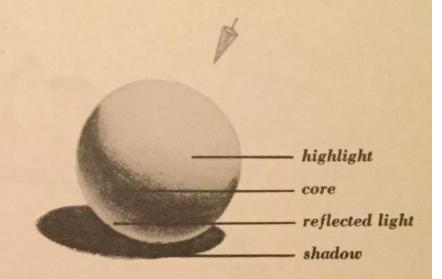
Using a cylinder, for an example, note that light will strike the nearest side with a surface perpendicular to the light source—with the greatest intensity. This is known as the high-light. In any drawing this will be the lightest area.

As the light ray strikes the top of this cylinder and moves down the side, less light will be reflected to the eye from these surfaces. Where the light rays pass tangent to the cylinder, reflected light will diminish to practically nothing, producing the darkest area, or the core. We have now progressed in light intensity from the lightest to the darkest.

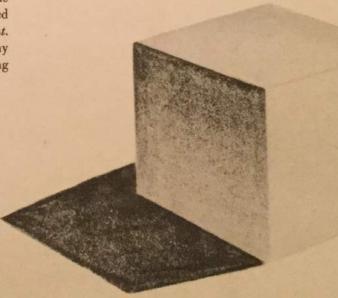
When this cylinder rests directly on a surface it will cast a shadow. This shadow takes the exact shape of the object, as viewed from the light source.

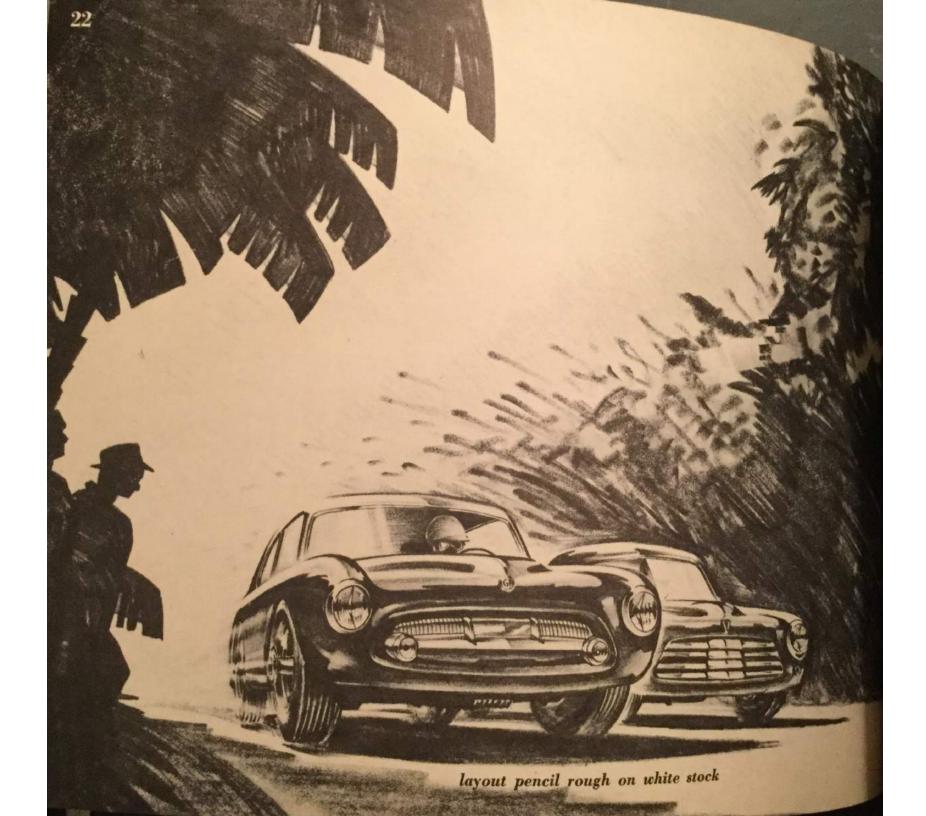
The light will strike the surface all around the shadow. Some light will be reflected up onto the underside of the cylinder, as well as to the eye, denoting that this is a lighted surface. This area of the cylinder shows in reflected light.

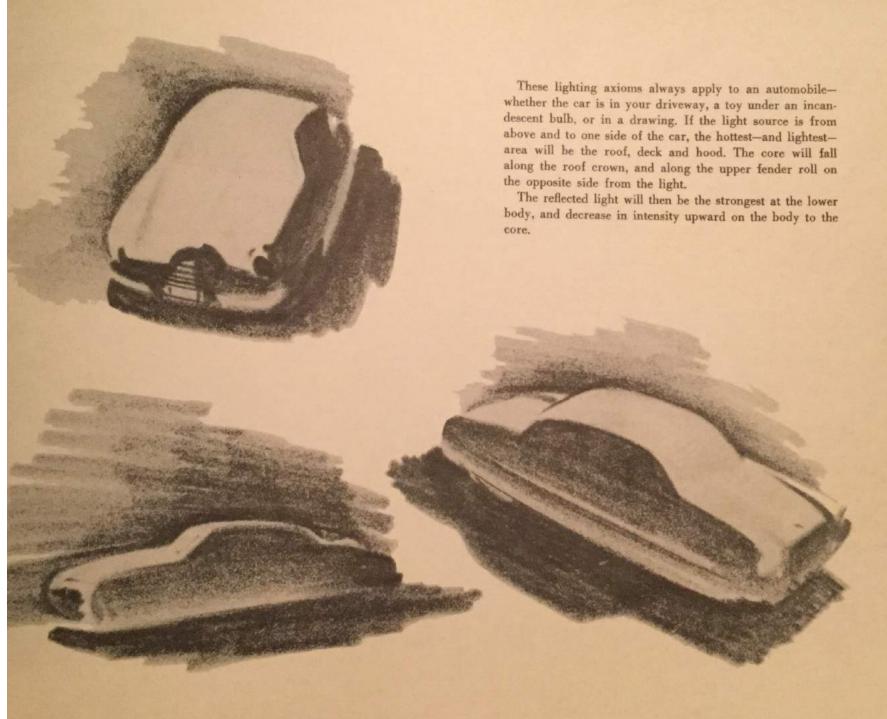
When these simple principles are observed in drawing any object—be it a cylinder or an automobile—a convincing drawing will result.











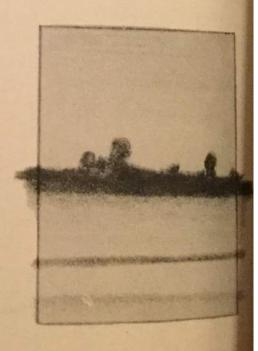
#### reflections

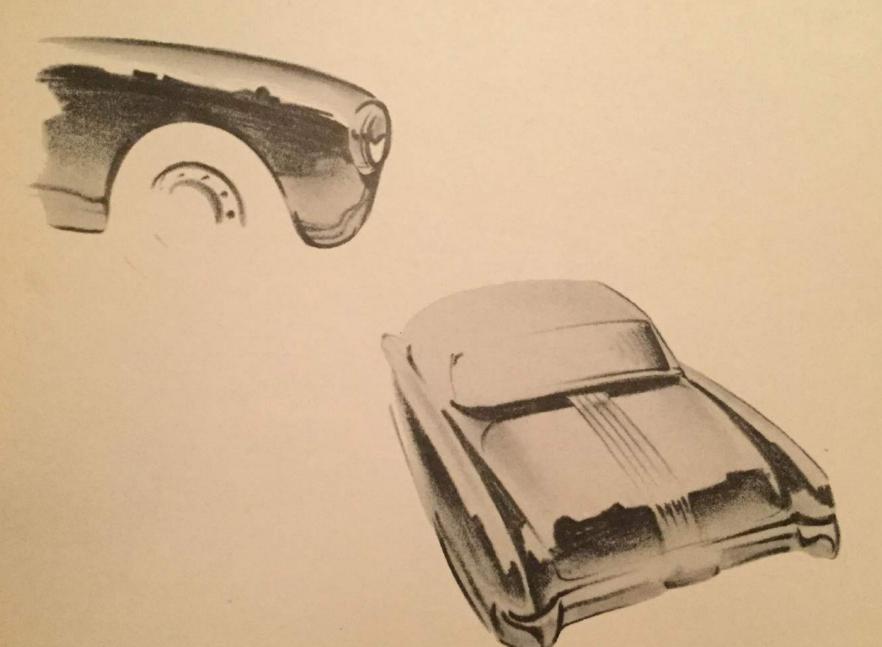
Since the automobile has a high surface sheen, background reflections are a further consideration. These are especially important and either add to a flowing design, or tend to break it up. You have likely noticed how one make of car may have a series of smooth, flowing body reflections, while another will be formed of a maze of abrupt reflections, individual panels of a continuous expanse each sounding a discordant note.

All things directly perpendicular to any automobile surface will be reflected into this surface. As an example, suppose you are standing looking at a car parked in an open area. A short distance behind lies a curb, bordering an area of grass which leads up to a grove of trees. Above is the sky. Looking carefully at this slab-sided car you will perceive the horizon or the grove of trees. Below will be the grass and the curb, all reflected into the car as if it were a large curved mirror. The sky overhead will be reflected into the surface, varying in intensity as smaller radius curves condense more sky into less area, and vice versa.

Designers can do much to control these surface reflections by a perfecting process known as *surface development*.

With each gleaming surface reflecting its surroundings to the human eye, they are considered to be well-designed only when they appear flowing and harmonious from one panel to the next. When the surface design is unrefined, poor reflections will distort the whole area. The fore-thinking designer considers reflections in his drawing and turns them from design liabilities to assets.

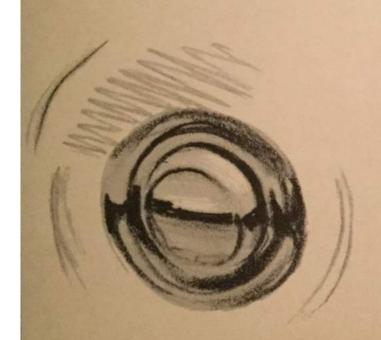


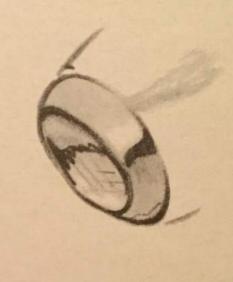


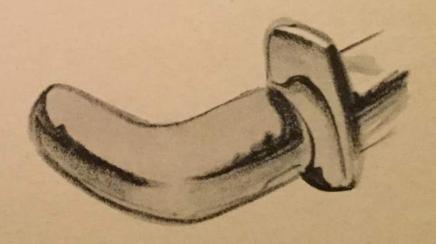
pencil and tempera monotone on colored stock

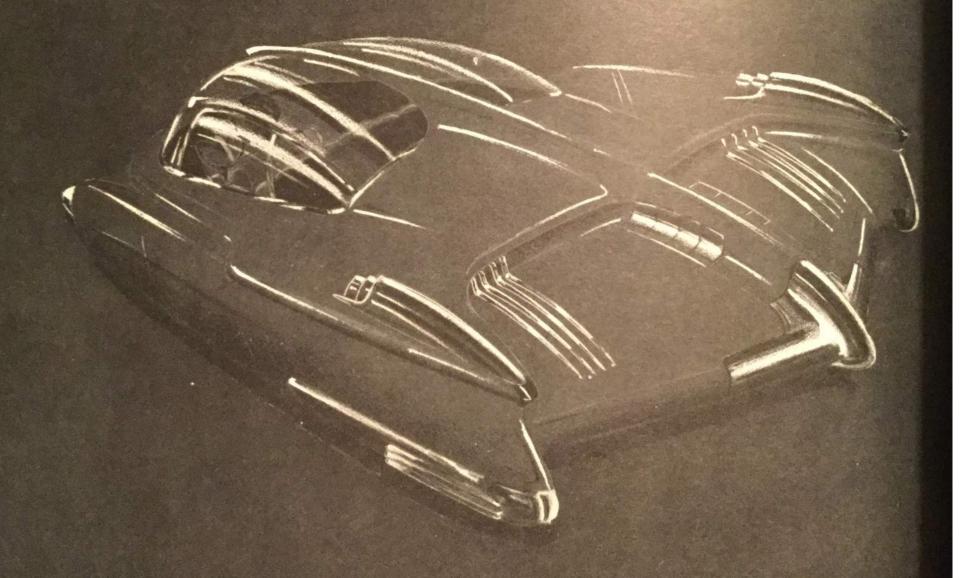
#### chrome

One principle for indicating reflections will follow for all chrome surfaces. A clear, pure reflector, treatment for bright-work embodies an exaggeration of both lights and darks. Painted surfaces, in contrast, generally tend to dilute and soften certain reflections.







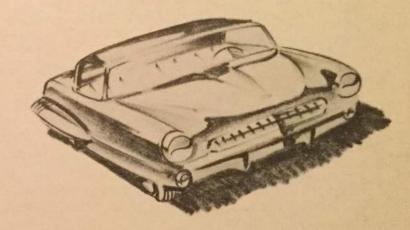


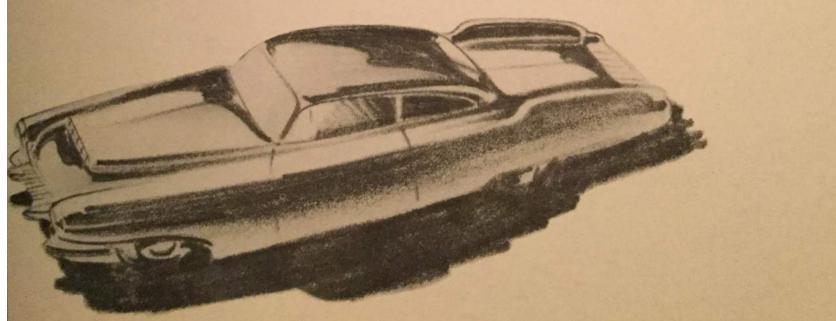
# distortion

Distortion can be the result of poor surface development. It should never result from the artist's failure in proportioning or perspective.

Making a habit of drawing cars in an extreme perspective, making them especially low, long or wide is not constructive. A distorted drawing is a false statement; transcribed into an actual dimension drawing it cannot be made to work.

Subtle distortion, on the other hand, is a tool for emphasis in predimensional drawings. This is usual practice, sometimes even a requirement of the drawing. Here, artist's license can only be used successfully when the exercise of good taste is paramount.

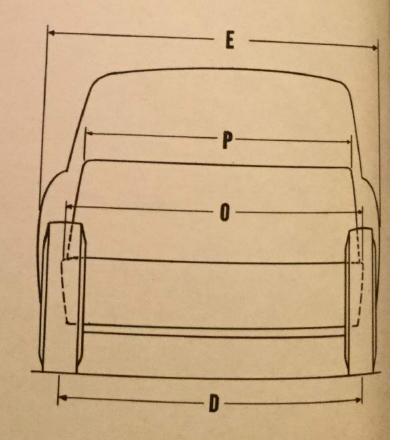


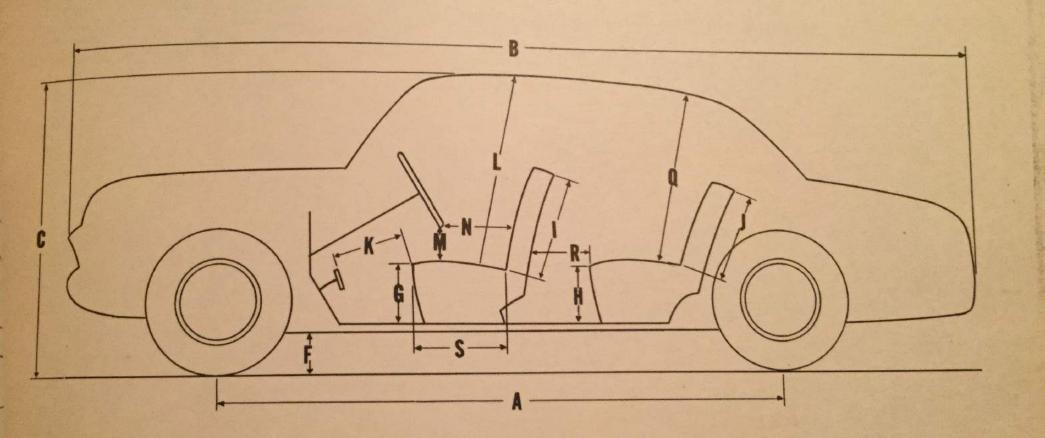


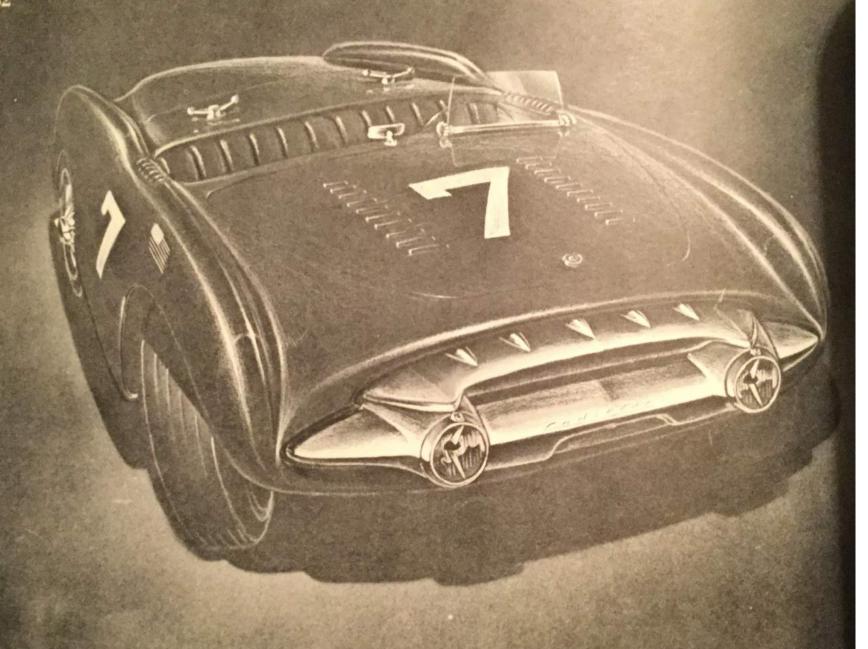
# critical dimensions

|   | passenger car | sports car |
|---|---------------|------------|
| A | 100"-126"     | 92"-102"   |
| В | 175"-216"     | 145"-168"  |
| C | 59"-65"       | 51"-54"    |
| D | 54"-63"       | 46"-54"    |
| E | 69"-81"       | 56"-62"    |
| F | 7″-8″         | 6"-7"      |
| G | 11"-14"       | 6"-10"     |
| H | 11"-12"       |            |
| 1 | 21"-23"       | 19"-21"    |
| J | 19"-24"       |            |
| K | 15"-17"       | 21"-23"    |
| L | 36"-39"       | 33"-37"    |
| M | 6"-7"         | 5"-6"      |
| N | 10"-13"       | 11"-15"    |
| 0 | 54"-56"       | 17"-20"    |
| P | 52"-57"       | 45"-47"    |
| Q | 35"-38"       |            |
| R | 9"-19"        |            |
| S | 16"-21"       | 16//10     |
|   |               | 16"-18"    |

This graphic layout of the basic restrictions in current American practice shows the limitations for production that must be met in headroom, footroom, wheel clearance, overhang, et al.







prismacolor and airbrush on colored stock

what you can do as a designer

Sound advancement in automobile design over present trends depends on the younger generation—the designers of tomorrow. The field is never a closed one. For young men sincerely intent upon designing cars as a vocation there is unlimited opportunity among those individuals who show talent—and willingness to continue their learning without end. Opportunity for immediate placement in the field will always be there for those having a wealth of imagination, qualified by a thorough training in the rudiments of the vocation.

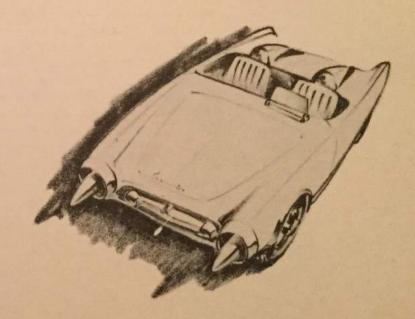
Several schools offering training for automobile designers, such as the Art Center School in Los Angeles, regularly place their students in the design industry. There training is conducted with actual job conditions, under the direction of notable professional motor car stylists.

The artist must continually ask himself whether his designs are going to do a better job than existing designs. Will it be simpler, lighter, safer, easier to park and clean? Will it be cheaper to produce? The designer's efforts are all toward the end of designing a car that will be in continuously greater harmony with human daily living.

The motor wheel can be cited to show how modern design has sometimes lost sight of its commitment to its users. Readily recalled is the day when the wheel was completely unskirted. Recent efforts at high style have buried the rear wheel under an avalanche of sheet metal—turning the usually simple tasks of cleaning, snow chain installation, and tire change into major operations. A covered wheel indicates either that the fenders have been broadened—decreasing streetability, or that the track has been narrowed—diminishing roadability. Consideration of either of these conditions as a solution is not constructive thinking; adoption in production is dishonest.

Is this a good design answer to such a problem? Can the car be made to look more contemporary with the wheels uncovered?

This is the nature of the problems confronting you as a contemporary designer.



the trend of today

Contemporary styling bears a much less direct relation to the chassis underneath than it did as late as the early Thirties, when honest radiators and open clamshell fenders were still respected in design. These faithful design notes, that once tied styling to a refinement of a car's basic elements, have become obscured by erroneous touch-points which give way to false grilles, large-radius fenders, and other symbols of the modern school.

With the rear wheel covered over the car's designer may have either honestly related a suggestion of the wheel to the surface immediately outside, or less-directly placed the suggestion elsewhere without relation, or left the suggestion out completely. The front wheel may soon go under in the same manner, if the drapery hanging continues.

Taking the thin-cab-post, high-fender-line trend from where it appears today it may be that the awkward period of false design-notes is in its last days. As the next round of new bodies comes up it may be that American styles will be firmly planted—with the false design touch-points remaining, of course, in a new trend of trim and graceful lines. The answer lies with you.

Nothing, at first reflection, could be more monotonous and standard than the old clamshell fender—yet how well it was used by some makers. The pontoon side, predicted by many as the stalemate influence in modern design, actually can be in for an infinite variety of distinctive treatments.

Most contemporary efforts have not been "classic" in character, while several have been. Lesser efforts and poor surface development have justly suffered criticism under the eye of a selective public. The only thing that might be

said in behalf of these abortive designs is that they were conceived without precedent.

Future designs must profit from the experience of these ugly pioneer full-blown bodies, as future designs of poor line cannot be passed off with tongue-in-cheek, as some postwar pontoon errors were presented.

Americans can use a transportation car; and they are buying an increasing number of them from abroad, while U. S. builders continue to upgrade their once-small models to make every unit a cross-country land yacht. They contend that the light car market can never be more than a decimal demand.

Proof of "traffic-car" popularity, none the less, continues to show a substantial increase in foreign small car sales in the country, at a time when few U. S. car makers are establishing records for new car sales. Whether Michigan-minds will ever actually produce a line of true transportation cars is highly questionable, for Americans have become educated to appreciate what American cars offer-and current annual sales of all foreign small cars in the U. S. total about one day's combined American car output.

So, the neophyte designer must face the fact that he will be compelled to restrict his dreamlined drawings to renderings of excess weight, fat tires, over commodious seats, et al—if he is to see his ideas in ultimate production.

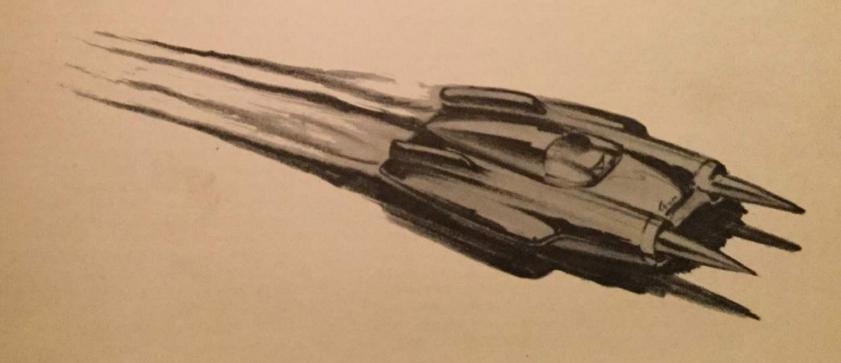
An encouraging point, however—U. S. wheelbases have been whittled. And in a few notable cases overhang has been made less acute. Body width is being used to greater advantage. Prospects for good-looking cars of a fresh, tight and trim school might be considered excellent.

It might be well to establish, that while foreign car designs have often been known to influence U. S. trends, American designs, at least as recurrently, have been the styling impetus for certain European creations. The exchange is free, easy—often quite unconscious—and no one country can rightfully be credited with a long-term lead in world design trends.

When a new model of unusual grace is introduced anywhere in the world, it generally indicates that new designing blood has scored. Like music, known as the International Language, design knows no frontier barriers.

To perpetuate this lineage of fresh styling treatments new men with new ideas must be taken into the fold in a continuous procession.

If you can transfer your original thoughts to comprehensible advanced-design drawings the motor car industry is looking for you.



manufacturer's
point
of
view

Like most contemporary producers, the farmer is a specialist. He grows wheat not on account of a particular affinity for grain, but because he must turn out a commodity he can sell at a profit—to live.

It should not be taken as an esoteric fact that the American Automobile Manufacturer, being a segment of the same economic cycle, also dedicates his facilities solely to making money.

An enthusiast is the instigator, the beginner; he develops every new thing. And the enthusiastic element continues at the helm—till the thing becomes attractively scaled for the strictly commercial interests to take over.

That there were, in the halcyon days, builders of motor carriages who loved their work, is undoubtedly true; but this coterie shrunk to nothing as the motor car industry was graduated into long pants. Few enthusiasts have been a part of the industry since.

Now there is nothing unhealthy or underhanded about this situation except that we must recognize that automobiles—today—are not built by enthusiasts. They are made by companies who would as soon report to their stockholders on their production and sale of typewriters or sewing machines. It just happens that cars are bigger business. In Germany, cars, typewriters and sewing machines were made under the same name by one company.

In the U. S. the vaster market makes a greater specialization the usual practice. Only two American car companies also make refrigerators—each under another trade badge.

While the enthusiast and the buyer might have in mind the same attributes for a "perfect car," the manufacturer's vision is something quite different. His end is to improve his product—profit-wise. Mass-production—the outgrowth of

general acceptance—makes alarmingly good value for the money—in spite of the profit-making premise—and the auto-mobile company has become a worthy servant of the public —up to a point.

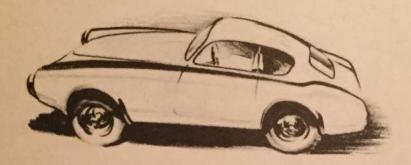
Particularly in America the manufacturer's desire is not to offer the most car for the money—but to sell the most car for the most money, that the public can afford to pay.

Personal transportation has always been the basic need. The present-day manufacturer's point of view has improved the package to also include ever-increasing power, speed, comfort, and bright-work.

Appearance of the product in recent years has become of prime sales importance. Annual alterations calculated to obsolete previously issued models are moderate changes, with a new body shell—contemporary but seldom "radical" ("the public might hesitate")—appearing only occasionally to initiate a basis for a new round of face-lifts.

When a producer does come up with a wholly new body style it is a bonus year for the buyer. Ironically these major changes come about not when the manufacturer is thinking first of the buyer, but first of keeping abreast, or ahead, of competition. Those usual "new" series, where a gimick change-for-the-sake-of-change is the only difference, are the models in which the manufacturer is thinking first of the buyer—and counting heavily upon his known vanity, for sales.

Much has been said in favor of the industry's conservative policy of advancing design through a painfully tedious yearly progression of minor changes. The principal objection to bold change has always been given that history shows radical jobs to have been failures, with a buying public ever-reluctant to plunge.



that a few radical jobs in particular, in history, have been met with enthusiastic public acclaim. Exquisite design taste made them eminently successful. They became forerunners in new trends for the industry.

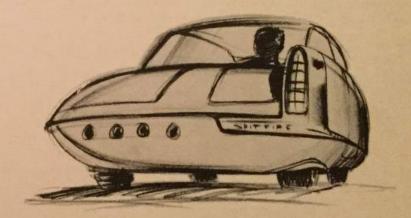
Little short of desperation seems to bring about major change with some makes. It might be concluded that the profit-motive is dominant at the expense of a more consistently improved product.

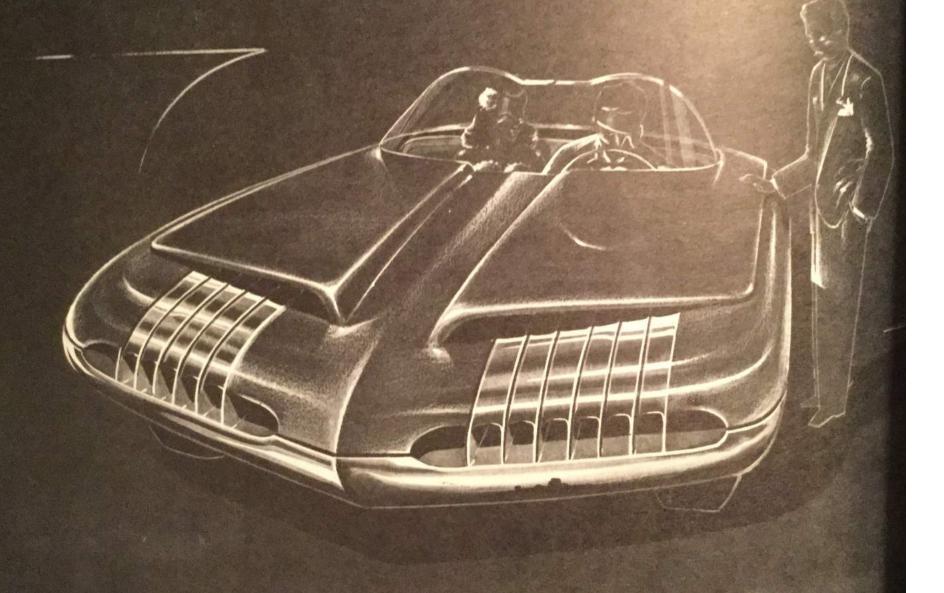
In the U. S. the modern motor car designer, then, is dedicated to conceiving the radical job—to accomplish an all-important role in the treatment of a conservative production design.

Most of this talk has come from industry sources. They do not point up that extreme changes cost far more than is necessary to put a new lease on sales.

When the industry may choose between scrapping major tooling to bring out an advance job, or dishing up more of the old soup by adding a fresh onion, there is little question of which pursuit will be followed. Restriction to triedand-true design, they say, brings relatively lower prices, and long-term resale satisfaction. This premise undoubtedly benefits a vast number of buyers. But who can say that by an enthusiast's bent for greater intrinsic practical value even more buyers might receive even greater satisfaction?

In retrospect, it is true that radical jobs in general have proven sales failures. It is equally recognized, however,





pencil and tempera monotone on colored stock

## salon

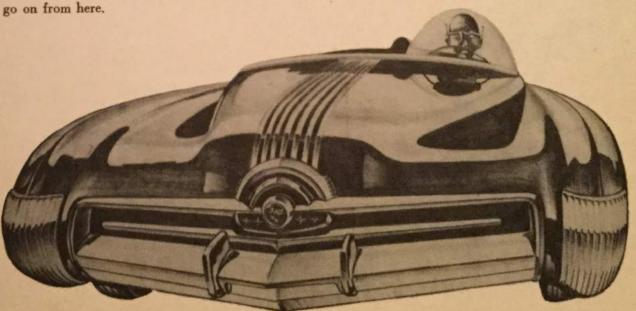
Original "rocket ship" renderings in this salon section have been done by professional automobile designers to display various techniques common among the thousands of preliminary design sketches that contribute toward a new production styling.

Some are sketch-type color renderings which show a relatively speedy technique. After the imagination has been allowed to drift this drawing is used to capture swiftly the fleeting inspiration of an adventuring mind.

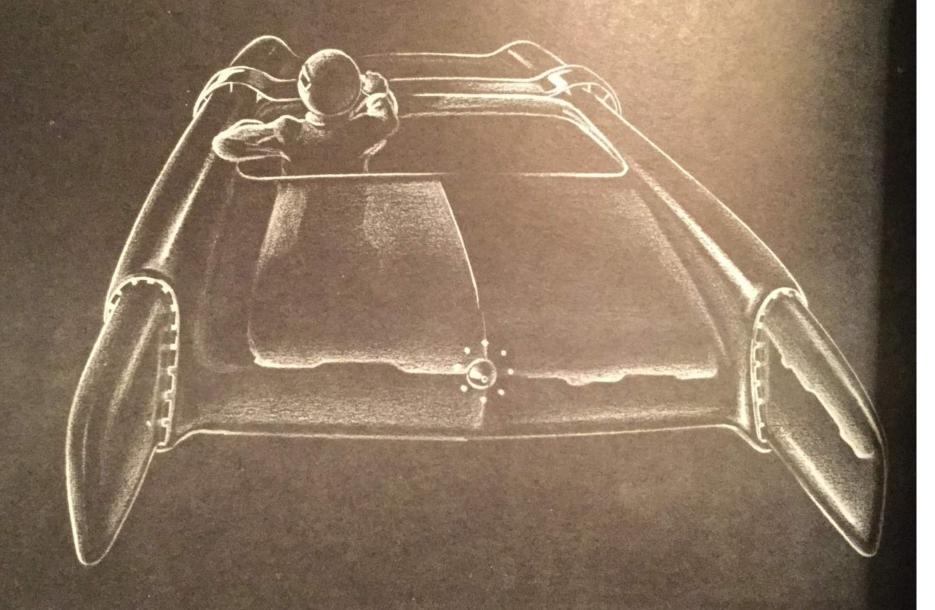
Viewed and criticized by others, the better points are then redeveloped in a succession of other sketches—often made by vellum overlays—until a pleasing, workable design is reached. The final drawing, examples of which also are given, is a painstakingly-developed color rendering.

This may go into a clay model where surface development is refined—the first step toward consideration that might ultimately mark a design for the production line.

What you see here has been done. What the styling studios want you to do is to go on from here.

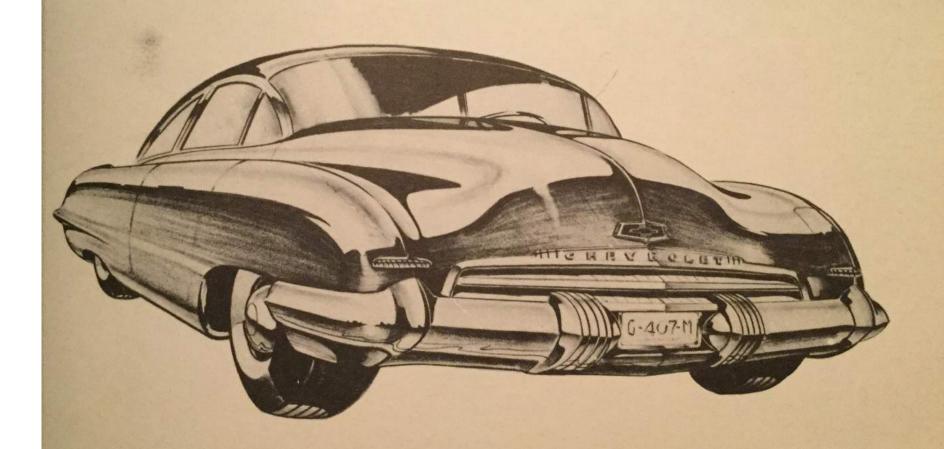


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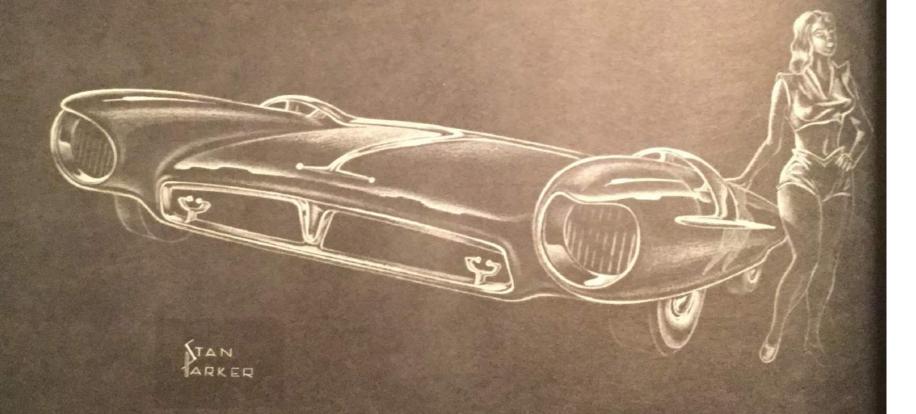


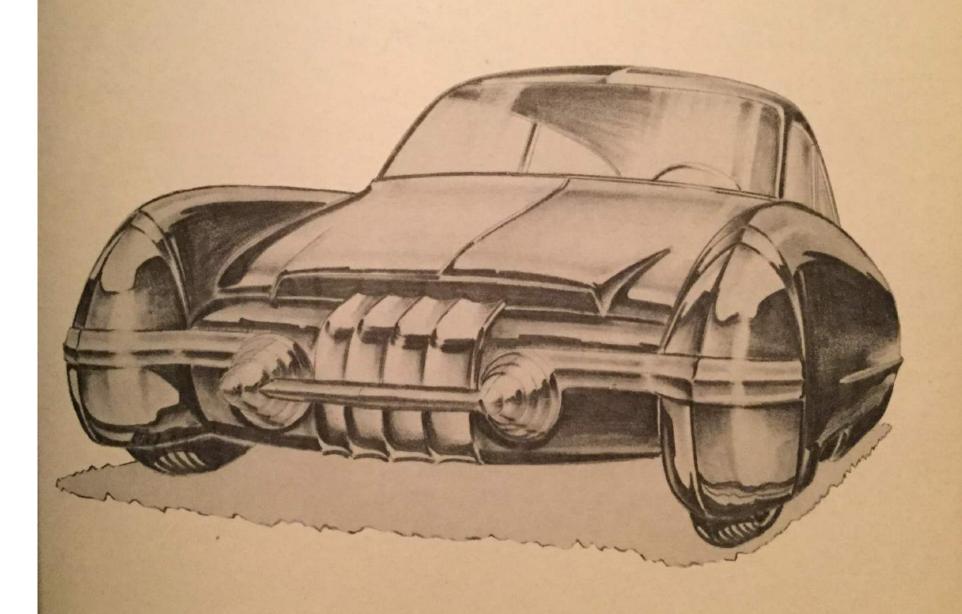
TAN

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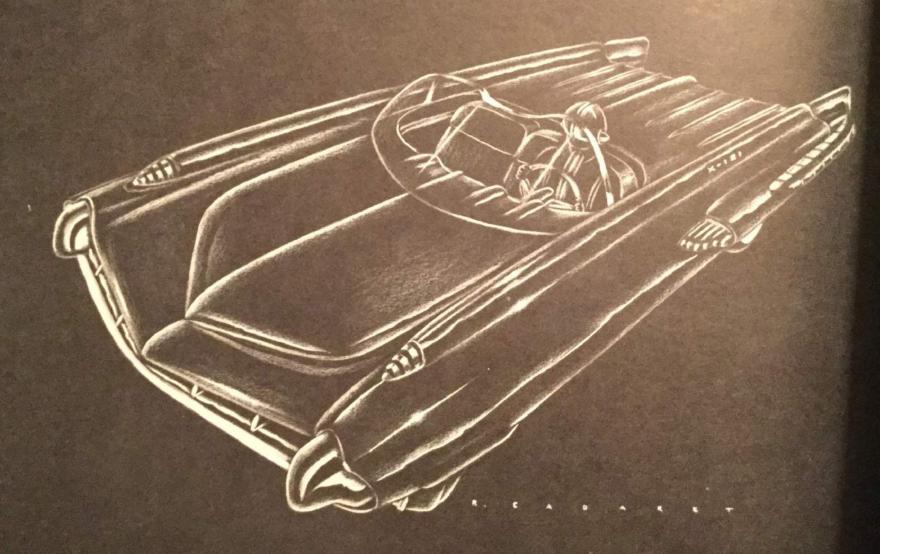


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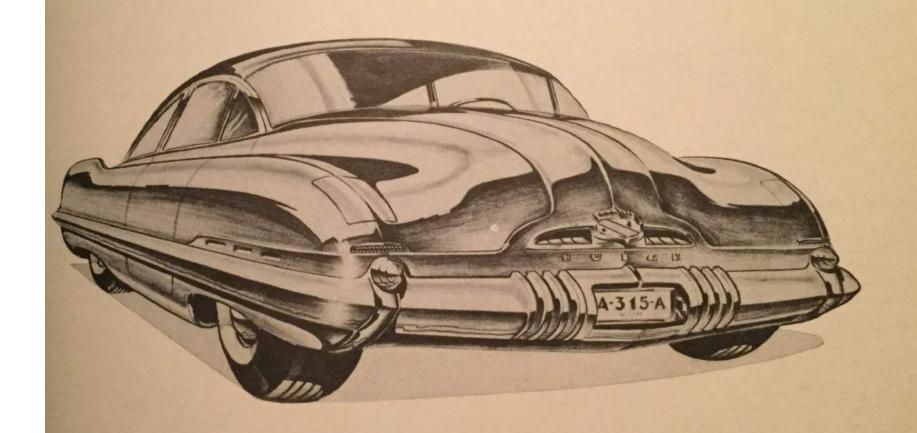




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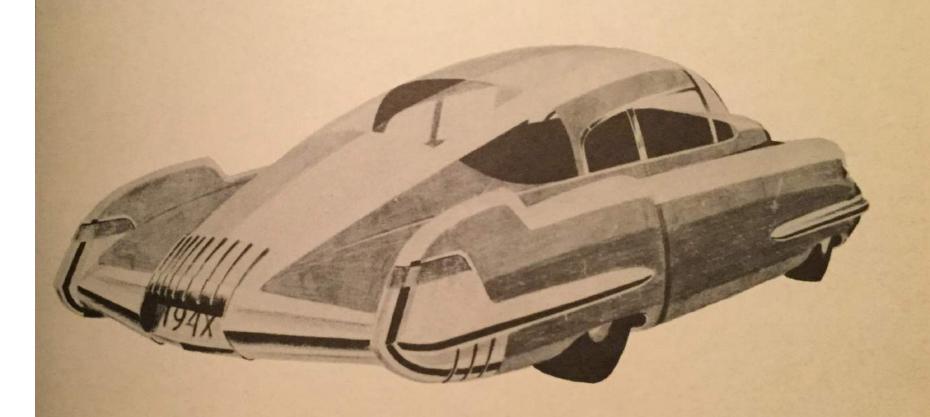
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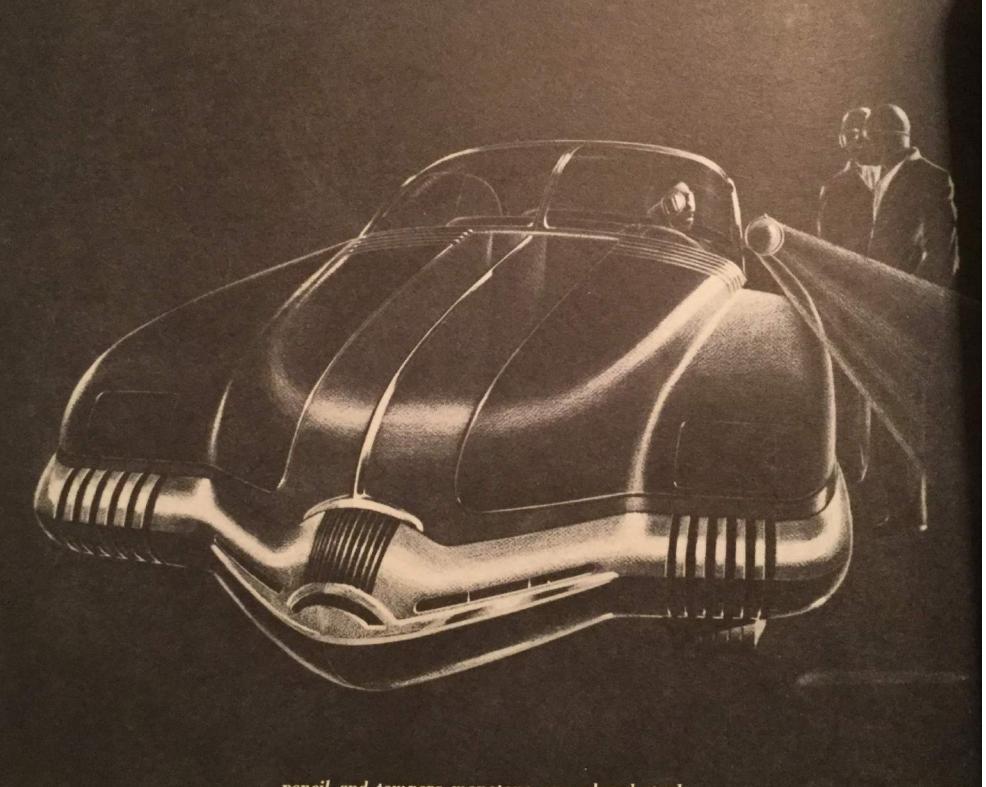


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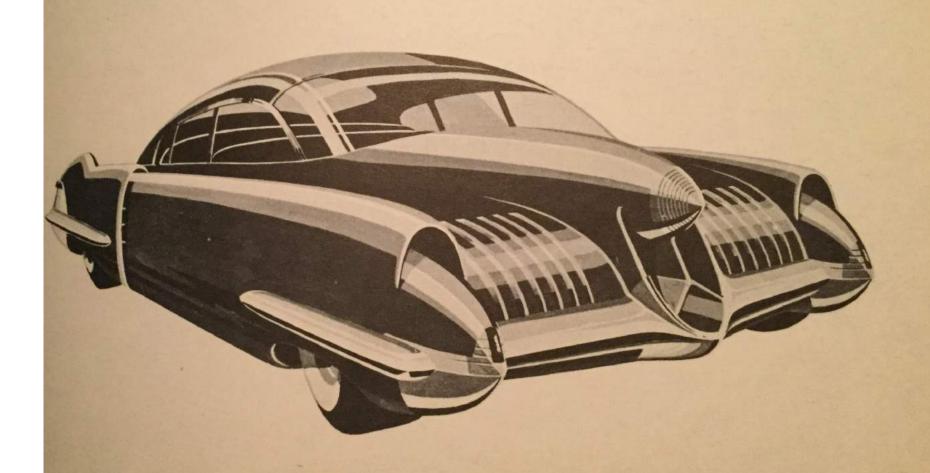


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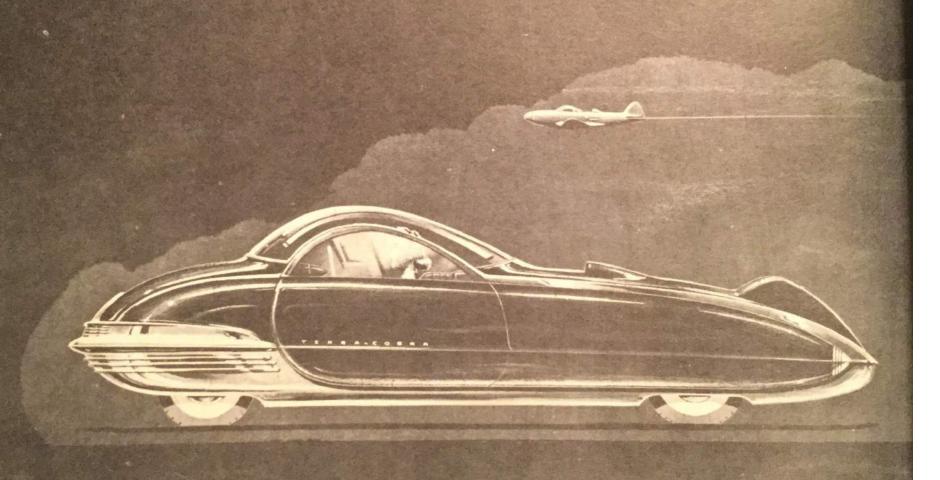




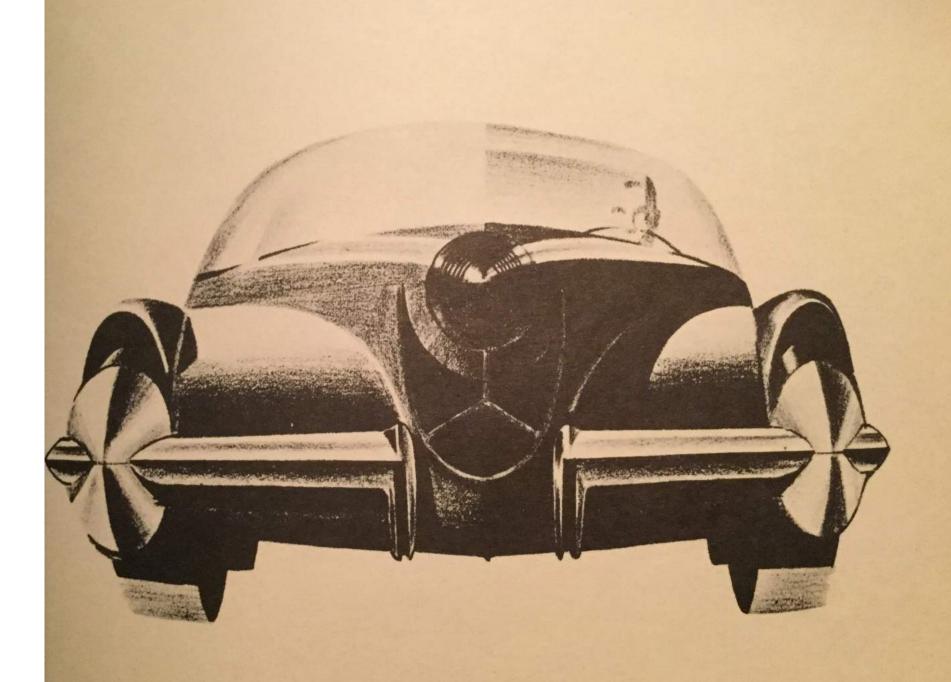
pencil and tempera monotone on colored stock



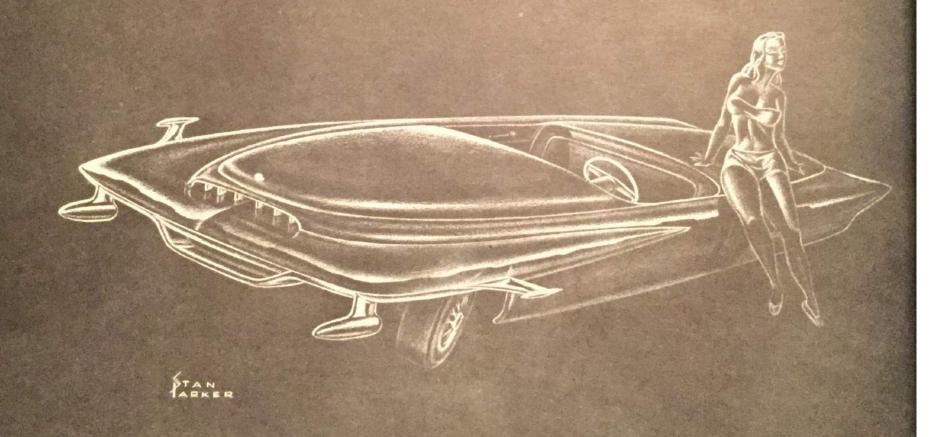
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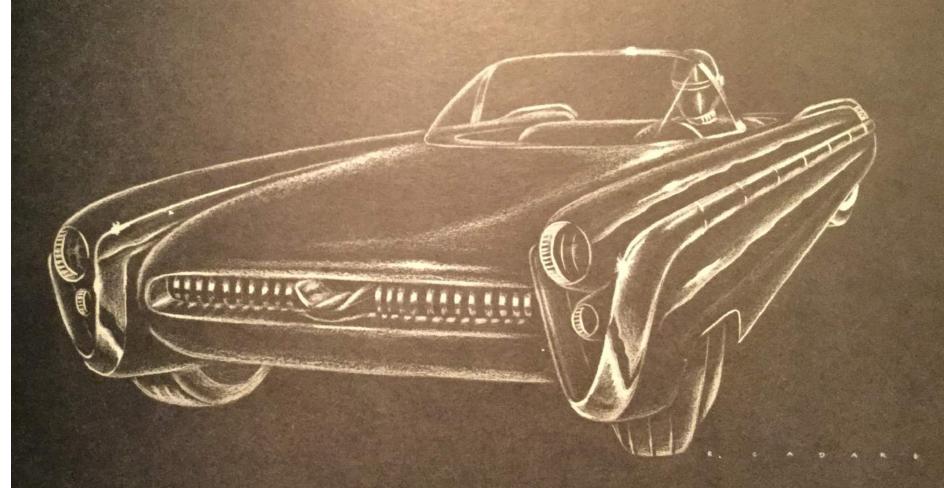
prismacolor and airbrush on colored stock



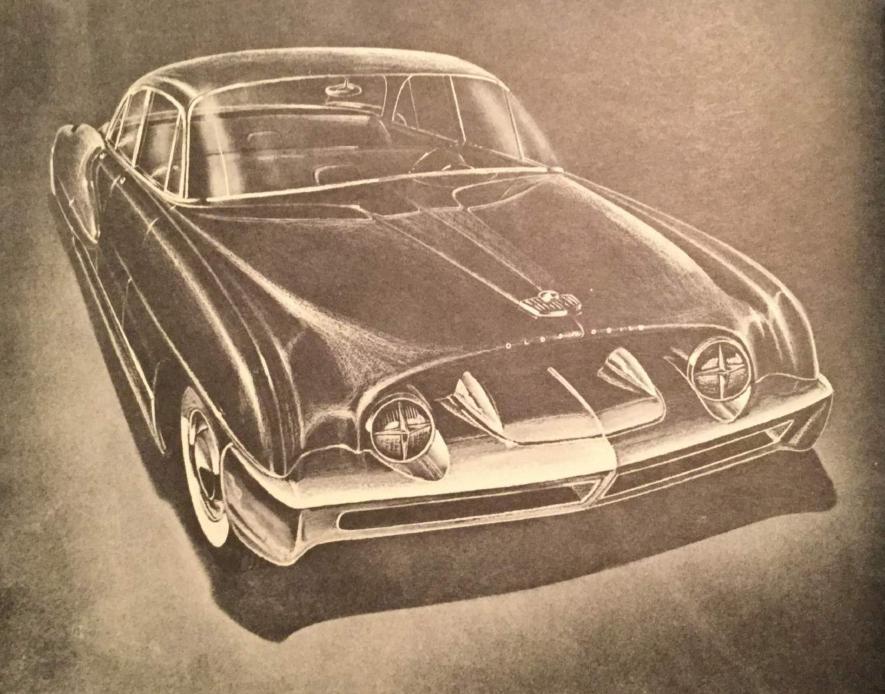
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pencil and tempera monotone on colored stock

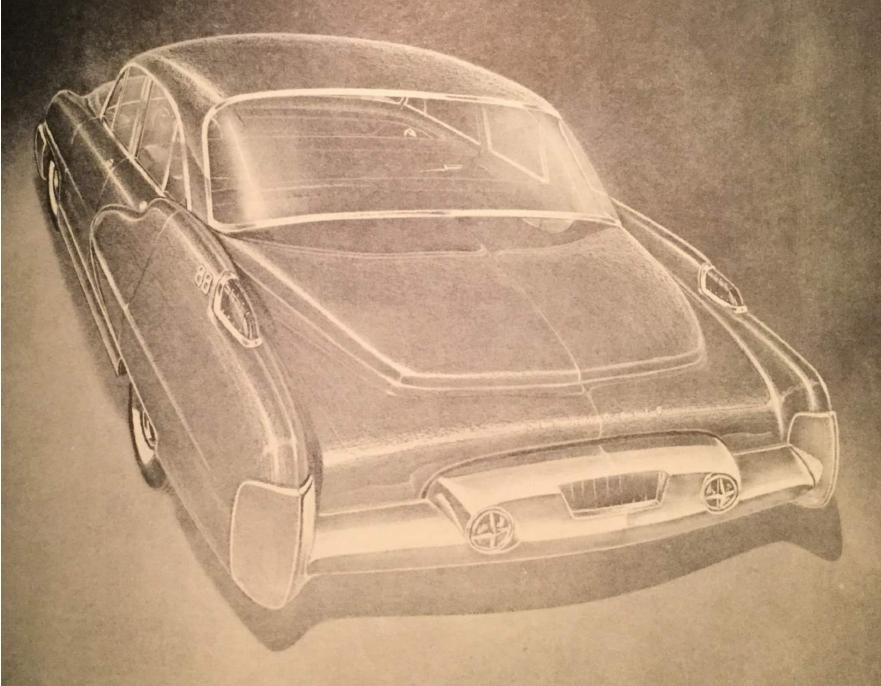


pencil and tempera monotone on colored stock



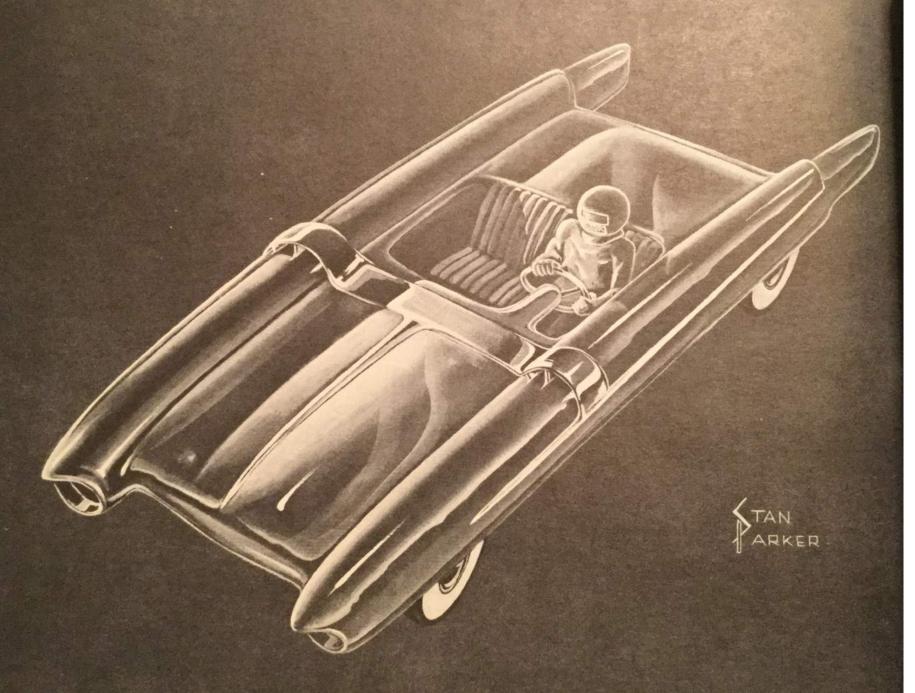
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HENRY GURR

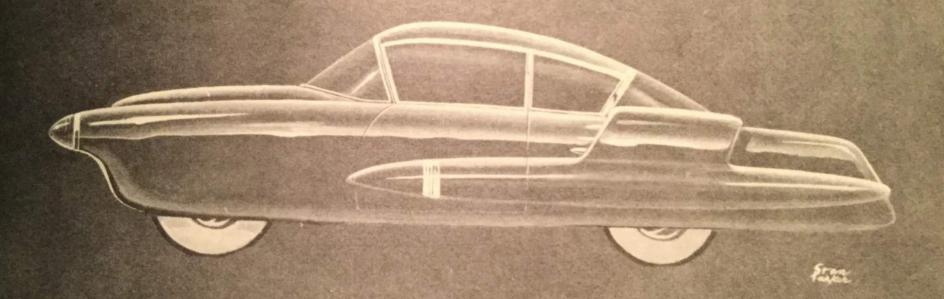


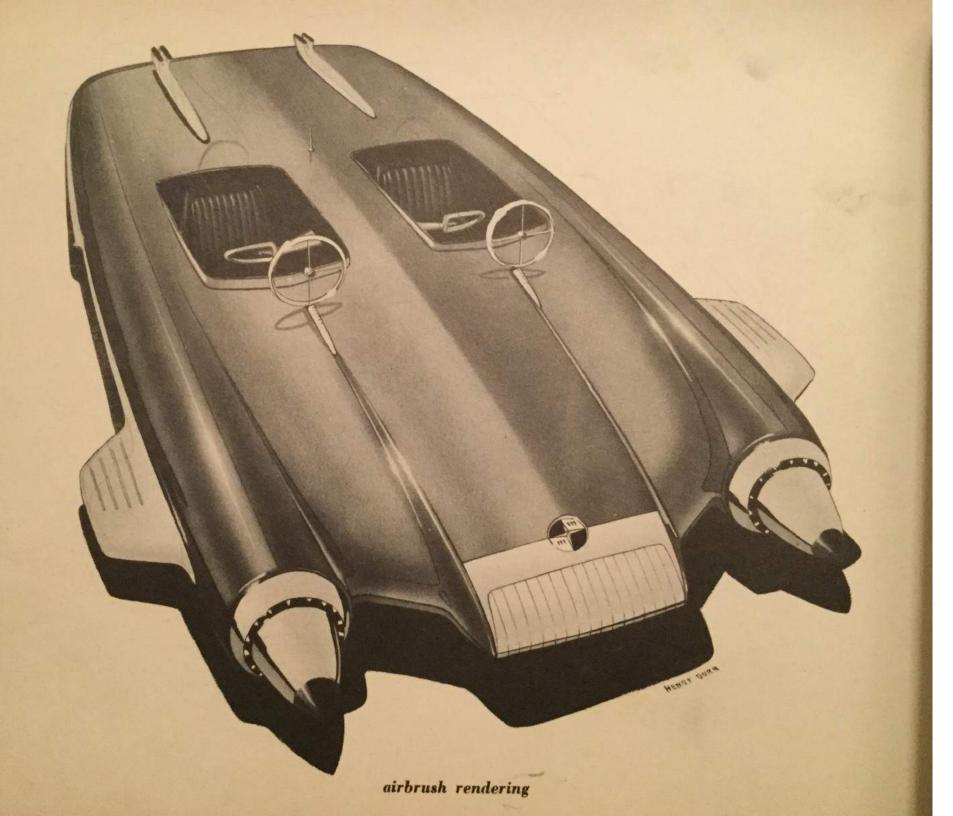
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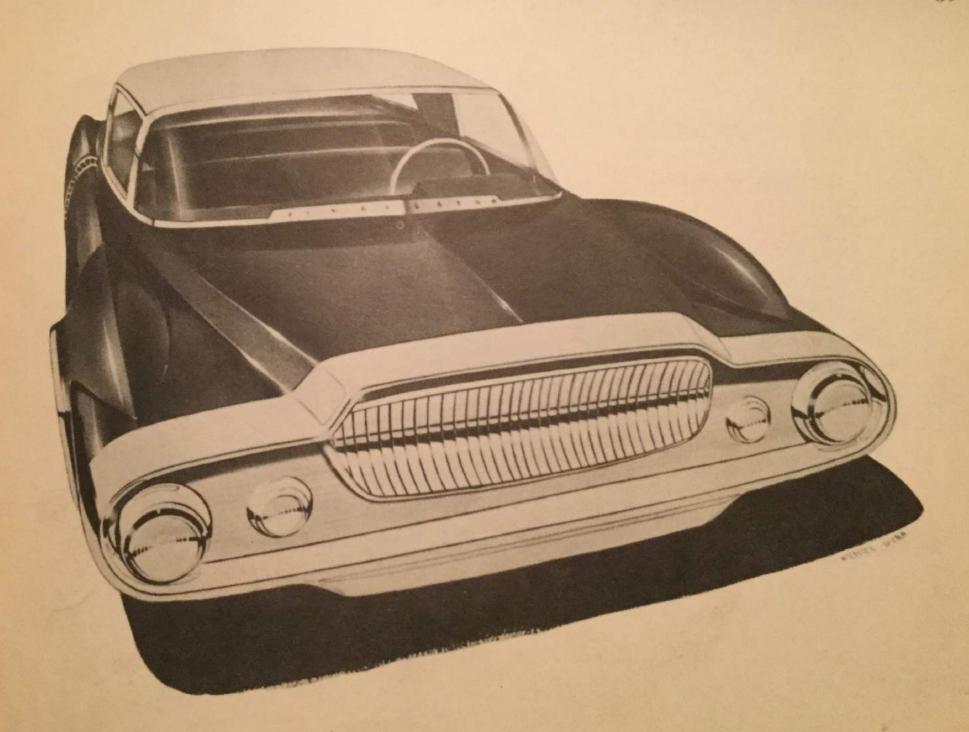
HENRY GURR



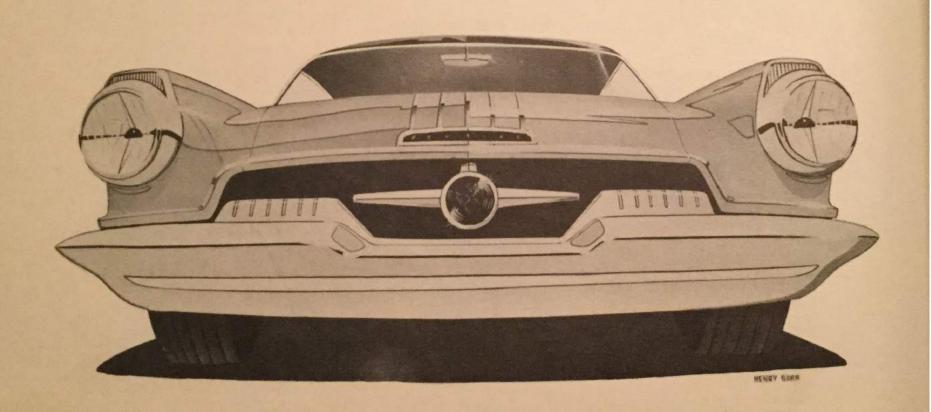
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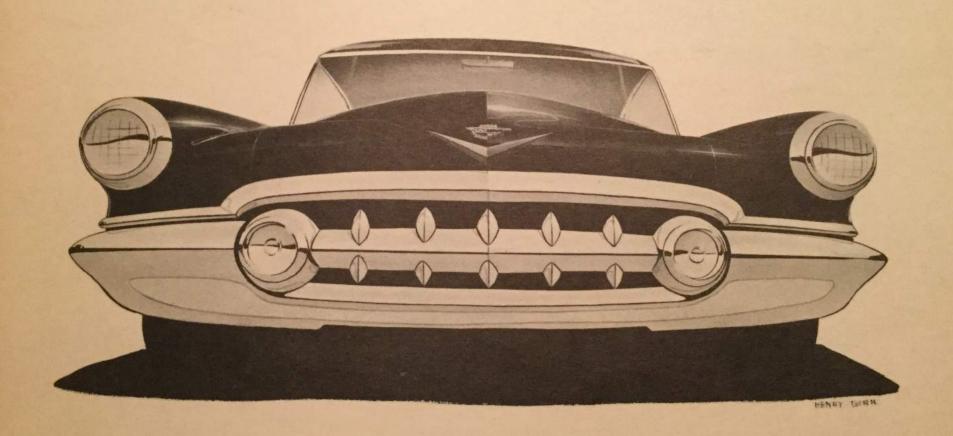




airbrush rendering



airbrush rendering



airbrush rendering

## START

wash rendering

## how to draw cars of tomorrow

text and principal illustrations by henry gurr

Here are the rudiments of automobile drawing in plain crisp language, with an unequalled selection of supporting sketches and renderings. This is the book that will turn armchair auto doodlers into artists of professional stature, and produce among the casually interested a pencil pushing effort showing mean ability.

The contents reveal the comprehensive character of the book:

materials, getting started, character in existing cars, professional character in drawing,
general perspective, elipses, lighting (highlight, core, shadow, reflected light), reflections, chrome, distortion, what you can do as
a designer, the trend of today, manufacturer's point of view, critical dimensions, salon
Besides the straight-forward course of instruction the

substantial Salon section of professional advance designs can also be considered a gold mine of fresh ideas for custom restyling current models.

Henry Gurr, a graduate of the Art Center School in Los Angeles, is now a professional motor car designer with one of the country's largest companies. His rare combination of outstanding designing and rendering ability, coupled with engineering comprehension, assures his future as a resident of Southern Michigan.

Nowhere else between the covers of a book can such candid and unbiased views of manufacturers' aims, designers' problems, and consumers' benefits be found. They would never have been said had the author been committed professionally when the book was written. That is perhaps why some of the facts revealed here may shock the reader.

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