# A DESIGN PROBLEM AND EXPERIMENT IN WATERCOLOR

by

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James G. Souden — Jan. 12, 1959

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Assistant Professor of Art

Date

## PROBLEM

A design problem in watercolor painting is to be the basis for the final paintings which will stem from sketches made in the Tucson Mountains and adapted to the support pellon. The three paintings chosen will fit together as a three-part screen.

## METHOD OF TREATMENT

The paintings will be done on plastic pellon using the watercolor medium. The direction of the paintings will be ascertained as the design progresses and the material pellon is thoroughly tested as a suitable support for the watercolor medium.

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# INTRODUCTION

It is my feeling that the essay which is to accompany the three part screen can best be handled in two parts; first, - the design problems as they occurred and were overcome; second, - the technical research done on the material pellon, with references to the first section. Plates pertaining to both sections are to be found in the section marked "Plates" at the back of the essay.

# PART I

## DESIGN PROBLEMS

Immediate limitations were imposed at the outset due to the number of panels to be included in the screen. The shape and size of the screen was determined and the material, plastic pellon, was decided upon. It was arbitrarily decided that the screen would consist of three panels, each sixty inches by sixteen inches. This would make an overall screen of sixty inches by forty-eight inches.

As a starting point under the above limitations, the Tucson Mountains were selected as a subject. It was not the intention of the artist to portray the mountains in a photographic manner but to impart to the person viewing the screen a pleasing design which would give the feeling of the mountains as the artist has come to understand them. Having spent eight months in Tucson, three of which were spent living in the Tucson Mountains, this subject was chosen as it seemed to be the one with which I was most familiar. It is my feeling that a better job is usually done if the writer or artist deals with a subject with which he is familiar.

The project was started by attempting to find a suitable design that could be turned into a screen. During this process sketches in pencil and in watercolor were made in the Tucson Mountains under different conditions of light and atmosphere. After reviewing the sketches and the various designs which had been done, it was felt that the watercolor

was best suited for this particular project.[1] Using this watercolor sketch as a starting point, the design underwent various changes as the necessary transitions were made in format and size, and as the separate areas within the picture were enlarged and worked. Keeping in mind that each of the three panels of the screen had to be a complete design in itself and the whole screen also had to be able to stand as a unit, all lines and shapes had to be used in such a manner that they would work in a harmonious relationship with all other lines and shapes. The problem was therefore basically one of design, as the above factors were pulled together into a completed screen.

The chosen watercolor was done on a rainy day just prior to sunset as the sun was intermittently hidden by storms moving in and out of the mountain area. As the sun disappeared and then again hazily reappeared through the changing atmospheric shapes, the seeming movement of entire areas, and the forms of clouds and atmosphere against the mountain shapes provided the basic pattern of the design. Formal design and stylization were not the ends in mind, however, but a dynamic quality was sought by emphasizing the constant changing of the mountains, the overall vastness of the area and, at the same time, the spots of detail which appeared as alternately rugged and hazy. The palette used on the original sketch consisted of yellow ochre, Prussian blue, Payne's gray, Black renderer's ink and Davy's gray. The dimensions of the original painting were thirteen and one-quarter inches by nineteen inches. Because of the aforementioned limitation and size of the screen it was a necessary second

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[1] See Fig. 1

step to adapt the design to the new format, thus causing the design to undergo its first major change. In an effort to retain the freshness which is proper to watercolor, no attempt was made to copy the original painting or any part of it. The new format was attacked by working from the basic design, but freshly and directly on the pellon support. The developed design was of necessity more subdued because of the properties of pellon. Additional mountain and cloud areas were added to strengthen weak areas in the new design and lines were altered to suit the new areas. The new design picked up strength in some areas due to the washes and the way they react to pellon.[1] Each time the design was improved, it was by means of a completely new painting. A noticeable weakness was apparent in the first two efforts because of the merging of the three line areas approximately one fourth of the distance from the top on the right edge. The convergence of the two lines and the dark area lead the eye away and out of the painting. The sun also seems more nervous than hazily appearing and disappearing.[2] The painting was done as a single unit. Masking tape strips were prepared and placed on it to divide it into three separate units. This would then indicate the parts of the finished screen. By moving the dividers, it was possible to adjust the design in each section of the picture. It also emphasized the necessity of carefully working each large area of space to be sure that it worked effectively in the overall design. In an effort to strengthen the design, an attempt was made to wash out the lines that met at the middle

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[1] See Figs. 2 and 3

[2] See Fig. 2

of the right edge. The clouds at the left of the sun were washed down in an effort to fill the middle area on the left. The effect was not strong enough, so light blue areas were added as well as lines. Prior to these additions the entire first screen had been divided into three equal areas by the two dark horizontals. Although it was not apparent at this time, the finished left hand panel changed little from the left section of the small work. In an effort to determine the problems which must be faced prior to working on three large panels and to aid in the experimental tests, as described in Part II below, a large pellon panel was prepared and painted. The left third of the small painting was applied without any attempt to faithfully reproduce each area. However, an attempt was made to approximate the original.[1] Although no major design change came from this exercise, it did heighten the effect of the three divisions mentioned above and pointed out the importance of the relationships between the low value areas and the large areas of high value which would appear. The test panel was reworked and additional blue areas added in the middle of the panel on the left edge.[2] It was felt that this improved the design of this panel.

It was further deemed advisable at this time to substitute phthalocyanine blue for Prussian blue in an attempt to intensify the blue to more closely approximate the intensity of the original watercolor. This was the last time the small watercolor was used as a reference. From the results of the test screen, it seemed advisable to work on three full size cartoons. It was decided that the three cartoons should be done on

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[1] See Fig. 4

[2] See Fig. 5

pellon in order to become accustomed to the different qualities of pellon and paper. The small painting was gridded and the large pellon panels were gridded. The design was then roughed in with pencil.[1] The pellon used for this cartoon was of a lighter weight than the pellon which was to be used for the final paintings. The cartoon panels were placed on benches and all three were worked on at the same time, since the design had to flow across the divisions. The three finished panels showed strength and weaknesses in the following areas: The yellow ochre of the sun was not intense enough in relationship to the intensity of the blues and blacks. The first panel, aside from this intensity problem, stood quite well alone.[2] The middle area of the panel worked quite well with the low value areas. The second panel, for the first time blown up to actual size, showed a very bad middle area because it seemed to act as a bull's eye.[3] The bottom of the second panel worked well as an individual unit but failed to relate itself to the rest of the panel due to the aforementioned bull's eye. Also the chevron shapes at the bottom of the panels had no relationship with the shapes at the top. Panel three was weak in that all low value areas extended toward the border of the panel and seemingly ended there at a vertical line.[4] Panel three was reworked and the first and third areas were extended to the right edge of the

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[1] See Figs. 6, 7 and 8

[2] See Fig. 9

[3] See Fig. 10

[4] See Fig. 11

screen.[1] The value intervals in the entire screen seemed too great at this time and the entire set of panels was reworked with a predominantly blue wash. Because the screen had lost its freshness it was discarded and a new set of panels was made for the purpose of correcting the errors of the cartoon screen. The second complete screen was done on the heavier grade pellon, as were the succeeding screens. Cadmium yellow light was added to the pallet in an effort to pick up the intensity of the sun. All areas of low value were intensified and the entire screen made more intense. The aforementioned weaknesses of the preceding cartoons were corrected.[2] Although the bull's eye area on panel two was eradicated and the vertical limiting margin on panel three corrected, the new intensities and low values heightened the weakness of the large high value space areas. Also, due to the peculiarities of pellon, the dark areas became opaque and the feeling of translucency which is prevalent in watercolor was lost. A design problem was created due to a technical fault which formed two "V" shaped areas where panels two and three met. Being a technical problem, this was solved satisfactorily on later screens and the areas returned to their former shapes. The major problem at this time seemed to be one of value relationships and opacity which prevented the areas from working together. In an effort to improve this set of screens, two washes were applied over all three panels.[3] A third wash was added to the bottom of the panels in an effort to bring this area forward. The lowering of the high value areas made them become more integral parts of

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[1] See Fig. 12

[2] See Fig. 13

[3] See Fig. 14

the design and the play of values within each area was also integrated because of the opacity of the panels and the consequent loss of freshness, new areas of complete opacity were added to the bottoms of all three panels to determine the effect of harsh detail on the design.[1] From a study of the cartoon screen and the second screen it was decided that the screens should be redone using the new technical controls that had been learned at this time and that a higher key should be maintained throughout in an effort to control the relationships of the areas and cause them to work harmoniously. The new set of screens was completed. The overall effect as a complete design was better, and the individual screens stood quite well as separate units.[2] When the screens were finished, two glaring faults at once became apparent. The two dark blue areas at the top of panels one and two met in the sun in a point which weakened the design. Due to the application of the paint, harsh lines that did not tie in with the rest of the areas were apparent in the lower area of panel two and the middle area of panel three. To correct these areas as well as to weaken some of the individual lines, the panels were soaked and the areas reworked.[3] Although some of the areas were corrected, washing and reworking removed much of the freshness of the paintings and caused much pigment to sink to the back of the screen and create undesirable line effects. It was decided to do another screen in an effort to rectify the previous errors and recapture the freshness of watercolor. The new set was done on dampened panels and all lines and areas were consequently softened. The value areas were in better relationship to

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[1] See Figs. 15, 16 and 17

[2] See Fig. 18

[3] See Fig. 19

each other and, I felt, worked well together - all areas being an integral part of the design. After the panels were dried additional line areas were added to clarify some of the wash effects of the water-color medium on pellon. From a distance all of the lines are not discernable to the eye. However, as one approached the screen more of the lines become apparent and help to lead the eye into the mountain area.[1]

[1] See Fig. 24

## PART II

## TECHNICAL RESEARCH

Having decided that the finished project should be a screen worked in the watercolor medium, it was necessary to decide upon a subject. Due to the difficulties and costs involved in using paper, it was felt that a cloth ground might be more durable and still retain the properties associated with watercolor. After a discussion of possible supports with the men in the art department of the University of Arizona and investigation of available materials, it seemed highly probable that the new material, plastic pellon, might furnish a satisfactory support. Professor James G. Souden, of the art department, had already had satisfactory results with watercolor done on wool pellon.

Pellon, according to the advertisements of the Pellon Corporation, is...

> "Pellon: a fabric unlike any that had ever been made before. Neither woven, knitted, or felted, but made by a patented process which chemically bonds together specially selected fibers, it gives a permanent, supple, built-in shape to any outer material, from airy chiffons to the heaviest of velvets.
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> "Pellon's research chemists developed an entire family of non-ravelling, non-shrinking, easily worked fabrics. They had to. For within less than seven years ingenious Americans have invented more than 1,000 ways of using this magical material that makes old products better and new products possible."

While sketches and watercolors were being worked in an effort to find a satisfactory design, small strips of pellon were tested as supports for the watercolor medium. Small areas of color were tried on strips of dry pellon and then on strips of wet pellon. In each case it was found that the pellon readily accepted the color.

After the preliminary tests it was decided to put the selected design on a sheet of pellon. The pellon was stretched over a plastic coated piece of plywood and tacked down.[1] The painting was applied to the dry pellon and water was then added to create the desired washes. As the wet areas of wash were added to the pellon, the material buckled and created areas by the flow of color into recesses that were difficult to overcome. To control the washes, it was discovered that the pigment may be pulled down by brush work into the desired damp areas, or that by using the natural flow of water the washes can be directed by manipulation of the board and the degree of dampness. It is impossible to get a fine line or a hard line when working on the wet material. The pellon, when dry, was again taut and the color had dropped in intensity. Upon removal of the pellon from the plastic surface, it was found that much of the pigment had sunk through the pellon and had been absorbed by the plastic material and wood. After several further tests of painting upon pellon stretched upon cardboard, papers, and glass, it was determined that the glass backing was the most suitable as a solid painting support in that it permitted the pellon to retain the pigment. The color in each case was most intense on the back of those that had been worked

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[1] See Fig. 2

wet.[1] If heavy pigment is applied directly to the dry pellon, the color will not seep through and a satisfactory dry brush effect can be obtained.[2] If washes are added, the seepage of the pigment through the pellon is in direct relationship to the dampness of the cloth.

If the material were to prove satisfactory as a watercolor support, it was further decided that it should be determined what corrections, if any, could be performed upon a painting once it had completely dried. Therefore, lines and entire areas were worked over by scrubbing with water and bleaching in the sun. Also, chlorox was used. In each case the following results were obtained: In direct relationship with the amount of scrubbing performed, an area of low value can be washed up to a higher value. However, the material will never again return to its original color. What, in effect, happened in the low value areas was that the heavy pigmented areas washed down through the pellon to the back, but the front side still retained the stains of the pigment. Because of the action of the water and scrubbing, the pigment spread and formed a new dry line where the water stopped its seepage.[3] In the high value areas, the washed down areas could be raised still another value step or two but the actual hue was never successfully removed from any area. This was true of thin lines as well as large opaque areas or washes. To further test the pellon, a piece was thoroughly washed in a detergent and restretched. The pellon did not shrink from its original size and it was as taut and wrinkle-free as when first tacked down. However, it

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[1] Compare Fig. 19 with Figs. 20 and 21

[2] See Fig. 5

[3] See Fig. 6 - Lower Left Hand Area

still was stained by the pigments. At this point it was still a difficult material upon which to satisfactorily work while stretched upon a stiff backing. As a result, it was decided to work on the pellon stretched over canvas stretchers. The pellon was thoroughly soaked and stretched onto a frame twenty-five inches by thirty inches. The material is easily stretched as it increases in size when moist. This means the material may be tacked down wet and will be taut when it dries. It then forms an ideal resilient surface upon which to work. The pellon, though previously soaked and dried, accepted the paint as readily as the former pieces had done. Without a backing to absorb the excess pigment, the color remained in the pellon. When the material was again moistened with water it sagged uniformly, making a much easier working area than had previously been encountered. Again, depending upon the amount of water added, the washes can be easily controlled by tilting the frame. In the event that too much water is added, beads of water will form on the back of the pellon. These beads may be removed and the color left by blotting with small pellon squares. A rapidly spreading color area can be slowed down and brought under control by the use of a hair dryer. However, I think it best to add that additional dry lines can be avoided if the area is not entirely dried. The seeping will continue as long as there is any moisture in the pellon and the artist must allow for this. It was my experience that the best way to control a partial wash or small area that had been wet was to take two small pieces of pellon and work carefully and patiently on both sides of the area with a blotting action. In this way any drying lines could be avoided, and the area controlled. For this technique, patience is a must. After the stretched pellon had become dry

it was apparent the color areas, in relationship to intensity, behaved exactly as previously. New design effects also became evident. When placed against a backing, as a watercolor might appear in a frame, there is a complete picture. If the backing were left off the painting and the piece displayed with light coming from behind, the areas change subtly in shape and noticeably in value and intensity. If the painting remains in the same position and backing is placed on what was the front and the painting is turned around, a third effect occurs. If it is remembered that line or areas may be added to the dry pellon and that they will not seep through, there are more possibilities as the light and translucent qualities of the material are controlled. Thus, unlimited design effects are created as one controls the moisture of the pellon.

Up to this point, nothing has been said about an attempt to add color to a design that had been worked and permitted to dry. At any time prior to the time the original painting is completely dry, or feels dry to the touch, areas and lines may be added without fear of a dry, hard line appearing in the design. The wetter the material, the more the color will seep. Once work is stopped on the design and the pellon is permitted to dry, it is increasingly difficult to add a soft area without changing the adjacent areas. As the painting dries it will drop a step in intensity and rise a step in value. This proved true in both the stretcher and backing processes. However, by working carefully and slightly dampening an area, a wash may be carefully added.[1]

[1]See Fig. 6 - Left Side in Center

The painting must be handled most carefully, however, when drying. Due to the nature of the material the colors will seep as long as there is moisture present. As a result, it is advisable to allow the paintings to dry undisturbed in a flat position. If the painting is permitted to dry standing or leaning, the moisture will work around the fibers of pellon and run downhill.[1] It is my recommendation that the safest way to add a soft wash area to a painting is to wet the entire painting again with clear water, spraying it on lightly so that there will not be any distortion of areas by the brush strokes. Once the entire painting is wet, then carefully work the desired areas - whether it be adding color or subtracting color. In this manner you are assured of not having any unplanned dry, hard lines. However, each time that a wash of clear water or faint tint is applied, the painter runs the risk of losing some of the freshness of the original painting.

From the above information and brief tests it had been determined that the material could be worked much as regular watercolor grounds are worked, obtaining the desired washes and line areas. Also, it had been demonstrated on smaller paintings that the medium could be controlled with relative ease.[2] The larger the painting the more difficult it becomes to control the medium and moisture involved. As a result, certain problems were immediately encountered when working large - and these problems again increased when three large areas were to be worked simultaneously. These problems will now be reviewed and it will be told how they were

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[1] See Fig. 6

[2] See Fig. 22

resolved. In the first large single screen, the pigment was added to the dry pellon and the desired wash areas were achieved by dampening and pulling these color areas into the desired places with a large house-painter's brush.[1] The remaining areas were dampened and tinted by use of the same type of large brush or sponge. All areas were dampened until there were no damp areas between washes. This alleviates a hard-drying line around a wash area. The area can continually be worked until it is dry. In the event that an area is too dark in the first application, it can be soaked, thus reducing the intensity and value. The excess of each can be blotted away by the use of small pellon squares until the area is the desired value and hue. One point must be emphasized at this juncture. When adding a wash to an overall area the approximate value and intensity of the wash should be determined before application. If a much lower value is added to the area and then it is attempted to wash it out to a larger, lighter area, the artist runs the possible risk of the brush strokes of the first application remaining after the wash has been worked. It was decided that all three panels must be worked quickly and simultaneously if the value areas and connecting shapes were to run smoothly from one panel to the next. The cartoon was the first attempt to work the three large areas.[2] The following procedure was used as it seemed to be the one most likely to control the medium. Two benches were placed apart so that the frames of the painting were resting horizontally on the benches and the pellon was far enough from the floor so that the sag of the wet cloth could not possibly reach the floor. In

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[1] See Fig. 4

[2] See Fig. 11

this manner any beads of water which needed removal could be easily blotted. Small wooden blocks were kept by the corners of each frame. On occasion the frames were propped on these blocks so that a wash could be permitted to run while another area was being worked. In this manner any panel could be tilted at any time in any direction without moving the entire screen.

One problem arose which had not been noticeable on the smaller paintings. The color areas will continue to move through the pellon until the material is thoroughly dry, particularly when the pellon is in contact with some other material. In the case of the three panels this was true along the edges where the pellon contacted the stretchers.[1] This was a problem in all of the screens from this point forward until the following solution was found. When the panels were dry, there was often a faint line on the pellon where it met the inside of the stretcher and the color would run at these places. The running can be stopped entirely and the inner frame lines can be completely eliminated by tucking long thin strips of pellon between the frames and the pellon on which the final painting is being done. Until this method was discovered, one of the most serious problems of the entire screen was devising a method to insure perfect control of the material at the edges of the panels so that the design would flow smoothly from one panel to the next.

As problems concerning the design were encountered after the different screens had become thoroughly dry, it was necessary to go back to the

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[1] See Fig. 11

screens and rework them. As previously stated color can be added and washes added. It proved most effective to rewet the entire screens and add the colors at this time. It should be noted that in the case of large low value areas of high intensity, the additional washes and wettings weaken both value and intensity each time and they lose some of their effectiveness. If this process is done three to four times, the artist runs the risk of washing down the entire area until the effect is one of a narrow intense area within a large value area that is much less intense.[1] There is the eternal watercolor problem of the entire painting losing the freshness which is associated with this medium.

It was further noted that an opacity occurs in the very low value areas. This raised the question of adding a sizing to the pellon to determine what effects this would have on containing and controlling the medium. A sizing, "Liquitex", was prepared half and half with water. A dry piece of pellon was stretched. Sizing was added on one half of the back side and then it was applied to the front on the other half. The second piece was thoroughly soaked and treated in the same manner. Both pieces were permitted to dry thoroughly and then a design was applied.[2] It did not help in the control of the medium. The areas were, however, more opaque. The idea was not entirely abandoned at this point, but again explored at a later time.

The third set of screens were worked until they reached a point

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[1] See Fig. 19

[2] See Fig. 23

of opacity in many areas.[1] It was then decided that some opaque detail might be added in the hope that it would further the design. "Liquitex" was applied directly to the pellon with the addition of the watercolor pigment as it comes directly from the tube. The mixture was applied to one wet panel and two dry panels.[2] There was no noticeable difference in the results. Although the idea was discarded as far as these particular screens were concerned, it should be noted that the effect of the medium on pellon was very attractive. It resulted in a soft, velvety surface.

Additional tests were run to determine the basic properties of pellon. It is very inflammable. At no time when the material was undergoing any of the above experiments was an odor noticeable. As to strength, it is a very durable material. It may be cut easily by the use of scissors or knife. The material will tear if sufficient pressure is added or if it is abused. It tears more easily when wet. It is very easy to stretch when wet as the moisture allows it to stretch. It will then return to its original size and become taut on the frame. It is the opinion of this writer that the material is more rugged than paper and under normal use is to be considered a rugged ground.

Due to the properties of the material discovered and explored up to this point it was felt that a protective coating should be found in the event that a large project should be undertaken that could not practically be covered with glass. In the event of a regular frame size watercolor the painting can be easily framed and protected in the conventional

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[1] See Figs. 15, 16 and 17

[2] See Fig. 16

watercolor manner. In the case of the screens another solution was necessary. As a result the plastic sprays were explored with the idea of plasticoating the panels. Sections of pellon that had been painted were sprayed in the following manners. All tests were run using a glossy and a non-glossy spray. Panels were sprayed lightly on the front. Additional panels were sprayed on both the front and the back. The sprayings were done in three finishes, light, medium, and saturated. Water was applied to all test pieces, additional paint was added and areas of color were attempted to be removed. The light spray was to all intents and purposes ineffectual. The areas that had been well covered but thoroughly soaked resisted water and color additions to a limited degree. It was nearly impossible to change any areas by scrubbing. The saturated areas were most effective and behaved in the following manner. Water splashed onto the surface beaded and rolled off in most areas. Where it did not roll off it could be blotted with no bad effects to the design. Color and paint could be added to areas where desired but had to be worked into the material. A wash could not be added. The colors were difficult to remove and it was hard to tell where the material was rubbed away and where the color was retreated. As a protective material it is very satisfactory. Due to the properties of the material, both the glossy and non-glossy spray appear the same. Concerning the effect of the spray on the colors and values of the design, the following effects were noted. The colors become a little more intense than they previously had appeared, but not quite as intense as they did when first applied to the pellon in a moist state. The values drop down a very little.

## SUMMARY AND CONCLUSIONS

In summing up, it is my opinion that pellon is an excellent watercolor support. It accepts color readily, allows a fine wash that can be controlled and is no more difficult to work in the smaller sizes, (thirty inches by thirty inches or less) than is regular watercolor paper. Similar to watercolor paper, it can be obtained in varying weights and may be worked either wet or dry. However, for the best results the material should be stretched on a frame.

Before summing up the entire pellon problem, I feel that there are certain factors which should be mentioned at this point. The soft effects of the final screens were achieved by thoroughly soaking the panels and then working upon them while they were still wet.[1] In this particular case it was done to insure the absence of any hard lines in the final design. The small detail lines were added after the screens had dried.

The question of the material aging is one that can be answered only by time. It should further be noted that at this time the cost of pellon, dependent upon the weight, is in line with that of watercolor paper.

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[1] See Fig. 24

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[1] See Fig. 24

PLATES

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22

Figure 23

Figure 24