YOUR COMPANY THROUGH THE YEARS

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RECENTLY DOCTOR KALMUS
SUMMARIZED THE HISTORY
OF TECHNICOLOR
FOR THE DIRECTORS OF OUR COMPANY

HIS DISCUSSION REVEALED AN ASTONISHING FACT:
TECHNICOLOR HAS FACED FOUR SERIOUS DEPRESSIONS
AND HAS SURMOUNTED EACH OF THEM
SUCCESSFULLY

BECAUSE YOU ARE WORKING TODAY
AT THE BEGINNING OF WHAT WE HAVE EVERY
CONFIDENCE WILL PROVE TECHNICOLOR'S FIFTH
GREAT STORY

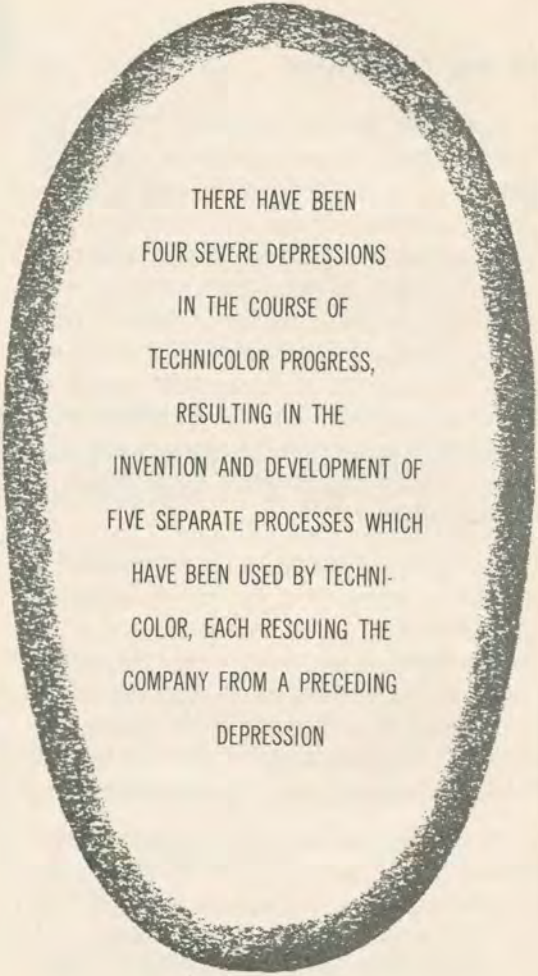
WE THOUGHT YOU WOULD LIKE TO HEAR ABOUT IT
FROM DR. KALMUS HIMSELF

AT THE BEGINNING . . .

It was forty years ago on November 19, 1915, that Technicolor Motion Picture Corporation was born. It all started a year or so before that date when Mr. William Coolidge, a prominent attorney and businessman of Boston, Massachusetts, asked Kalmus, Comstock & Westcott, Inc., to investigate for him a motion picture projector called Vanascope. Kalmus, Comstock & Westcott was a company formed in 1912 by Dr. Daniel F. Comstock and myself, both graduates of Massachusetts Institute of Technology and recently returned from obtaining Ph.D. degrees abroad on fellowships from Massachusetts Institute of Technology, together with W. Burton Westcott, a mechanical genius.

We reported unfavorably on the Vanascope and a year later, at the request of Mr. Coolidge, we made a second unfavorable report in which we suggested to him that if he wanted to put money into the motion picture business he raise his sights and aim to put color on the screen. During the consideration of the problems connected with Vanascope the ideas which led to the first Technicolor camera and process were germinated.

Mr. Coolidge must have enjoyed my statement that "the most he could lose was all he put into this color motion picture venture" because he and his partner, Mr. C. A. Hight, came along with the first money for research and experimentation that led to the organization of Technicolor Motion Picture Corporation in 1915.



TECHNICOLOR PROCESS NUMBER ONE

was a two component additive system.

Photography was with a camera which Kalmus, Comstock & Westcott, Inc. invented and built for Technicolor to photograph two color-component pictures simultaneously from the same point of view. Pairs of prints made from these pairs of negative pictures were projected in register on the screen. About that time a color process called Kinemacolor was appearing. By that process the two color-components were photographed, one after the other, so that for a moving object they did not register perfectly; hence, a horse might have two tails, one green and one red, due to the motion between the two component picture exposures. Since Technicolor photographed these two pictures simultaneously from the same point of view the Technicolor slogan was that the pictures were identical geometrically and hence no fringing was possib'e. On this point Technicolor was theoretically correct and Kinemacolor impractical but Technicolor pictures required that the two components be kept in good register by the projectionist at the theatre.

We learned that lesson the hard way. I was invited by the American Institute of Mining Engineers to give an exhibition of the "revolutionary" Technicolor process at Aeolian Hall in New York City. We were photographing a picture called "The Gulf Between" in Florida. The audience included Mr. Coolidge, Mr. Hight and about 150 others, many of them interested in the prospect of financing the growth of Technicolor. After my enthusiastic preliminary remarks the picture began to appear, and behold there were the most glaring color fringes anyone had ever seen on the screen. The projectionist had failed to register the picture properly at the outset.

This and some further experiences in the theatre with the difficulties of registration in the projection brought about the first deep depression for the then very young Technicolor company. Technicolor was born of re-

search work and now more research work was required to save it.

2 TECHNICOLOR PROCESS NUMBER TWO

And so a second Technicolor process was developed, this time a two component subtractive process. That is to say, instead of having two separate beams of color light going through two separate pictures in the projector which had to be registered on the theatre screen, as in the first Technicolor process, we now have both components of the picture printed from the negative in register on the positive film. This was accomplished by making a relief image from the green component. By a relief image I mean that instead of having silver deposits constituting the image of the picture as printed from the negative, hills and valley are etched in the gelatin giving a relief image corresponding with the image of the picture. Two such relief images, one each for the red and green components were welded together back to back in register. Then the two sides, one after the other, were floated over baths of the respective dyes and dried. Thus we made a double coated relief image in dyes. This process gave beautiful pictures as of 1923-5 and Technicolor was away to another spectacular start as evidenced by Famous Players Lasky Corporation's "The Wanderer of the Wasteland" and Douglas Fairbanks' great picture, "The Black Pirate".

But this second Technicolor process soon fell upon difficult times. As you know, motion picture film, as a result of passing through the heat of the projector and cooling off again, curls or buckles because it has gelatin emulsion on one side and plain celluloid on the other. But with double coated film, with gelatin emulsion on both sides, the direction of this buckling changes from time to time and with each change the picture jumps out of focus during projection in the theatre. And so it became necessary to have men travelling about the country replacing these prints and returning them to our laboratory in Boston where they were put through a debuckling process and reshipped. While we, with special attention, could operate in this manner for a picture or two it obviously was not a commercial process and Technicolor entered into the depths of its second depression.

3 TECHNICOLOR PROCESS NUMBER THREE

Again further research and development work was urgently needed, the clear objective being to have both color component layers on one side of the film instead of one on each side. The result was the third Technicolor process which was a two component subtractive imbibition process. This operated as follows: The camera gave us two negative records, one taken through a red filter, the other through a green filter and from each of these a relief image was made. But instead of cementing these two relief images back to back and floating them over dye baths as in the second Technicolor process these relief images were impregnated with dye after the manner a lithographic plate is impregnated with ink. After picking up the dye these matrices were used to impress the dye on a blank piece of film, one color on top of the other in register.

This gave us the third Technicolor process, a two component, subtractive, imbibition process, so-called because dye was imbibed from the matrix to the blank upon which it was impressed. The blank, after two such impressions, one of each color, became a release print to be sent to the theatres.

Technicolor Process number 3 was a tremendous improvement and Technicolor was under way to a terrific boom. Many two-color cameras were built and the corresponding plant facilities. The demand was so great that Technicolor required an advance of $25,000 a picture as a guarantee of performance and just before the bubble

was to burst it had $1,600,000 of such advanced payments.

During this boom period of 1929 and 1930 producers pressed us to a degree that cameras operated day and night. Hundreds of new men were hastily trained, trying to accomplish in a few weeks what properly would require years. There were 30 to 40 feature pictures photographed and released during the ascendency of process number 3, among them "Gold Diggers of Broadway", all-star cast (Warner Bros.); "King of Jazz", Paul Whiteman (Universal); "On With The Show", all-star cast (Warner Bros.); "Song of the West", John Boles and Vivienne Segal (Warner Bros.); "The Rogue Song", Lawrence Tibbet and Catherine Dale Owen (Metro-Goldwyn-Mayer); "Sally," Marilyn Miller (First National); "The Vagabond King", Dennis King, Jeannette MacDonald (Paramount); "Wax Museum", Lionel Atwill (Warner Bros.); "Whoopee", Eddie Cantor (Samuel Goldwyn and Florenz Ziegfeld).

In Warner's "Wax Museum" and Goldwyn's "Whoopee" the Technicolor two color process probably registered the ultimate that is possible with two components. But after all this was only a two component process which was an attempt to create all shades of all colors from two component colors.

As everyone knows, to do a good job of this kind three components are necessary. But with sufficient care in the choice of materials, in the choice of colors placed before the camera, with the make-up, with the amount of blue sky showing in the scene, etc., etc., it was possible to make wonderful pictures even with this two component method.

But when the rush was on and every producer was clamoring to turn his black and white pictures into Technicolor no such care was employed. Some producers spoiled what opportunity they had by insisting upon more and more garish colors in however bad taste. They were out for color and they wanted plenty of it. And in the rush to meet the demand other defects crept in such as excessive graininess. And so after awhile Technicolor was in its third deep depression. Once the tide set against us we constantly heard producers say "the public doesn't want color", "it detracts from the story," "it hurts the eyes," "it is too expensive", etc. Something had to be done and again Technicolor research and development must come to the rescue.

TECHNICOLOR PROCESS NUMBER FOUR

This premature rush to color was doomed to failure simply because Technicolor was then a two color process. In the last analysis the amusement business is creating and selling entertainment. The play is the thing. You cannot make a poor story good by sound, by color, or by any other device or embellishment but you can make a good story better. Broadway has a struggle each year to find good stories or plays for a dozen successes. Hollywood is trying to find some 300. They don't exist. The motion picture needs all the help it can get, all the showmanship it can summon. It needs sound, it needs color, but color must be good enough and cheap enough. The old two component process was neither but it was a necessary step toward the next Technicolor process which must be three component instead of two.

In May 1932 Technicolor had built its first three component camera and had one unit of its plant in Hollywood equipped to handle a moderate amount of three color printing. Thus was launched the fourth Technicolor process. The difference between this three component process and the previous two component process was extraordinary. Not only was the accuracy of tone and color reproduction greatly improved, but definition was markedly better.

The era of this three component process opened with an experiment by Walt Disney using it on some of his

cartoons, among them the never to be forgotten "Three Little Pigs". But cartoons were not live action pictures. Early in 1933 Merian C. Cooper and John Hay Whitney showed an interest in Technicolor. To enlist their financial support a practical and complete test needed to be made producing a live action picture by the new three component Technicolor process which would be as successful on the screen as had been the Disney Cartoons. The result was the now famous short subject "La Cucaracha". Following this in rapid succession came a series of feature pictures including "Becky Sharp", "Wings of the Morning", "A Star is Born", "Goldwyn's Follies", "Ramona", "Snow White and the Seven Dwarfs", "Nothing Sacred", "Men With Wings", "Trail of the Lonesome Pine", and the great "Gone With the Wind".

In 1934-5 prints of "Becky Sharp" were shown in London and 1935 Technicolor Limited was born. So 1955 marks the 20th anniversary of that company.

In the year 1934 Technicolor first began to make a real profit. From 1934 when Technicolor Motion Picture Corporation sold about eleven million feet of positive prints until 1953 when it sold over five hundred and sixty million feet there was a steady growth, a steady increased investment in plant. Beginning that year for some nineteen years the history of Technicolor was of growth and prosperity operating its fourth Technicolor process—three component imbibition.

But about 1953 came another development which heralded the fourth serious depression which was to overtake the Technicolor business.

TRANSITION

I refer to the advent of a new method of photography employing negative of Eastman Kodak color negative type which largely superseded the use of Technicolor special 3-strip cameras. And I also refer to the advent of large screens in the theatres and increased area negatives.

The fourth Technicolor process which took care of a very substantial part of the motion picture requirements from 1934 to 1953 was tailored to make prints in the laboratory from Technicolor special 3-strip negative and to be projected on screens not larger than 30 or 35 feet in width. Beginning about 1953 both of these conditions changed and again Technicolor research and development departments had to do something to meet the new demands. And hence we come, in 1955, to the announcement of a fifth Technicolor process, "The Improved New Technicolor Process".

TECHNICOLOR PROCESS NUMBER FIVE

Making Technicolor imbibition prints from Eastman Kodak type negative involved new and special laboratory problems. Continuing to operate with Technicolor Process number 4 resulted in Technicolor imbibition prints with the usual characteristic fine tone scale and color rendering but which lacked something in definition, or visibility. This became increasingly apparent when the industry began generally to use larger area screens in the theatres.

So beginning around 1952-3 the objective of the Research and Development Departments of Technicolor became to improve the definition of its imbibition prints without the loss of any of its other superior characteristics. This work progressed on an emergency basis through a period of about two years until early in May, 1955 I saw on a 50-foot screen in Hollywood a demonstration of AN IMPROVED NEW TECHNICOLOR PROCESS. The 35MM print used for this demonstration embodied all the changes in its imbibition process that Technicolor has been striving for since the advent of Eastman and Ansco color type negative and the advent of large screens in the theatres. The result was the most wonderful picture in color made by any process that I have ever seen on the screen from all technical points of view, including sharpness or definition and especially color rendition.

AND SO

AS WE LOOK FORWARD

TO THE 40TH ANNIVERSARY

OF THE BIRTH OF

TECHNICOLOR

WE DO SO

AT THE THRESHOLD OF

AN IMPROVED NEW

TECHNICOLOR PROCESS

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