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Number 8

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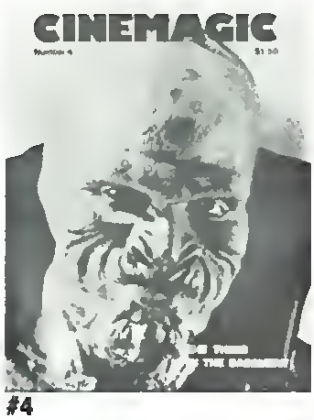

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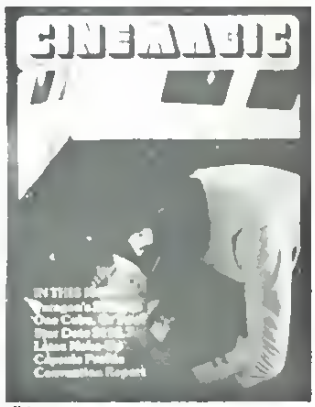

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NOTE: Because of the very special nature of this stop motion animation issue we have eliminated some of our regular departments. Our Letters Column, Convention Report, Capsule Profile, and the usual array of Film Profiles will all return in our next issue.

CINEMAGIC is published quarterly (in January/February, April/May, July/August, and October/November) by Cinemagic Publishing Company, Inc., P.O. Box 125, Perry Hall, Maryland 21128. Single copy price from the publisher: $1.50 plus 50¢ postage/handling. Subscriptions: four issues for $6.00; eight issues for $12.00. Contributions are welcomed, although we cannot assume responsibility for loss or damage due to postal neglect. No payment is made for contributions, other than free copies of the issue in which a contributor's work appears.

EDITORIAL

Well here it is! The issue of CINEMAGIC that so many of you have been waiting for. This very special stop-motion animation edition should give you plenty of facts and insights into an often tedious creative area: that of constructing armatures and models of a professional quality.

Of course, as in any creative medium, what we give you here represents only one way of building armatures and casting models. The articles herein should be treated as guidelines to the basic techniques, for there are always alternatives to such technical processes, not to mention innovations that you may come up with yourself.

We'd like to acknowledge our contributors this time, since they have labored beyond the call of duty to research, write, and photograph their respective articles:

MARK SAWICKI hails from Jackson, Michigan, and is now attending college in Los Angeles. Among Mark's credits into professional animation is his creation and stop-motion work of the Holsum Bread Boy, for Holsum Bread commercials (filmed but never used). Mark has spent several years studying and refining his model-making skills, and as evidenced by his article, his knowledge of ball/socket armature construction is on a level with any professional.

CRAIG REARDON, born, reared, and still residing in Redondo Beach, California, is a former CINEMAGIC contributor (see *Evils Of Alcohol*, issue #4) with talent in many creative areas. Craig studied make-up techniques with two unsurpassed Hollywood make-up artists: Dick Smith and Rick Baker. Their film credits go unquestioned, of course, but Craig himself has recently entered the field of pro make-up work. He is now working on a Hollywood motion-picture being filmed in the San Francisco area. Craig's article on sculpting and casting a foam-latex model was photographed especially for CINEMAGIC.

ERNIE FARINO is a professional stop-motion animator working and living in Irving, Texas (near Dallas). Ernie's credits include his now defunct, but ever-popular magazine, FXRH (Special Visual Effects Created by Ray Harryhausen)— a publication all about the world of professional stop-motion animators, with Harryhausen's work being accented. Ernie is also vice-president of Stop Frame Productions, a company specializing in producing three-dimensional animated films and commercials. Ernie's contribution to this issue is threefold: he wrote our Introduction to stop-motion animation, supplied us with a detailed stop-motion bibliography, and spent many weeks creating the beautiful oil painting for our cover.

Our thanks on behalf of the entire CINEMAGIC staff to Mark, Craig, and Ernie for their fascinating contributions!

Turning from the creative to the business side of things for a moment, we regret to say that because of tremendous increases in the costs of printing and binding, we will be *forced* to go to a lower grade of paper starting with the next issue. We are reluctant to do this, but it's the only way we can continue publishing. And because of those increased printing costs, coupled with three increases in third-class postage rates in the last year, we now must charge $2.00 for individual copies ordered from us through the mail. Because bulk-rate is still relatively inexpensive, we can maintain our $1.50 per copy rate for subscriptions—a good reason for you to subscribe if you haven't already done so (or renew your current subscription before it runs out!).

And now, enjoy yourself in a revealing journey through the exciting world of stop-motion animation!

—Don Dohler

INTRODUCTION

A HISTORY OF STOP-MOTION ANIMATION

Stop motion animation originated during the infant years of the film industry as an accidental discovery. It is very likely that George Melies, the noted French film pioneer, was among the first to make use of the technique, along with the many other special effects he introduced during his experiments in the early 1900's.

Although Melies is regarded as the true pioneer of special effects, others, such as Norman Dawn, were also instrumental in the growth of the medium, developing such diverse techniques as glass paintings and in-the-camera matte shots. These techniques, so many of which were introduced over a comparatively short time, were to heavily influence animation, since all of these systems have found use in conjunction with stop motion.

On an afternoon early in 1915, a restless young man laboring in a marble mason's workshop began fashioning clay figures of prizefighters, a sport he'd followed for many years. The man was Willis O'Brien, and his lucky diversion caused him to stumble on his new career—stop motion animation. With the help of a newsreel photographer, he shot a crude test atop the Bank of Italy building in San Francisco, a test that was impressive enough to convince a San Francisco producer, Herman Wobber, to invest in a short subject utilizing this technique. O'Brien was soon making a series of silent, animated short subjects for the Edison company, including *The Dinosaur And The Missing Link*, *Morpheus Mike*, and *Prehistoric Poultry*, all made between 1915 and 1917. They all featured prehistoric subjects, and although crude by today's standards, the films provided O'Brien with a training ground for later, more ambitious efforts.

After working on *The Ghost Of Slumber Mountain* for Herbert M. Dawley, O'Brien teamed up with Ralph Hammeras, an artist/technician who had developed his own glass shot technique, and both of them convinced producer Watterston Rothacker to make the first feature length film with stop motion—*The Lost World*. For this ambitious undertaking, O'Brien hired a talented young Mexican immigrant, Marcel Delgado, to fabricate the dinosaur models. Delgado, who still lives in California today, fashioned the animals out of various rubber compounds formed over jointed steel armatures. Many of the animals had breathing mechanisms consisting of inflatable football bladders, and were a vast improvement over the unsatisfying modeling techniques used by O'Brien in his short films. This 1925 film was also the first to introduce the photographic style which has since epitomised O'Brien's career.

An interesting scene from RKO's *Son Of Kong* (1933).

The small dinosaur models were placed on a shallow miniature jungle set and appropriately lit. In front of the set and behind it were large vertical panes of glass, on which had been painted detailed foliage. The camera was aligned so as to combine all of these images, and a truly compelling atmosphere was created. The animation was tedious, since the models, unlike anything that had been built before and therefore without benefit of problem-solving precedent, often broke during a scene, and the filming progressed at an especially slow pace when numerous models were in the same set-up. O'Brien considered himself fortunate if a ten-hour day yielded him 35 feet of film—a little more than 30 seconds of screen time.

The Lost World was a tremendous success when it was released, and its audiences truly marvelled at its unique and realistic depiction of "living" dinosaurs. From a special effects standpoint, *The Lost World* created the sort of furor that the modern day *2001: A Space Odyssey* has also enjoyed.

O'Brien then tried to develop various other projects, including an elaborate version of *Atlantis* and one of *Frankenstein*. But it was only when he became involved in the production of a test reel for a film project called *Creation* that things started to fall into place again.

Creation concerned itself with a shipwrecked crew that landed on a remote Pacific island populated with prehistoric animals. While O'Brien was involved in shooting test scenes, a young, energetic producer named Merian C. Cooper was assigned by David O. Selznick to evaluate all the projects currently under development at RKO. Cooper realized that there was little potential for O'Brien's *Creation*, but he also realized that O'Brien's method of animation would be the perfect solution for another film project. Over a period of time, Cooper had personally brainstormed an idea about a giant gorilla that would battle Komodo Dragons. Cooper could see

(please turn page)

BY **ERNEST D. FARINO**

PHOTOS COURTESY TED BOHUS, TED RAE, & ERNIE FARINO

that O'Brien's animation technique would yield far more impressive results than a man in a suit, and that "real" dinosaurs could replace the temperamental Komondo Dragons. *Creation* was dropped and work immediately began on the Eighth Wonder of the World—*King Kong*.

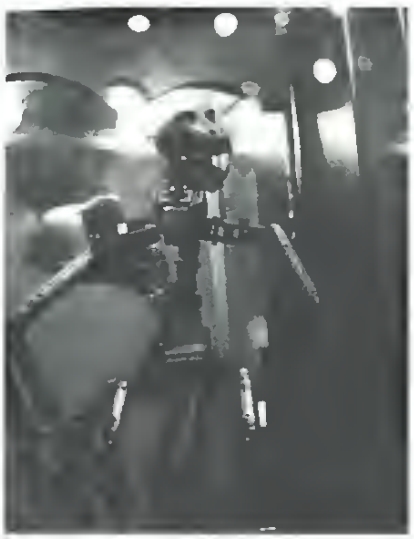
Though revolutionary at the time, the technology required to produce *The Lost World* was mere child's play compared to the demands of *King Kong*. Contact between the prehistoric denizens of *The Lost World* and their human adversaries had been remote and relied on simple in-the-camera matte shots. But a close interaction of live action and animation was crucial to *Kong*, and the film represents the first extensive use of miniature rear-projection. Most of the scenes in *Kong* employ not only process projection, but the multi-level glass painting technique in conjunction with miniature settings, matte shots and various superimposition techniques. In fact, most of the film was literally constructed in the studio or on the back lot. With the exception of the now famous confrontation between Kong and the bi-planes atop the Empire State Building, the scenes in the theater, and the few location street scenes, *King Kong* was a result of carefully constructed studio sets, miniatures, and glass paintings.

Marcel Delgado was once again hired to build the miniature models, and constructed two 18" high models of Kong as well as the dinosaur figures seen in the film. In addition, a full-size bust of Kong was built for certain close-ups, requiring 40 bear skins to cover it and 6 men to operate it.

King Kong made even bigger cinema history than *The Lost World*, and few people in the civilized world are unfamiliar with its story of "beauty and the beast."

RKO decided to come out with a quickie sequel, *Son Of Kong*, but for various reasons, O'Brien had very little to do with the project. The resulting film was disappointing from a special effects standpoint, and its "quick-buck" nature prevented it from even approaching the quality of the original. Initial interest in the sequel soon dissipated, and the film is now largely forgotten.

After another hiatus of some years, in which he worked on films such as *The Last Days Of Pompeii*, creating an impressive earthquake and volcano disaster, O'Brien again teamed up with Merian C. Cooper and made



Top: The famous King Kong. Center: A display at the Movieworld Museum in California—an original Kong armature is at top, and the David Allen Kong model is shown in the case below. Bottom: A close view of the original Kong armature.

Mighty Joe Young in 1949. The film won O'Brien a deserved Oscar for its visual effects. Much like the improvement seen between *The Lost World* and *King Kong*, the technical finesse exhibited in *Joe Young* was elevated to such a level of excellence and spectacle that it still rivals much of today's product. Marcel Delgado surpassed himself with the model work, constructing four 18" models of Joe and two smaller versions for long shots. The improvements in fur texture, overall miniature set design, process projection and optical printing procedures advanced the state of the art considerably. The complexity of the film demanded that O'Brien spend most of his time designing the actual sequences, so he was only able to animate a few scenes. For the bulk of the animation, he hired a young film student named Ray Harryhausen, and Harryhausen's masterful work on about 85% of the scenes, epitomized by the opening sequence of Joe with the lion's cage, remains some of the most dynamic animation on film.

While O'Brien continued to work on many other films, including *Black Scorpion*, *The Giant Behemoth* and the climactic fire-ladder sequence from *It's A Mad, Mad, Mad, Mad World*, it was Ray Harryhausen who would move on to much more ambitious projects and continue to introduce various technical refinements.

As a teenager, Harryhausen had seen *King Kong* in 1933 and was thoroughly fascinated by the idea of stop motion animation. He had been making a series of static dioramas of prehistoric life and now saw a way to convert his formerly immobile models into movable ones. After much experimentation with a 16mm camera, Ray finally had the courage to approach his idol, O'Brien, and show him examples of his work. O'Brien's encouraging suggestions did not fall on deaf ears, for Harryhausen redoubled his efforts to master this difficult technique and finally embarked on a series of 11 minute 16mm animated fairy tale stories, his most ambitious undertaking at that time. The films successfully embrace a delightful "fairy tale" atmosphere, and feature an incredible attention to detail in the sets and models and a fluidity of animation that has since become second nature to Harryhausen. The films also utilized replacement techniques to allow a change of expression in the characters' faces, employing a series of small plaster heads.

This refined footage was demonstration enough for O'Brien, and in 1946 when *Joe Young* started production, Harryhausen's long-awaited dream of working on a feature film came true.

Following *Mighty Joe Young*, Harryhausen was hired to do *The Beast From 20,000 Fathoms* for Warner Brothers—his first solo effort and the film that is most directly responsible for the onslaught of the "giant monster" cycle of the fifties. For this film, Harryhausen developed a new matte technique that was to become the mainstay of the industry. Unable to afford the expensive and elaborate glass shots of *Joe Young*, Harryhausen devised a system of in-the-camera mattes by which an animated figure could be inserted into the previously filmed live action scene. This involved rear projecting the image and placing the model in front of the process screen. Between the model and the camera, though, he set up a large pane of glass, on which were affixed various mattes, one to expose the model and a portion of the image, and the other to expose the remainder of the image. The resulting composite obscured the stage on which the model was placed, and eliminated the need for a great many miniatures and paintings.

Harryhausen used the technique to good advantage in a succession of films produced by his new partner, Charles Schneer, including *It Came From Beneath The Sea* and *Earth Vs. The Flying Saucers*.

By the time of *20 Million Miles To Earth* in 1957, Harryhausen had refined his technique to a high degree of photographic quality, working with the black and white motion picture film emulsions available at that time, but producer Schneer decided that the time was ripe to move on to color production, and their next film, *The 7th Voyage Of Sinbad*, released in 1958, became a technical milestone. Although some scenes betray a lack of photographic clarity that resulted from working with early color film stocks and intermingled dupe negatives, the film represents the first time that such special effects work was successfully done in color. Harryhausen's matte technique was finally given a name—Dynamation—and it was also this film that gave him a chance to exhibit some of the most stunningly conceived and executed screen creations of the last 20 years. His

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Top: A scene from the nightclub sequence in *Mighty Joe Young* (1949) as Terry Moore grinds a tune for the bewildered gorilla. Bottom: A scene from *Animol World* (1955). Willis O'Brien supervised the production; Ray Harryhausen did the animation.

imaginative use of a living skeleton battling a human foe prompted praiseworthy comments everywhere—virtually every review of *7th Voyage Of Sinbad* singled out the skeleton swordfighting sequence in the film as being of particular effectiveness. Harryhausen's clever coupling of man and skeleton in *Sinbad* was cited by *Parents* magazine, for example, as being a "masterpiece of animation." The entire film presented Harryhausen with the first opportunity to parade across the screen his own startling impressions of classic monsters of myth and lore—dragon, giant 2-headed Roc, snake-woman—and his realization of such terrors on the screen was received with remarkable public fervor: *Sinbad* was a highly successful motion picture and grossed over $6 million. And it was in this picture that Harryhausen unleashed what may be perhaps his all-time most popular creation: the magnificent first horror of the isle of Colossa. To quote a particularly apt description by *Time* magazine: "A 50-foot orange cyclops ... the colossal eye rolling around in its prodigious socket like a bowling ball in a bathtub, the fangs dripping like bloody stalagtites." Now, over 18 years later, the cyclops of *Sinbad* remains as the favorite of many Harryhausen admirers.

Harryhausen went on to work on other projects of a fanciful nature, and managed to create some cinematic masterpieces along the way. Such films as *The Three Worlds Of Gulliver* and *Mysterious Island* would have been impressive enough, but he topped all of this in 1963 with *Jason And The Argonauts*.

In addition to Harryhausen's inspired depiction of *Talos*, the monstrous bronze-laden sentinel of Crete, *Jason* sported flying harpies, a slithery hydra, and the ultimate sword clash with the soldiers of the hydra's teeth, that overwhelming screenful of animated skeletons, the children of the night. Without doubt, *Jason* must take first place as the vehicle which most thoroughly reflects the incredible range of Harryhausen's talents.

Harryhausen's most recent film, released in the summer of '74, is *The Golden Voyage Of Sinbad* and has grossed over $15 million at the box office. *Golden Voyage* convinced Columbia to put Schneer and Harryhausen to work on another film, *Sinbad And The Eye Of The Tiger*, now in the animation stages after completion of the live action filming in Spain.

Of course, Ray Harryhausen wasn't the only one working with animation during this time. A young Hungarian, fresh in this country in 1939, had developed a technique for full replacement animation and called it the Puppettoon. George Pal had begun his experiments in Europe, and his first use of stop motion was for a theatrical advertisement featuring dancing cigarettes. Threatened by the emerging Nazi war machine, Pal settled in the States and was soon making *Puppettoons* for Paramount Pictures. His technique was slightly different from that of O'Brien and Harryhausen: their models were flexible and were re-positioned each frame, but Pal's models were, for the most part, made of individual pieces. For each movement of his character, new arms, legs, and body would be assembled into the new position and photographed for a single frame. The films averaged 8 minutes in length, requiring some 30,000 frames and over 9,000 individually carved wooden figures. Pal referred to his skilled woodworkers as "animators with a lathe and blade," and was able to establish a routine that allowed the completion of a film every 45 days. Ray Harryhausen, even before *Mighty Joe Young* or his fairy tales, was given his first commercial job as an animator for Pal, and worked on the first eight *Puppettoons* released in America.

Pal was not satisfied just to continue making *Puppettoons*, and he soon embarked on feature production. His first film was a largely forgotton little comedy called *The Great Rupert*, starring Jimmy Durante and Terry Moore. The great Rupert of the title is an unusually talented squirrel, rendered through the use of stop motion, although this time with a single flexible figure. Pal went on to make many of the better science-fiction films, including *War Of The Worlds*, *Destination Moon*, *When Worlds Collide*, and *The Time Machine*.

Although those films did not use stop motion to any appreciable degree, Pal had not entirely forsaken the technique and resurrected the *Puppettoons* figures for *Tom Thumb* in 1958, winning an Oscar for special effects. This was followed later by *The Wonderful World Of The Brothers Grimm*, the first animation film shot in 3-panel Cinerama, and *The 7 Faces Of Dr. Lao* which was nominated for a special effects Oscar in 1964. Although the model work and photographic effects were handled by a Los Angeles company known as Project Unlimited, the actual animation of the fairy-tale-like dragon in *Brothers Grimm* and the Loch Ness Monster in *Dr. Lao* was handled by newcomer Jim Danforth. Danforth, like Harryhausen, had been inspired by *King Kong* and, once out of high school, managed to get a job with Clokey Films in California doing the famous *Gumby* children's films. (The studio also did the religious oriented *Davey And Goliath* series.) Based on this work, Danforth was hired by Project Unlimited in 1960 to handle much of the animation on the feature film *Jack The Giant Killer*. Well-known as a deliberate copy of *7th Voyage Of Sinbad*, *Jack* was an overall disappointment, its biggest drawback lying in the actual model work. The animation itself is fine, and exhibited a talent in Danforth that was

The ever-popular Harryhausen cyclops from *7th Voyage Of Sinbad* (1958).

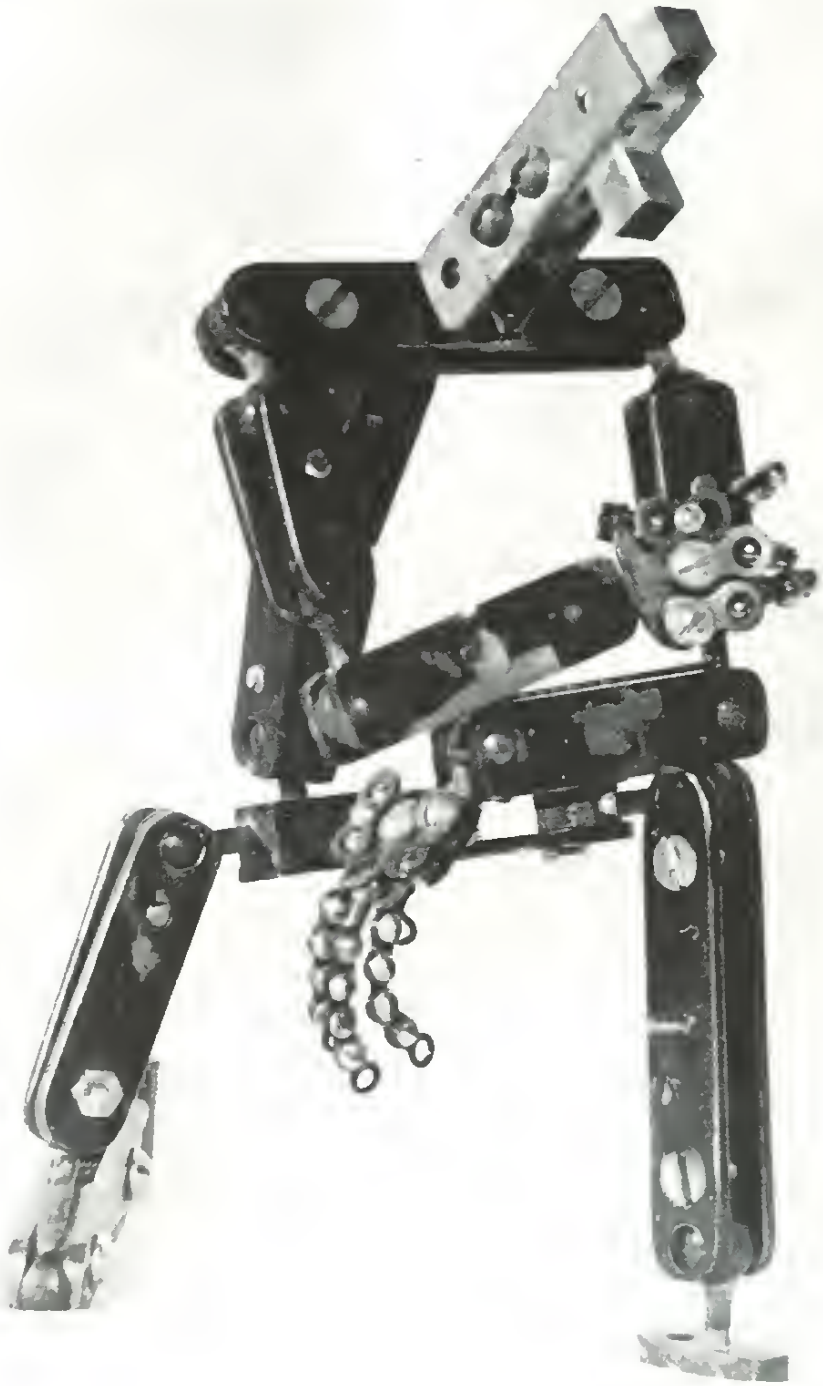
soon capitalized on. Among Danforth's other achievements is the creation of the universally popular Poppin'-Fresh, the Pillsbury Doughboy, and the animation and special effects for Hammer Film's *When Dinosaurs Ruled The Earth* (which was rightfully nominated for a special effects Oscar in 1971.) *Dinosaurs* featured some of the smoothest animation in screen history, and the effects scenes are remarkable for their unusual and extremely effective compositions. The "Mother Dinosaur" figure seen in the film, constructed by Danforth himself using a build-up technique not far removed from Marcel Delgado's pioneering methods, exists on film as one of the most superbly crafted animation models yet seen.

One of Danforth's many talents is his skill as a matte artist, exhibited most recently in the X-rated parody *Flesh Gordon*. Danforth, the "third generation" of animation/special effects men, had made a welcome return to the use of the matte painting technique popularized by Willis O'Brien. O'Brien's use of paintings dwindled primarily because of the economics of the low budget films he'd worked on, and Harryhausen has been satisfied to rely primarily on his Dynamation technique. Matte paintings can truly add a sense of atmosphere and flavor to a scene, especially one of a fantasy nature. The most recent, extensive use of matte paintings occured with the films *Earthquake* and *The Hindenburg*, both of which won Oscars for special effects. Albert Whitlock, possibly the greatest matte artist in the world today, executed over 40 matte paintings for *Earthquake*, combining them with live action scenes and separately photographed pieces of film of fire and smoke. Whitlock had 12 weeks to execute the 40 paintings, measuring 3x5', which meant that he had to complete an average of 3 or 4 paintings a week, sometimes finishing one in a single day. For *The Hindenburg*, Whitlock provided 70 paintings, many of which depicted the dirigible in flight. Until this time, the 1939 Gone *With The Wind* was matte painting champ with approximately 50 renderings by Fitch Fulton, who later rendered the glass paintings seen in *Mighty Joe Young*. It often surprises the average movie-goer to discover that virtually all of the "spectacle" shots, as well as many of the "normal" scenes, in Gone *With The Wind, Earthquake*, and *The Hindenburg* were actually 2-dimensional renderings painted on glass.

Top: Jim Danforth's mother dinosaur armature *(When Dinosaurs Ruled The Earth;* 1971) as it appears today. Bottom: Jim Danforth works on a matte painting for a Volkswagen TV commercial.

One current, prolific use of stop motion lies in television. Although still far outflanked by cartoon work, stop motion is gaining recognition as a viable technique for TV production. Since there is so much cartoon work on the tube, the stop motion commercial automatically enjoys a certain advantage, and the well done stop motion character is a delightful departure from the norm. The Doughboy has proven the most popular creation to come out, but there are many examples going all the way back to the early fifties (Brylcreem, the recently revived "speedy" Alka-Seltzer, and others). Also, the number-one-rated Saturday morning children's show *Land Of The Lost*, produced by Sid and Marty Krofft, features stop motion dinosaurs in a live action format—the work of Gene Warren, whose studio has also produced the Chuckwagon dog food commercials.

With the advent of the Super 8 camera for home use, and subsequent developments in its technology, more and more "armchair Harryhausens" have been able to load up a spool of film and try their hands at stop motion and a variety of other special effects. The Super 8 phenomenon has encouraged thousands to go beyond "home movies" and tackle truly ambitious "epics" of fantasy and science-fiction. Some have used this experience as a springboard to professional careers, while others have been satisfied to enjoy their filmmaking efforts strictly as a hobby. Whatever the motivation, animation has reached a more wide-spread market than ever before—to the point of creating a demand for magazines such as CINEMAGIC—and the current wave of enthusiasm shows no sign of dwindling. ■



CREATING BALL-AND-SOCKET ARMATURES

Article by MARK SAWICKI

Photography by MARK SAWICKI & GEORGE SVINICKI

THE ARMATURE AGGREGATE

A good deal of mystique surrounds the art of stop motion animation. One of the most puzzling aspects of the business is armatures. Published pictures of them are rare and articles on their construction are virtually nonexistent. The only thing the average animation fan is sure about is the fact that they are expensive. The mother dinosaur in the film *When Dinosaurs Ruled The Earth* cost approximately $3,500. This armature along with the others used in the film, ended up costing a grand total of $17,000.

Figures such as these, coupled with a lack of information, tend to make armature construction seem a lot like building a car from scratch. This is a gross misconception. One of the main reasons armature information is hard to come by is that it deals with an entirely different business from filmmaking. One must talk about drill bits, not F stops. This article is intended to bridge the gap between the animator and the machinist.

If you do your own construction, armatures are inexpensive. The materials cost around $40 to $50. Labor is what sky-rockets the cost of these things but since you don't charge yourself for labor these little steel constructions are quite reasonable in price. So let's begin.

EQUIPMENT

The first thing to learn is not to be afraid of metal. It can be worked just as wood can; all you need are the proper tools. The best tool you can use is the 'Unimat' (see notation box) which is manufactured by Edalstall Inc. This device is a miniature machine shop equipped with lathe, drill press, vertical mill etc. The machine is a luxury, however, so I will limit the tools used to ordinary garage fixtures (see figure 1.):

1. **Hacksaw**
2. **Electric Hand Drill with drill press** (You don't absolutely have to have a press but if you want your armature to be made with some degree of precision you had better use one.)
3. **Drill bits** (The diameters depend on the size of the armature.)
4. **Milling bit** (This is a special steel cutter shaped like a sphere. It is used for cutting sockets.)
5. **Tap and tap holder** (A tap is a special steel cutter used to make threads in holes. These threads enable you to screw bolts into the holes.)
6. **Thread cutting oil** (This oil is used to help your cutters cut steel; it also cools down the work.)
7. **Punch** (A steel point used to prick tiny holes in the work; these holes act as guides for your drill bits.)
8. **Grinder** (You can get grinding wheels that fit into your drill, thereby making it a grinder.)
9. **3-Jaw chuck** (This is a device that is used to hold work below a drill press. If you don't intend to use a press, forget about this device.)
10. **Vise**
11. **Propane Torch**
12. **Silver Solder** (You have to go to a welding supply company for this. Ask for "Industrial Silver Solder." If they try to sell you something for $5.00 don't buy it. This cheap $5.00 solder is made for airplane hobbyists and will cause your armature to crumble in your hands. You should pay about $20.00 for your silver solder. It comes in a kit that includes a chemical

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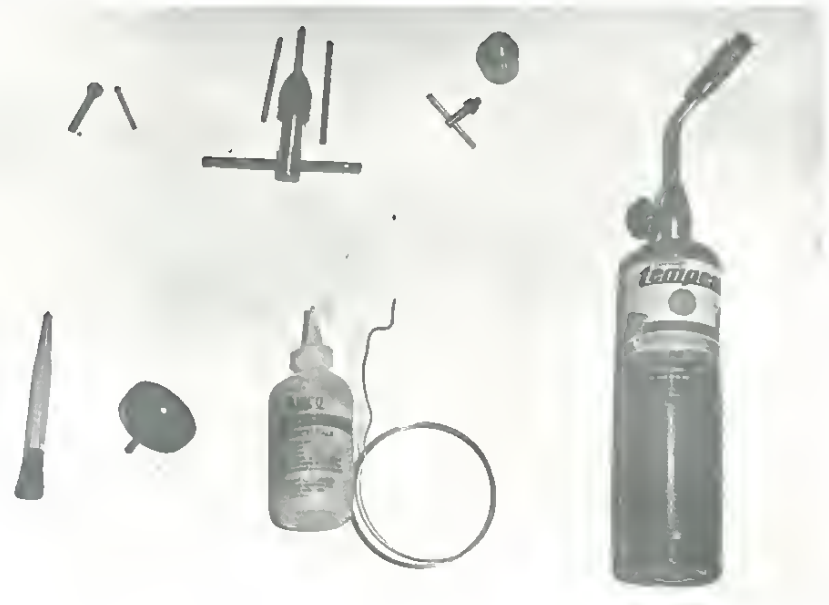
Materials needed: milling bits, drill bits, tap, chuck, prick punch, grinding wheel, flux, solder, and propane torch. (Figure 1.)



THE UNIMAT

The Unimat can be obtained from:

American Edalstall
1 Atwood Avenue
Tenafly, N.J. 07670

or from:

Edmund's Scientific
652 Edscore Building
Barrington, N.J. 08007

The basic Unimat, with which you can do absolutely nothing, costs about $200. The additional accessories that enable you to build armatures, a drive belt, drill chuck, three-jaw lathe chuck, and grinding wheel, cost about $60. All in all you should be able to get a beautiful set-up for about $300.

Before you buy a Unimat, however, it is strongly urged that you buy an instruction book first, so that you know what you are getting into. Machining techniques can get quite complex!

called a flux. The professional solder comes in different percentages of silver. The more silver, the higher the cost and the stronger the hold. For armature construction 30% silver content is sufficient.)

PLANNING

What comes first, the armature or the model? If you build your armature first, then sculpt a design around it, you could wind up with a funny looking model. A lot of pros, like Jim Danforth, make perfect scale drawings of their models, send the drawings to the machine shop, and the armatures are constructed to accommodate the drawings. Once the armature is built, the model is then sculpted to match the original scale drawings and everything should work out proportionate. Another technique is to sculpt a clay prototype exactly as you want your model to appear, make a two-half plaster or stone mold of this clay sculpture, and then measure and build your armature to fit the mold (which will later be injected with foam rubber).

My way is to sculpt the figure in oil base clay to the way you want it to look. Now we do something tricky and make a few photograms. What's a photogram? A photogram is a picture taken without a camera. Go down to the local camera store and purchase some print paper in a size that will enable you to lay your clay figure on it without the clay overlapping the paper. Then buy a Kodak developing kit for 80¢. This kit contains all the dry chemicals you need to develop print paper.

When you get home, find a completely dark room, preferably a bathroom with running water, and stick a small red filtered night light in the wall socket so you can see what you're doing (a dim red light won't expose your print paper). Once your chemicals are all mixed and in trays, take out a sheet of print paper, put it on the floor and place your clay prototype on top of the emulsion. Now, take a collimated light source (a flashlight) and shine its beam directly on top of the model and the paper. The length of time you keep the light on will have to be determined by experiment but its usually around three seconds. Turn off the flashlight and develop. You should come out with an image that looks like an X-ray (see figure 2).

The photograms that you make will be traced onto paper for working drawings. You design your armature using the outline as a guide. In conjunction with this, measure the depth of your model. This depth measurement will give you the width of your armature. If your figure's arms and legs are approximately 3/4 of an inch thick than your armature must be 1/2 inch thick or thinner.

Since all of the joints will be of the ball and socket type, the positioning of the balls will be critical. The best way to figure this is to outline the limb you're working with in both a relaxed and a bent position. If you're working with the elbow, for example, trace the arm in an extended and bent position as shown in figure 3. Let's assume that the general width of the arm is 3/4". Draw two lines 1/2" apart within the tracing of the forearms. These lines represent the plates of the armature. Extend the lines till they intersect each other at the elbow. The box that is formed will be the position that the ball bearing will occupy.

This same process is used with the leg from a side view. The wrist, elbow, shoulder, hip, knee and ankle joint positions are found in this fashion. The rest of the joints (the spine) are not so critical and can be estimated.

If this sounds like a lot of work just remember that it only has to be done on one side. The measurements are duplicated for the other half, making the armature exactly symmetrical.

Now that we know where our balls are we can figure out the lengths of our plates. You will be working with two basic types of joints, the sandwich joint and the sandwich ball joint. The plate size of the sandwich joint is determined by drawing a straight line from the top of one ball to the top of the other. The line is broken a short distance after it has passed the top of the balls. The line is measured and duplicated 4 times so that the plates on both sides of the ball and on both limbs will be the same. The sandwich ball joint is measured in the same way except the plates do not connect with the other ball (the knee and elbow ball). They extend to a point before the ball because the bearing will become an integral part of the joint. See figure 4.

MATERIALS

In order to build your skeleton you will need four types of metal stock:

1. Ball bearings. (A ball bearing supply company will supply you with any size ball you need. The armature appearing in this article used 20, ½" balls.)
2. Key stock. (This is a square shaft of metal that is usually used to link transmissions. My armature used ¼" and ½" stock.)
3. Rod. (This, along with the key stock, can be obtained from a local hardware store.)
4. Plates. (This product is the most difficult to acquire. Hardware stores don't stock ½" wide or smaller flat stock. You can get durable flat stock of any size from a large steel distributor, but you will probably have to purchase a minimum order of $20.00 A good

FIGURE 2

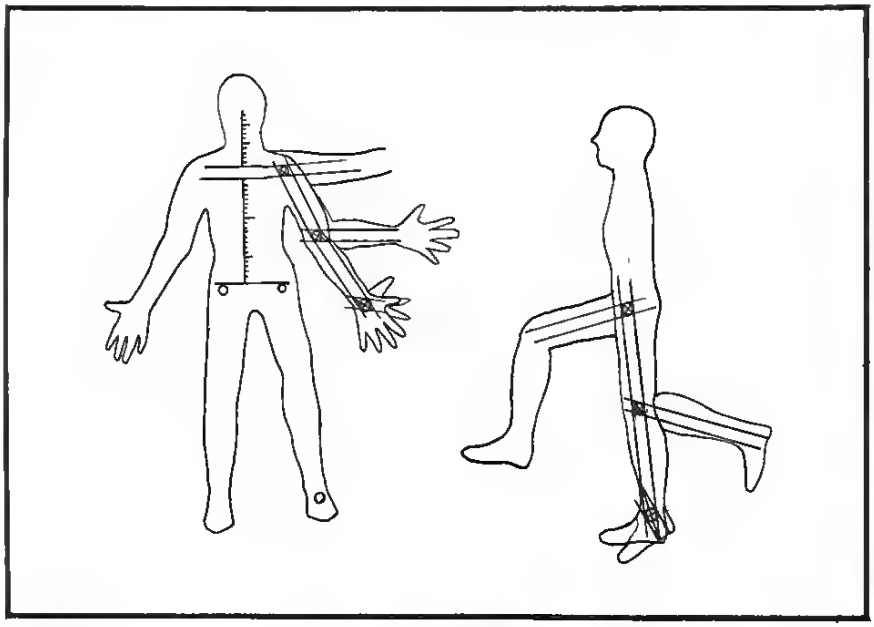


FIGURE 3

FIGURE 4

cheap place to get metal is from a sheet metal firm. These companies will cut you strips of metal from large sheets very inexpensively. Be sure to tell them what you're going to use it for so they can provide you with a sufficiently strong material such as cold rolled steel. My skeleton used ½" wide, 1/8" thick and 8' long strips.)

MANUFACTURE OF THE PLATES

The most difficult thing about manufacture of plates is the necessity of making all of them uniform. In order to accomplish this without sophisticated equipment one must make a template. I will use the forearm as an example.

First cut four plates of equal length out of your stock. The best way to start your hacksaw is to file a notch in the metal for your blade to rest in. After cutting, use your punch to prick dents in one of the plates at the points where the center of your balls would be and where the screw holes will be located (figure 5). Clamp the plate in a vise and drill the holes with your tap drill using the pricks as starting points. The drilling will be a lot easier if you douse the work and the bit with cutting oil while drilling.

At this point let me explain what I mean by tap drill. A tap is a tool that cuts threads into the inside of a hole. There are many tap sizes and each one works with a particular size hole. The hole has to be slightly smaller than the tap to give the tap teeth something to cut into. All you have to do is pick a

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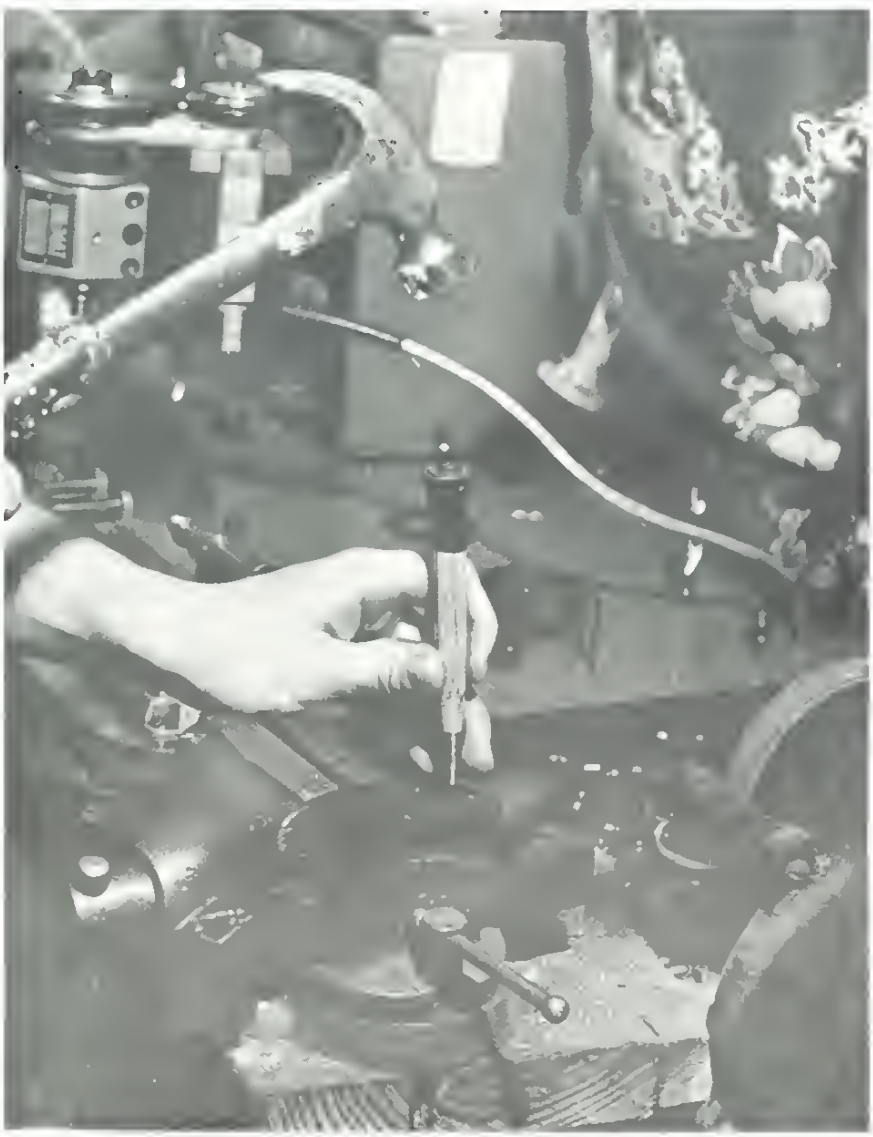

FIGURE 5

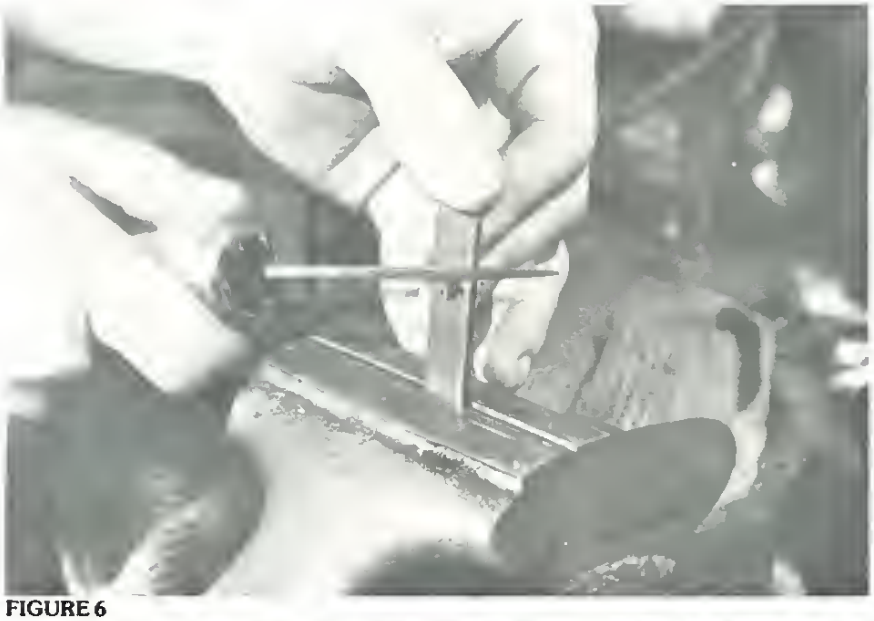

FIGURE 6

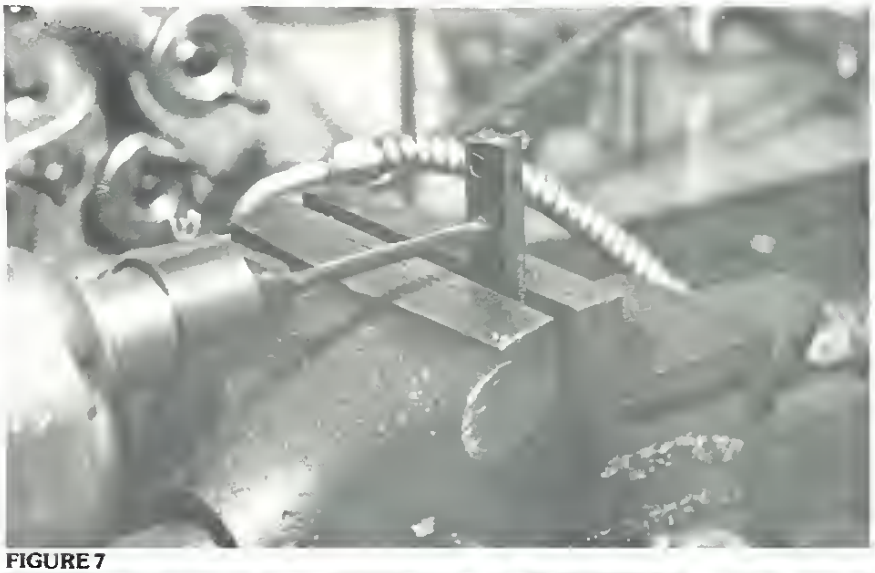

FIGURE 7

FIGURE 8

machine screw size that appeals to you and tell the hardware store salesman that you want a drill and tap to match your screws. It is as effortless as that. You will also need to purchase a bit whose hole will allow your screws to slide freely in and out.

Now, back to the template. After you have drilled your holes, file down the shavings that were left around the holes (figure 6). Once this is done, clamp another plate onto the one you have just drilled and, using the template as guide, drill one tap size hole in the place that a screw will be (see figure 7). What you should have is a plate with four holes in it and a plate with one hole in it. You are now ready to begin tapping.

Taps are expensive and fragile! This fact cannot be over-emphasized because there is nothing harder on time or money than a broken tap lodged in a hole. Here is the correct way to tap: Take the plate with the single hole and clamp it tightly in a vise. Put your tap in a tap holder, douse the tap with oil and carefully screw the tap into the hole with moderate pressure (figure 8). After you have cut a few threads (two or three turns) unscrew the tap a turn or two. This clears out metal shavings that would hinder the cutting of the tap. The important thing is to keep the pressure directed straight into the hole. If the tap is in the hole and it receives some side pressure, it will snap. When tapping, make sure you screw the tap all the way in and out of the hole. This will insure a good cut.

After tapping the hole, take the drill bit that is slightly larger than the screw and widen the hole in the template that corresponds with the tapped hole in the plate. When this is done, take a screw and screw the two plates together; then clamp them in a vise. (figure 9).

This setup prevents the two plates from moving independently of each other. The tap holes drilled in the plate will be used as guides so that, after drilling, both plates will be identical. This one template is used for all the forearm sandwich joints. The same procedure is used for the legs, and for the spine joints.

The sandwich ball joint is made much the same way as the sandwich joint with this exception: there is only one tapped hole in plate A and two enlarged holes in Plate B. Both plates have holes for the balls.

Next, after the drilling and tapping, are the sockets. A drill press is a god-

send when doing this, because you can adjust the depth of the socket. First, make a V shaped cut in the ball holes with a countersink or a ½" bit. This provides a better surface for the ball end mill to cut into. Mill each socket down to the bottom of each hole, flooding with oil while doing so (figure 10). If all the sockets are cut at this depth the armature joints' diameter will be ½", since the plates will sit no higher than the top of the ball. If at all possible try to get the sockets uniform. If you don't the joints will tighten unevenly.

KEY STOCK

Key stock is used as a rod holder and spacer in sandwich ball joints. In my armature the key stock was cut for the upper arm and thigh. The length of the key stock is determined by the one extra enlarged hole that was put on one of the plates of the sandwich ball joint. The key stock must cover this hole and extend to the undrilled end of the plate, as illustrated in figure 4. A tap hole is drilled in the key stock to coincide with the one extra enlarged hole. If you understood the construction of the sandwich joint then you know that the next step is to tap the key stock. The only remaining step is to drill a hole (large enough to admit your rod) down through the center of the key stock, to a point just before the bit breaks through to the tapped hole.

BALL BEARINGS

If you have ever attempted armature building you will know that working with plates and such is child's play when compared to drilling a steel ball bearing. Ball bearings are made of one of the hardest steels known to man. These tiny spheres are almost indestructible! I guarantee that you will break more drill bits than you can afford if you try to work bearings without prior preparation.

Why drill them anyway? The standard procedure is to drill a hole in a bearing and solder a rod into it. This method makes a clean join between rod and ball that is exceptionally strong. I have found that if you are careful, and your armature is fairly small, a simple butt soldering join between the rod and ball is sufficient. But for those of you who want to do it the more professional way here is the process:

The only way to drill into a ball bearing is to soften its metal. This is done through annealing. Annealing is a technique in which the crystaline structure of the metal is changed through the use of heat. The steel is heated to a bright cherry red and then allowed to cool very slowly. After cooling the steel is workable.

In the case of bearings, annealing can be done in several ways. One way is to have it done by a company. This is profitable only if you want to anneal 1000 ball bearings. The cheaper way is to do it yourself with your propane torch (figure 11). After heating, dunk the ball in some sand to cool it.

If you want a really good annealing job for little money, put the bearings in a ceramic kiln and fire them. The steel is cooled extremely

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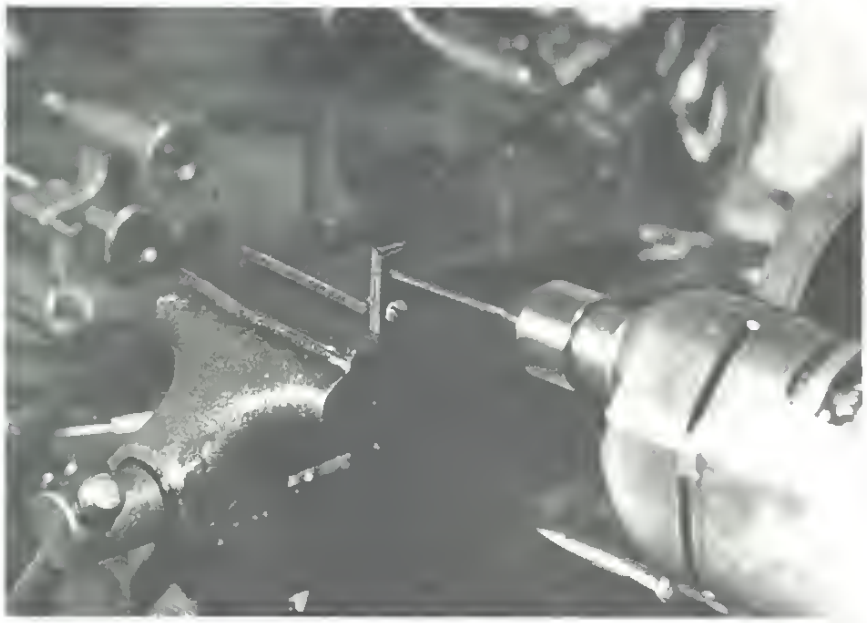

FIGURE 9

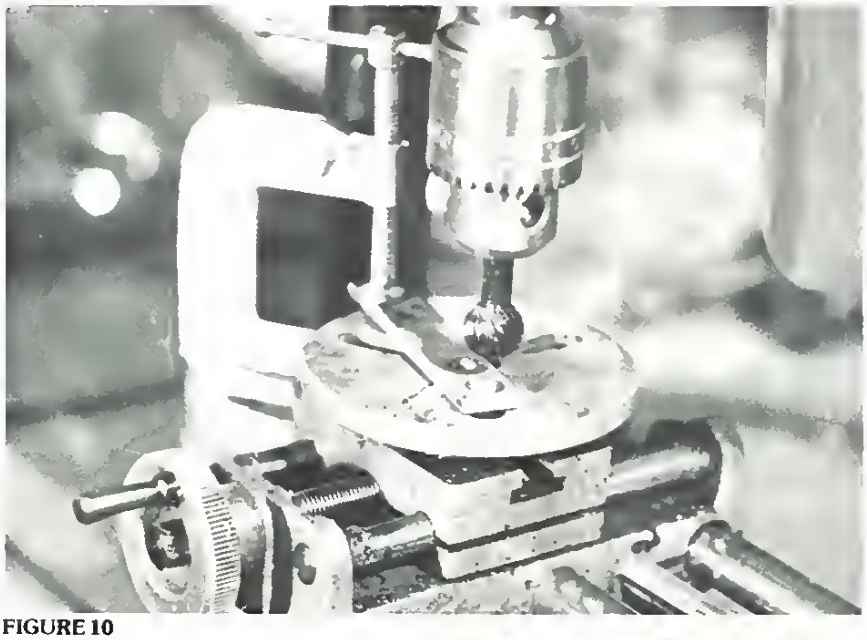

FIGURE 10

FIGURE 11

FIGURE 12

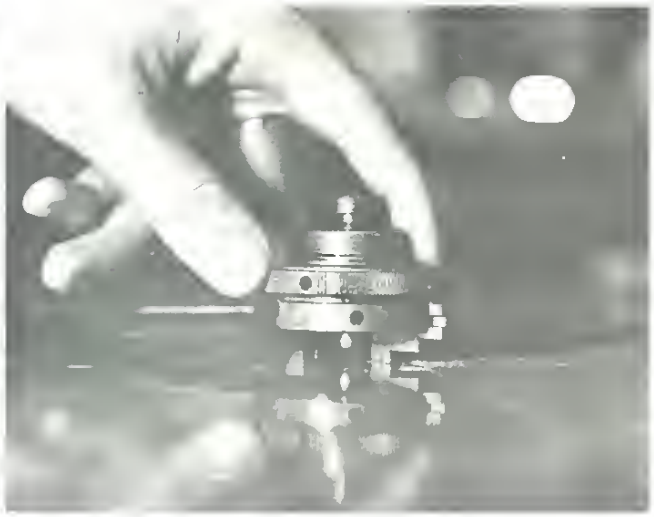

FIGURE 13

slowly and you can bake a lot of them all at once. The problem is convincing your ceramic teacher or dealer that this won't damage his kiln. Tell them to fire the balls at cone .05. The bearings will not melt at this temperature.

In any case with whichever method you choose, unless you have your annealing done by a company, the balls will oxidize. Oxidation is a black crud that forms on the surface of the balls when they are heated to a high temperature. It is extremely hard to remove. Oxidation is caused by the reaction of oxygen with the metal. Annealing companies get around this problem by annealing in controlled atmospheres. Guess what! You can create a controlled atmosphere.

Many ceramic sculptors have, on occasion, a need to imbed metal into clay, for instance when making a ceramic hot plate. The sculptors suffer the same problem of oxidation when they do this. They get around it by painting the metal with kiln wash. Kiln wash is a china clay powder that you mix with water to form a paste. This chemical is usually used to prevent glazes from sticking to the kiln floor. It is fine for annealing because it is fire resistant and keeps oxygen from coming in contact with the metal. So, instead of coming out with black pitted balls, you come out with grey smooth ones. If you anneal with a torch the oxidation problem is not as critical.

Now, let's get on with drilling the balls. If you don't have a drill press, good luck. The balls can be drilled using a hand drill but it's more of a headache than it's worth. If you don't have a drill press I would skip the annealing and drilling entirely and resort to straight soldering.

Grind off a flat area on the ball (figure 12), prick punch it, rest the ball on its flat side, place a 3-jaw chuck around it and tighten (figure 13). Putting the ball in the chuck this way insures that the drill will go in straight. It is a good idea to put something inside the chuck and behind the ball so that the bit drills instead of merely pushing the ball into the chuck. Position your ball under the press and drill a rod size hole starting with a small drill bit and progressively enlarging the hole with bigger bits. This makes the drilling of the ball a lot easier (figure 14).

SILVER SOLDERING

Now we are ready to put the pieces together. The balls are the easiest so we will begin with them. Cut off a piece of rod that is long enough to reach the bottom of the holes drilled in the key stock and ball, with enough left over to provide the spacing. This piece of rod is to be used in a sandwich ball joint. The spacing is determined by your preliminary plans. Next cut off about four or five chips of silver solder, each about a millimeter in length, and put them in the hole of the ball along with some flux. Insert the rod into the ball and clamp, as shown in figure 15. Heat the ball to a bright red and gently tap the sphere onto the rod with the hammer. This is slightly tricky. During the initial heating the flux boils and tends to bubble the ball off the rod, so keep your hammer ready. After the solder has melted, take the flame away. As soon as the ball cools down to its original color dunk the work in water. After a few seconds the ball will be cool enough to touch. If you wish, you can paint the ball with more kiln wash before heating.

Now we come to the tricky part, the sandwich ball joint. First, solder your key stock onto the other end of the rod you just finished, soldering it in the same manner as you soldered the ball. The heat won't travel far enough down the rod to unsolder the ball, so don't worry. After soldering, screw the key stock onto the plate with the two holes, using a very short screw. A short screw won't be long enough to be soldered in the next operation. With a grinder or file, clean the side of the key stock and plate that will be joined by the solder. After cleaning, screw the filed plate against the key stock and solder. Remember to apply flux while soldering.

I solder my metal on an old charcoal broiler coal basin and I suggest that you do the same. If you attempt to solder on some porous rock like concrete you're in for trouble. A rock contains water that rapidly turns into

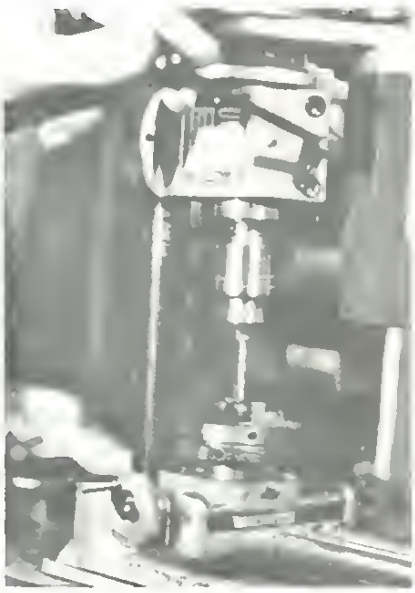

FIGURE 14

steam. Trying to weld on a rock is like trying to weld on a bomb.

The soldering operation in the case of the plates is a little different from that used for the rod and balls. You have to heat the metal red-hot and then apply the solder by hand (figure 16). Experiment with a few pieces of scrap metal, so you can get the hang of it before working on your joints. That can save a lot of grief.

This pretty much wraps up the basics of armature construction. The skull is usually made of milled (shaped) metal with hinged joints for the jaw. My figures make use of the replacement head principle so I have no need for skulls. For amateur work, carved wood can suffice for the skull. This is what King Kong's skull was made of. The photographs of the feet make them self-explanatory except for the fact that you must include tie-down holes.

Tie-down holes are the means by which a model can stand in an off-balance position while being photographed. The easiest tie-down system to manufacture is a tapped hole in the foot. The model can then be bolted to the peg board stage with a bolt and a wing nut.

FIGURE 15

FIGURE 16

MAKING HANDS

Hands are usually jointed only in models that will appear throughout a film, like King Kong or Gwangi. This is because they are very time consuming to make and one wonders if they are all that effective.

I make my jointed fingers of chain. It is not bicycle chain, however, for that would be much too large. The smallest chain you can buy is #25, which costs about $2.00 per running foot. You have to buy a whole piece of chain, instead of separate links. To separate the links you should purchase a chain breaker, which is sold at motorcycle shops; or you can wrestle with the links using hammers, picks, and grinding wheels—but the chain breaker is your best bet.

Once you have separated the chain you will notice that some links have smaller holes than other links. If you followed the construction of the ball-and-socket joints you should have an idea of what's next. The smaller holes in the chain are the perfect size for accommodating a 4/40 tap, and the larger holes are perfect for letting a screw with 4/40 threads slide freely through. So you must tap the smaller holes to accommodate the 4/40 screw threads. I should mention that tapping chain links is very difficult since the metal used in their construction is case hardened (very hard) and it puts excessive wear on the taps. You could soften the links via annealing (as explained earlier)—tap them, clean them and chrome them—but it's easier to go to the extra trouble and strain of tapping them in their raw state. Chain links are manufactured with rust in mind and are black anodized and rust resistant, so if you don't anneal them, chroming is not necessary.

Ball joints in the knuckles facilitate finger stretching. The balls are held in place by links screwed into the base plate. The balls have been straight soldered because of their size; no annealing was done here. Because the larger base plate links fit together as they do, they give a ready-made natural curvature to the fingers—just as your own fingers do not form an exact straight line when you lay your hand flat.

As you can see, my model has only three fingers and a thumb (figure 17). At that, the hands are abnormally large. If you want to make a jointed four fingered hand and still have the model look anatomically correct, you are going to have a big model whose mold may not fit your oven! Such a large model may be uncomfortable to work with for animation purposes. At

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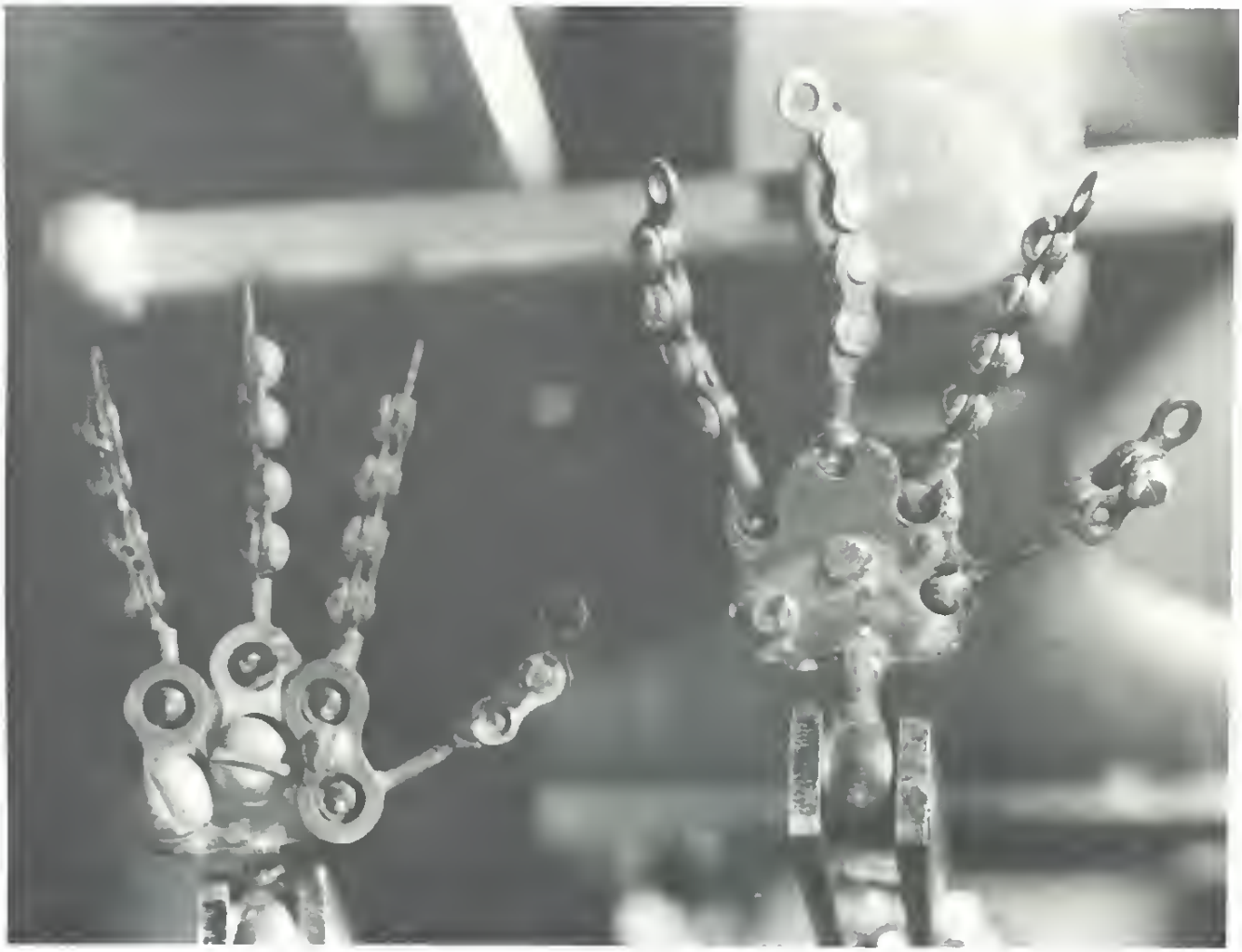


FIGURE 17

any rate, notice how the thumb's ball joint is on the same plane as the finger knuckle joints. This is wrong and looks strange. I did it to save space on an already overly large hand, but really, the thumb should be on the opposing plane. In other words, the thumb's ball joint should be on the palm side of the hand and the finger ball joints should be on the back side of the hand.

The upper part of the thumb joint, as shown in figure 17, should explain itself. These finger joints will not need to be tightened and they have fairly decent response characteristics, but they must be covered with thin sheet rubber along with the rest of the armature or the foam rubber will ruin them, causing loosening and other troubles.

The hands can also be made of flat pieces of metal with braided Almaloy armature wire glued on with 5 minute epoxy glue. Almaloy can be obtained from:

Sculpture House
38 East 30th Street
New York, New York 10016

The wire comes in 1/16", 32 feet long for 60¢. The stuff never breaks. It is the easiest and most economical way to make hands.

PRESERVING THE ARMATURE

The rest of the armature, pelvis and shoulder girdle can be manufactured using the same principles I have outlined. The only remaining thing to do is preserve the beast. Armatures are everything but rust resistant. Rust-proofing is a must, since the foaming of a model necessitates that the armature be immersed in water.

Chrome plating is the best method of rust protection. Clean off all your joint pieces with a wire brush or a file, then take them to a custom chrome plating shop. A custom shop is one that re-chromes bumpers and the like. If you clean your own metal you can have your armature plated for around $10.00. If the plating firm has to clean the metal, plating can cost $100.00. That's labor again.

The only other way to rust-proof cheaply is to spray the metal parts with some Barbecue Grill Rust-O-Leum. The paint is heat and rust resistant and works fairly well. The ball sockets, balls, and screws can't be painted, however, so they will rust.

If you build your armature well it will never break or oxidize. The one important thing to remember before you cast your model, is to tighten the armature with a little more tension then necessary. I have found that as the rubber shrinks and tightens through time, the armature sometimes doesn't have enough force to move the rubber. Some joints, then, appear to become loose, especially in the shoulders.

Once these techniques have been mastered, any type of skeleton can be designed to simulate reality or to conform to flights of fancy. Use this article as a guide for basic machining techniques, but don't feel obligated to stick to my armature design. Experiment and be creative. You may find methods of procedure that are applicable only to you. What works for you is what is important. Good Luck! ■

If you want to learn motion picture animation, not just read about it, my course book is the one for you - "Animation In Twelve Hard Lessons" - it really teaches you, with drawn and written answers in the back of the book. A big 11" x 14" size too. I have full learning kits also, which include a disc w/calibrated metal pan pegs, punched animation paper, a field guide, exposure sheets and the course book. These kits start at $101.50 plus shipping, or you may care to order the course book alone for $16.50 plus $1.25 shipping. Our big new catalog of ten kits and all animation supplies, equipment and services comes with each order. If you would like to look over the details of our kits or even the course book, send $1.00 for our new No. 106 catalog, it's refundable with your first order.

B.H.

P.S. the course book is 144 pages and covers both cartoon and technical animation.

robert p. heath productions, inc.

1627 Scott Avenue, West Islip, New York 11795

PRESS NOTICES

Have a horror, science fiction, or fantasy film currently in production? Send the details about it (title, names of actors, effects, type of film, etc.) and, if available, a publicity photo to *Press Notices, c/o CINEMAGIC, P.O. Box 125, Perry Hall, Maryland 21128* and we'll include a write-up about your film in this section.

Alex Laurant of San Francisco, California is currently scripting a science-fiction film centering on the subject of pollution. The plot concerns an alien who discharges collected waste from his spacecraft on a small planet, and in doing so, disturbs an agressive inhabitant of the planet. The film will be shot in regular 8, color/sound and will incorporate live action with stop-motion animation. Running time of the film will be about 40 minutes, and production is expected to take more than a year.

Payment In Blood was recently completed by Harold E. Brown, Jr. of Akron, Ohio. The story concerns two martial artists who are hired by a league of business men to find a mad bomber who is terrorizing the city. Many carefully planned karate fight scenes were used. Special effects include slow-motion and reverse filming. *Payment In Blood* runs 45 minutes and stars Harold Brown, Jr., Ed Ellis, John Lewis, and Tim Cookson. Filming was done in both color and black and white super 8.

Tom Woodruff, Jr. of Montoursville, Pennsylvania has finished filming *The Eighth Wonder Of The World*, his own remake of *King Kong*. The film, which stars John Morris, Paul Roman, Erin Downs, Gary Frymire, and Mike Hutchison, has been in production since November of 1975. Models used include Kong, an Arsinotherium, and a Pteranadon, which were filmed via front and rear projection processes. The film was shot in super 8 color and sound.

R.C. Films, comprised of John Runyeon and David Cawley, of Baltimore, Maryland, have recently completed several fantasy films, including a Sinbad epic with several animated creatures, a science fiction flick with miniature spacecraft, and a 1940's type "mad doctor" film.

The Sorceress was recently completed by Keith Bowsza, of Westminster, California. The super 8, color film stars Carl Schwanke and Cleo in a surrealistic drama about a sorceress who uses mental telepathy and other psychic powers to locate and trap her victim. There is a special emphasis on pictorial exteriors and the colors red and black.

Producers Daniel Munson and Gary Olson and their *Snyrhd Productions* of Winona, Minnesota, are currently filming a comedy in super 8 color. The film, not yet titled, concerns a man who cannot pay his rent and is flattened (literally) by the villainous landlord. Munson and Olson are utilizing stop-motion animation and latex models for the film, which is due for completion late this fall.

Artist William Black, of Tallahassee, Florida is working on a 16mm color film that will feature an animated "monster" along with several miniature sets, front and rear projection, and other visual effects. Title of the film and completion date are not yet determined.

Narrie Films of Rochester, New York, has just begun principal photography on *Corroding Cosmos*, a film about the last survivor of earth. The five-minute 16mm color/optical sound film is being produced by Scott Narrie, a film student at Ithica College who, with Mike Del Rossie, created an award-winning film, *Invasion Of The Doorknob People*, a spoof on 1950's science fiction movies.

Alpha Centauri Probe 1 is being lensed by John Harden of Sonuma, California. Effects in the super 8 film include many miniature alien landscapes, rocket takeoffs and landings, and "giant" insect attacks. Glenn Harden and Roger Daeschner star.

Tom Baker, 3618 Driftwood Dr., Charlotte, NC 28205, makes and sells animation models like this one (a good replica of Harryhausen's *7th Voyage* cyclops).

Move over Jaws! Ted Rae of Otisville, Michigan recently built this ball/socket shark armature for use in a future film project.

Mark Collins and his *Carl Denham Productions* of Orange, New Jersey, are currently producing *The Princess Of Pallador*, a science fiction/fantasy film a la Flash Gordon serials. The 16mm sound production is about a female from another world who has come to earth to warn of an attack from her home planet. Special effects planned are stop-motion animation with rear projection, mattes, and superimposition.

Miracle Pictures of San Francisco, California is scripting *Night Meeting*, based on the short story of the same name from the Ray Bradbury book, *The Martian Chronicles*. Effects for the film include three ball/socket stop-motion models, an insect-shaped spacecraft, several miniature sets, rear projection, static mattes, and some unique methods of combining live action plates, matte paintings, and miniatures in one pass through the camera. *Night Meeting* is being produced, directed, and animated by Chris Anderson. Completion is scheduled for September of 1977.

Update on the *Cinemagic Visual Effects* feature length science fiction/horror film: production was delayed from August until October. Reason? Because of the several full-body creature suits designed by Larry Schlechter and John Cosentino. The actors inside would have baked, literally, in the summer heat. Working title for the film is *The Alien Factor*. Filming commenced October 16th with a scene between Baltimore superstar radio personality, Johnny Walker, and lovely Eleanor Herman. The cast also includes Don Leifert, Tom Griffith, Mary Mertens, Richard Giewitz, Ann Frith, Lou Scholz, George Stover, and Chris Gummer.

NOTEWORTHY FANTASY FILM PUBLICATIONS

The following publications, devoted to the fantasy, science fiction, and horror film genre, should be of interest to our readers. In most cases you can write to each publisher for a descriptive flyer about his respective publication.

The Late Show—published twice a year; 46 pages; 8½x11; two-color covers. An interesting magazine devoted to all areas of the fantasy film, and not just the usual cliched type. *The Late Show* also covers such topics as Laurel & Hardy, and many obscure genre films. Each issue is well illustrated with photos and fine artwork by Tim Hammell. The latest issue, #3, features interviews with Ray Harryhausen and Tobe Hooper (producer/director of *The Texas Chainsaw Massacre)*, an article on composer Ennio Morricone, and an intriguing examination of the film *Five Million Years To Earth*. Price is $1.50 per copy. Write for subscription information to: *Bill George, 5023 Frankford Avenue, Baltimore, Maryland 21206.*

The Portable Fanzine—published twice a year; tabloid newspaper size. This publication specializes in different themes each time. Editor Fred Burkhart has informed us that the next issue will be devoted to the science fiction/fantasy film. Interesting writing, good reproduction of photographs. Single copy price is $2.00 (mailed flat via first class). For further info on the special sf/fantasy edition, we suggest you inquire as to availability before ordering: *The Portable Fanzine, Box 253, Plymouth, Connecticut 06782.*

The War Of The Worlds—A 25 Year Tribute—This is a proposed one-shot magazine devoted to the classic George Pal science fiction epic. The editors intend to print on full-size, slick paper, with full-color covers. Many rare stills will be included. Publication date is set for January, 1977. To receive further information, send a S.A.S.E. to: *Ted Bohus, 70 West Columbia Avenue, Palisade Park, New Jersey 07650.*

READER EXCHANGE

I am interested in exchanging films with other filmmakers. My brother and I are currently working on an animation film. Please write to:

Paul R. White
Box 164
Gatlinburg, TN. 37738

Sneak peek: Eleanor Herman doesn't especially care for the attentions of *The Inferbyce*—an alien creature designed and worn by Larry Schlechter for the *Cinemagic Visual Effects* production, *The Alien Factor* (being filmed in Baltimore, Maryland).

A GUIDE TO MAKING FOAM LATEX MODELS

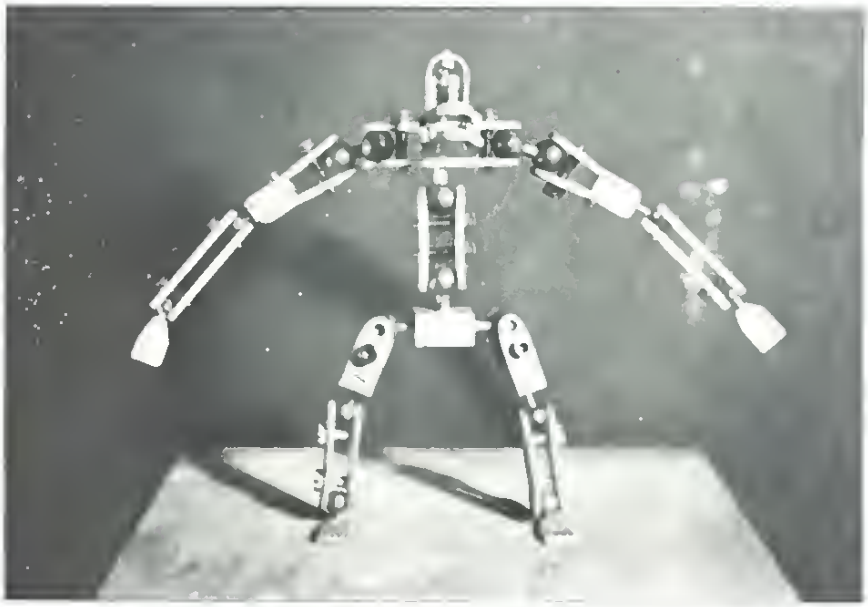
Article & Photos by
CRAIG REARDON

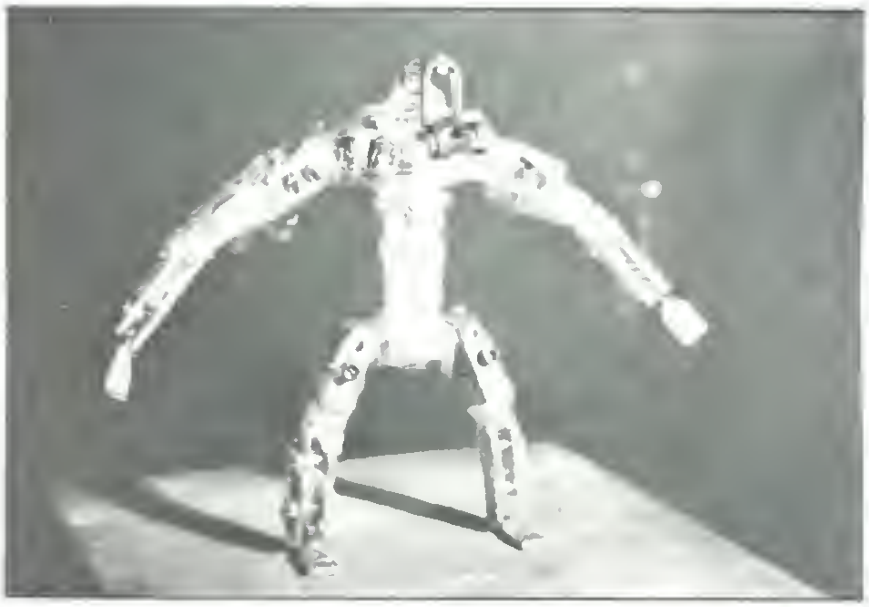
Methods for constructing animation puppets will vary according to the design of the puppet—obviously!—but there is one material which is common to the creation of most modern puppets, and that is foam rubber. Using foam rubber, the artisan may sculpt his puppet carefully in clay, cast a mold from this, and in turn cast a foam rubber duplicate from this mold. This casting will duplicate his sculpture exactly, and be completely flexible. A bendable framework, or armature, can be cast right inside the foam rubber, providing the necessary skeletal support the animator needs to move the flexible puppet into intricate positions.

I had occasion to create a facsimile of King Kong for use in my first brief, experimental amateur film. When I planned a second film, I was still interested in the idea of a giant ape, and so had to construct a new gorilla. My original imitation of "King Kong" had been created from a sculpture, cast in foam rubber; I intended to use this technique again, because I'd been very pleased with the results. However, my original pseudo-Kong had a simple network of soldered wire running through him, which had proven to be inadequate for animation purposes. I was determined to use some kind of professional-styled armature for the new gorilla, made of jointed steel parts, capable of precise movement. Unfortunately I lacked the mechanical know-how, but I paid a friend, Ernie Farino, to machine and assemble the armature for me.

I did some scant research on gorillas in the library. I would advise the novice to spend as much time as is needed to acquaint himself thoroughly with the physical characteristics of any animal he wishes to sculpt. He should gather any and all poses he can of this animal, to become completely familiar with every physical idiosyncrasy. I was a bit slovenly in my approach to this research stage, and consequently my sculpture suffered slightly in terms of realism. I only used one photograph to guide me, and the rest was intuition and impressions gathered from memory.

The first step in the construction of the ape was to anchor the armature to a wooden raised platform (hastily nailed together from plywood scrap). His feet were fastened to this platform via bolts screwed into them through holes I'd drilled in the wood. This method of "tying down" an armature is universally popular among professional animators. After doing





this, I wrapped the armature in Saran Wrap, so the clay (which was to follow) would be easier to remove later on.

I built the basic form over the armature with green plasticene. The sculpting process is a gradual thing. You seldom know at the beginning exactly how it will turn out. Sometimes you will decide to alter a concept you'd planned, simply because it doesn't look right in clay. At any rate, I like to use my fingers to sculpt, resorting to modeling tools only where the work gets intricate—around the face or the digits, for instance. I embedded BBs in the clay face to create eyes, and worked in a great deal of facial detail.

After sculpting the creature I coated the clay with plastic sealer, a substance used by makeup artists, so that the clay would not stick to the plaster mold. The mold would be cast in two pieces, so now I had to build a dividing wall.

I flattened some white plasticene and cut it into broad (approximately 1") strips, and carefully stuck these all around the ape, effectively dividing him in two. I tried to plan the point of demarcation so that the mold halves which would result would be so shaped as to allow the easy removal of the latex casting. To save labor, I pinched a bit of Saran Wrap into the dividing wall under the arms, and running down and between the legs. The next step was to cast the mold.

I decided to use Hydrocal B-11 (at your hobby store), a slow-setting, accurate plaster. "Accurate" in this sense means the plaster will not expand or distort as it sets and hardens, as do some kinds of plaster, such as the ubiquitous plaster of Paris. Hydrocal B-11 is also sturdy and resists low heat, making it well-suited for foam latex molds. I sifted the plaster into a bowl of water until the water was absorbed, then stirred it, and brushed the mixed plaster onto the front half of the gorilla. This coat was followed by a thicker application of plaster applied with a spatula, and that coat was followed by a few strips of wire mesh or metal cloth, for reinforcement. This was finished over with more

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Left, top: The ball and socket armature is secured to the wooden platform. Center: The armature is wrapped in Saran Wrap for protection. Bottom: The beginnings of the clay sculpture.

Left, from top: The clay sculpture begins to take on some detail. Second, the completed sculpture, front view. Third, the completed sculpture, rear view. Fourth, the model with the clay dividing wall around it. Above, top: The plaster mold. Note the pen to the extreme right shoved through the injection hole in the head area of the mold. Center: The foam latex model, removed from the mold and prior to trimming. Bottom: The foam latex model trimmed. The malformed hands have been removed so that new ones may be added.

plaster, shaped, and allowed to dry and harden. Then the clay dividing wall was stripped away from the figure (it came away cleanly because of the plastic coating), and the newly-exposed plaster surfaces were lightly greased with Vaseline. Then the casting procedure was repeated on the other side. When, at length, the plaster was completely hardened, I pried the halves carefully apart. (Sometimes this requires a hot water bath.) I took out the clay and removed it from the armature.

Now it was time to cast the ape in foam rubber. I used a foam rubber kit which was furnished at one time, through UniRoyal Company. They no longer provide it, in such small amounts (i.e., one gallon of rubber base, plus chemicals), which is unfortunate. Mixing foam rubber, in any case, requires the use of a triple beam balance, for weighing the proper amounts of chemical additives, and an electric egg beater, or preferably a Mixmaster, for whipping up the foam. Before mixing the foam, I prepared the armature and the mold. The armature was coated with plain latex, to protect it as much as possible from the slightly oxidizing effect of the chemicals in the foam rubber. I also coated this with a bit of castor oil (harmless to rubber). I took the same castor oil and gave the inner surfaces of the mold a generous coating. Prior to lubrication, I'd drilled a hole through the ape's back (in the mold), to allow an escape route for some of the excess foam. I drilled another larger hole in the back of the skull, for injection of the foam. I glued the BB eyes in their places with latex.

Now I started mixing the foam. I weighed out the rubber base in a ½-gallon can, which sat right on the scale platform, then removed the can and weighed out the four chemical additives in small waxed cups. Then I whipped up the rubber base in the can with the Mixmaster, adding chemicals at precise intervals, according to directions. I took the whipped rubber and poured it into a common grease injection gun, purchased from an auto parts store. I'd closed the armature inside

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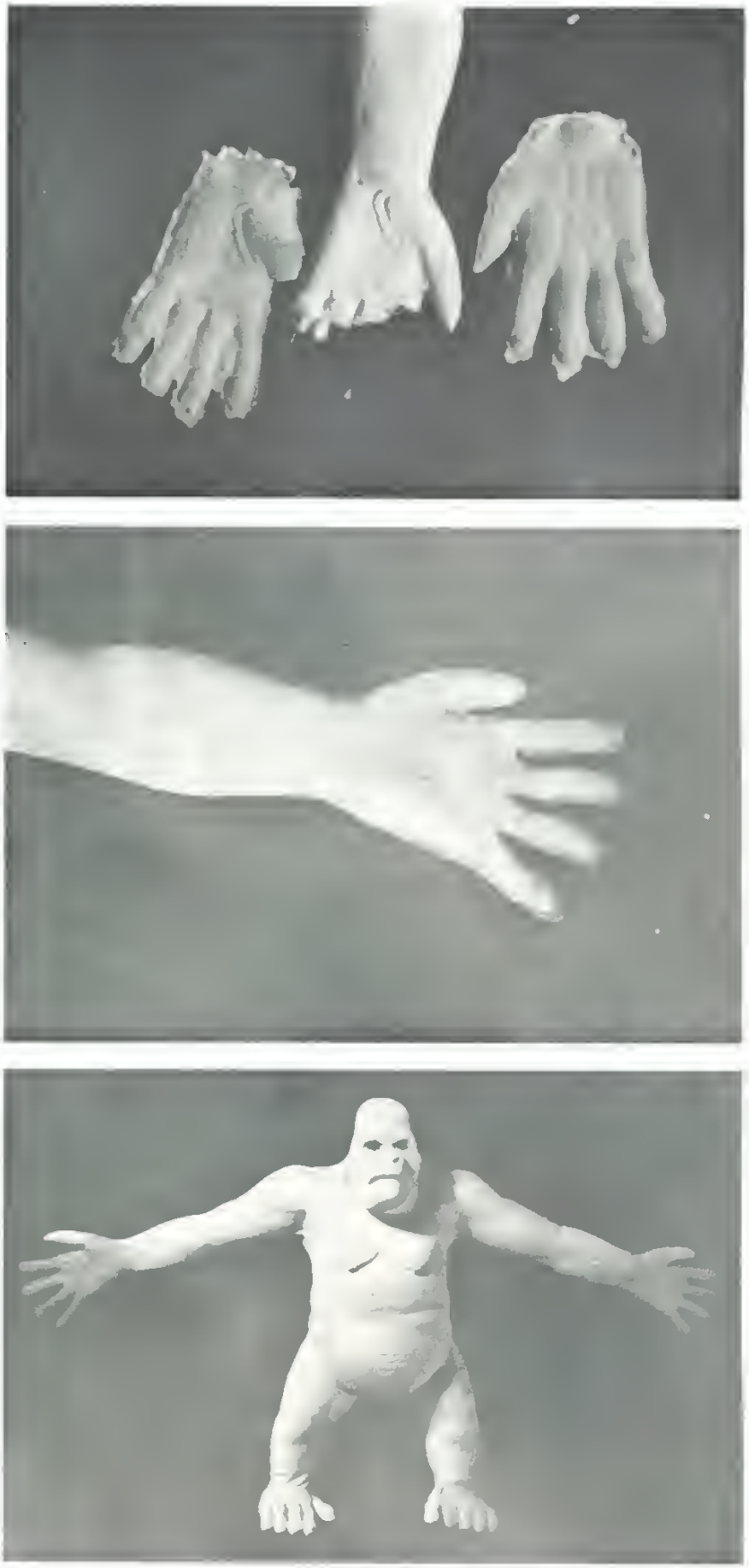

Right, top: The two newly molded hands are posed on either side of the malformed hand in the original foam latex casting. Center: The left hand has been added to the model. Bottom: The completed foam latex creation, with both new hands attached.

Top, left: Painting the model is begun. Top, right: Painting is completed. Bottom, left: Mold and latex castings of the teeth and ears. Bottom, right: A close view to show the latex teeth installed.

the mold; now I injected the foam into the mold through the hole in the head area. It gelled in a few minutes. Because of the chemical additives, the whipped rubber actually gels into a solid, albeit sodden, mass. To complete the casting process this mass must be heated, and "cured," in a 200-degree oven for approximately 3 hours This, at any rate, is what the formula I used required.

After approximately three hours, then, I removed the hot mold from the oven and pried out the steaming foamed rubber casting. The armature had been attacked slightly by the chemicals in the foam, but I'd anticipated this, and wasn't alarmed at the rusty secretions here and there. The performance of the armature was not affected. I popped the BBs out of the face, and perfect round eyesockets were left behind. I trimmed away the thin sheet of foam which surrounded the model with small scissors.

The foam had not travelled properly into the hands or feet of the animal, so I chopped off the deformed extremities and cast little pieces from the molds in regular latex. I took these small castings and restored the hands and feet. I filled all imperfections with more latex, and smoothed over the seams.

Now I fastened the puppet to the same wooden base I'd sculpted him on, and prepared to paint him. I mixed a paint from acrylic paint and latex, plus some water. A large puddle on my mixing palette was sufficient. Two coats provided good coverage. I mixed shading colors with darker and lighter versions of the same basic grayish brown, and used them to dramatize the ape's facial features. I'd already separately cast the lower teeth and tongue on one latex unit, and tried this on, or "in," at this point, as can be seen in the photographs. I painted the finger and toe nails, too.

I'd decided to use crepe hair, a material used in theatrical makeup, to give the ape a coat of fur. Others prefer to use actual preserved pelts from a taxidermist, but I had no ideas how to do this, and I already had experience working with crepe hair, so that was that for me. Crepe hair is applied in overlapping layers, like shingles, and you have to decide ahead of time in what direction the hair must go. For example, on the legs and torso, the hair will all grow down, so you start at the bottom and work up. This means that for the legs, you start gluing the hair on at the ankles and work your way up, one layer at a time. You musn't leave too wide a gap between the layers, or the results will be far too "shingly." Crepe hair comes in a braid, which you unravel into a kinky string. This you soak in scalding hot water, which removes the tight kinks. After this I prefer to iron it dry, after most of the water has been drained out. To prepare the hair for sticking, you take the dry strand of straightened hair and gently pull it apart from the end, and lay these fibers in a pile. This way you align the fibers and weed put the snarled, useless fiber. Then you can take the hair you need from this pile. You take a bit of it, snip the ends off straight, and press them into a narrow ribbon of latex, which you have previously applied with the blade of a palette knife or orange stick. You press them in with the blade of your scissors (and periodically wipe the






Left, top: Crepe hair is attached in a shingled fashion. Right, top: Front view of the hair being attached. Center, left: Front view—hair attached, but not trimmed. Center, right: Front view—hair trimmed. Bottom, left: Rear view—hair not trimmed. Bottom, right: Rear view—hair trimmed. Below, right: Close view of the completed model (for a full view, see our back cover).

dried latex off the scissor blades). When the hair is stuck down all over the puppet; you trim it. When I reached this stage, I did the trimming with my barber shears and with a single-edged razor blade.

Concurrently with these construction stages, I'd sculpted a miniature set of teeth for the upper and lower mouth (the lower half including a tongue), and also a pair of ears. These tiny sculptures were cast in a single mold. From this mold I made latex castings. I referred earlier to the mouth casting and how I glued it in permanently. I also glued the ears onto the head. Finally, I painted the BBs with acrylic paint and lacquered them, so that now they were ready to pop into their respective eye sockets. This completed the model. ■

MIXING FOAM LATEX:
A SIMPLIFIED METHOD

Article by DON DOHLER

There are often many horror stories from filmmakers who have mixed foam latex formulas for casting animation models (or make-up prosthetics, for that matter). Even in the preceding article Craig Reardon describes the pains of using the stuff. With a little help from filmmaker Bruce Shane, of Silver Spring, Maryland, we have experimented and found a relatively painless method of mixing a certain brand of foam latex.

What is possibly the best foam latex formula available can be obtained from:

R & D Latex Corp.
5901 Telegraph Rd.
Commerce, California 90040

For a one-gallon jar of foam latex, plus two needed additives, send a check to R & D for $23.00 (which includes shipping anywhere in the United States) and request *Compound 318-C, plus parts*. While you're at it, you might tell them that CINEMAGIC sent you and you should get quick service. At any rate, if that $23.00 price sounds like a lot, keep in mind that the chemicals are very heavy, and $5.00 of the price is for shipping. Those of you who live near Commerce might stop by in person and save some money. Also, the one gallon of formula can yield something like ten to fifteen Ymir-sized models, or an equal amount of make-up prosthetics. All in all, a reasonable price for what you get out of it.

The nice thing about the R & D formula is that there are only three ingredients involved: the raw latex (Part A), the cure paste (Part B), and the gel (Part C). Other formulas have been known to have up to five different parts!

When you receive the formula, an instruction sheet on mixing and curing will be included. The instructions talk about *CCs* and *grams* for measuring amounts of each part. Unless you have a triple-beam scale to weigh out grams, you cannot measure the amounts according to instruction. We were in the same situation when we first received our batch of the formula, so we figured out how to measure it proportionately. This might not be a chemist's dream, but it has yielded perfectly adedquate results every time we try it.

Basically what is involved is mixing together eight parts of Part A to one part of Part B. We used a 2-tablespoon measuring cup for this, which means that you add eight of these cups of Part A and one cup of Part B together in a mixing bowl. Mix according to instructions. (You can use a Mixmaster or an electric hand mixer, but do not try using a manual egg-beater!)

With Parts A and B mixed to a desired volume, the R & D instructions call for 6 CCs of Part C to be added. If you don't have a CC measure, simply add one-half teaspoon of Part C. Again, mix according to instruction.

When the formula is mixed, pour (or inject) it into your mold, place the mold in a household oven, and let it stand undisturbed for ten minutes. Then turn your oven on to 250 degrees and let the mold bake for about five hours. This time is not arbitrary, and depends on the size of your model or appliance, and the thickness of your mold. If you're not in a hurry, six to eight hours will be better for a larger model.

When baking is completed, turn off your oven and let the mold cool gradually before removing it. When it is removed, wrap some towels around it (to prevent cracking due to temperature changes) and handle it carefully. The R & D instructions tell you to wash the foam latex piece after it is removed from the mold, but this is not necessary or desirable for our purposes—remember that you're going to be coloring the piece, and once it is washed the rubber is not compatible with certain types of make-up (which might be used for a face appliance).

The more you work with the R & D formula, the more you will get the "feel" of it, but there's no reason that you can't get satisfying results the first time you try it. ■

Everything you need to mix foam latex: the one-gallon jar of the raw latex, the two additives, a mixing bowl, electric hand mixer, measuring spoons and small measuring cup.

STOP-MOTION BIBLIOGRAPHY

COMPILED BY ERNIE FARINO

BOOKS

Agel, Jerome, THE MAKING OF KUBRICK'S 2001, Signet Books, New York, 1970. 367 Pages, (paperback) $1.50. Features lengthy photographic coverage of the special effects work, including many behind-the-scenes photos.

Brosnan, John, MOVIE MAGIC, St. Martin's Press, Inc., 175 5th Ave., NY, NY, 10010, 1974. 285 pages, $10.95. Excellent informal history of special effects in the cinema, profusely illustrated. Chapter on the stop motion animators.

Butler, Ivan, THE MAKING OF FEATURE FILMS—A GUIDE, Penguin Books, 7110 Ambassador Road, Baltimore, Md., 21207, 1971. 191 pages, $1.75. Contains brief interview with Ray Harryhausen.

Clarke, Charles G., PROFESSIONAL CINEMATOGRAPHY, American Society of Cinematographers, 1782 North Orange Dr., Hollywood, Ca., 90028, 1968. 192 pages. Contains chapter on special photographic effects.

Clark, Frank P., SPECIAL EFFECTS IN MOTION PICTURES, Society of Motion Picture and Television Engineers, Inc., 862 Scarsdale Avenue, Scarsdale, NY, 10583, 1966. 238 pages. Primarily concerned with mechanical effects, has chapter on optical effects and miniatures.

Fielding, Raymond, THE TECHNIQUE OF SPECIAL EFFECTS CINEMATOGRAPHY, Hastings House Publishers, Inc., 10 East 40th Street, New York, NY, 1972. 425 pages, $18.50. *The* book on special effects techniques. Very technical, informative, profusely illustrated. Topics include glass shots, matte shots, bi-pack printing, optical printing, front and rear projection, miniatures and others. Does not cover stop motion animation. *Essential.*

FILM DESIGN, The Tantivy Press, 108 New Bond St., London, W1Y OQX, England, $3.95. Detailed and instructional examination of the Art Direction aspect in films. Chapters include set design, pre-production, forced-perspective (with diagrams and formulas), with interviews of the various art directors such as Ken Adam (pre-production sketch of Ft. Knox interior from *Goldfinger*), John Stoll, John Box, and others. Includes chapter on special effects, detailing various processes. Brief interview with Ray Harryhausen. Many interesting photos from various productions, including behind scenes shots (series of photos of construction of 60' miniature mountain & castle for *Where Eagles Dare*). Recommended.

Glut, Don, THE DINOSAUR DICTIONARY, Citadel Press, 120 Enterprise Avenue, Secaucus, New Jersey, 07094, 1973. $12.50. Useful reference book on all manner and form of prehistoric reptiles, illustrated with drawings, diagrams, photos from animation films, and a few original pieces of art by Jim Danforth.

Goldner, Orville and Turner, George E., THE MAKING OF KING KONG, A.S. Barnes & Co., Inc., Cranbury, New Jersey, 08512, 1975. $17.50. Excellent book on the making of the greatest animation film of all time. Profusely illustrated with scores of never-before-seen photos, including behind-the-scenes shots. Detailed text reveals many special effects techniques as well as general background on the making of the film. Co-author Goldner actually worked on the special effects crew for *Kong*—a must!

Gottesman, Ronald and Geduld, Harry (editors), THE GIRL IN THE HAIRY PAW, Avon Books, 959 Eighth Ave., New York, NY., 10019, 1976. $5.95. Interesting compilation of everything that's ever been published on *King Kong*—articles, essays, cartoons, etc. Includes reprints of articles of Willis O'Brien, Marcel Delgado, Fay Wray and others. Photos of David Allen filming his King Kong Volkswagen TV commercial.

Harryhausen, Ray, FILM FANTASY SCRAPBOOK, A.S. Barnes & Co., Inc., Cranbury, New Jersey, 08512, 1974. $17.50. Harryhausen traces his career in stop motion and special effects, starting with the influence of *King Kong* all the way up to his own current *Golden Voyage Of Sinbad*. Profusely illustrated with production stills, behind the scenes photos, and pre-production drawings. Recommended.

Johnson, William, FOCUS ON THE SCIENCE FICTION FILM, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1972. 182 pages, $2.45. Contains an interview with Ray Harryhausen.

MAGAZINES

AMERICAN CINEMATOGRAPHER, March, 1965. ASC Holding Corp., 1782 North Orange Dr., Hollywood, Ca., 90028. "The Mad Mad World of Special Effects," by Linwood Dunn, examines the composite photography techniques used for *It's A Mad, Mad, Mad, Mad World*. Many behind-the-scenes before/after photos and coverage of the stop motion ladder sequence.

AMERICAN CINEMATOGRAPHER, November, 1974. *"Earthquake*—The Special Photographic Effects," by Albert Whitlock. Detailed article on the matte paintings used in the film. Same issue contains articles on the miniatures and other aspects of the production.

AMERICAN CINEMATOGRAPHER, October, 1975. "The Cameraman and Special Photographic Effects," by L.B. Abbott. Discussion of various effects techniques, revealing some useful technical information. *Probes In Space*—The special effects filming of this elaborate space production, detailing model and set construction and photography techniques.

AMERICAN CINEMATOGRAPHER, January, 1976. "Reincarnating an 800-Foot Giant Superstar," by Albert Whitlock. The perfect companion to Whitlock's article on the effects for *Earthquake*, this essay deals with the marvelous special effects used for *The Hindenburg*. Superior to the *Earthquake* article in that this issue features "before and after" shots, graphically revealing the genesis of six of his 70 matte shots executed for the film. Same issue also details miniature work for *The Hindenburg* and general production articles.

ARGOSY, March, 1959. Out of Print. "Monsters are My Business," by Dolph Sharp. Lengthy, detailed article/interview with Ray Harryhausen just after he completed *7th Voyage of Sinbad*. Photos of Harryhausen with the models. Highly recommended.

BOLEX REPORTER, Vol. 20 #2 (1970). Paillard Inc., 1900 Lower Road, Linden, New Jersey, 07036. 50¢. Lengthy article by Bruce Dods on the creation of his first Grog film. Discusses model building techniques and rear projection systems. Five full color photos.

CINEFANTASTIQUE, Vol. 1, #2 (Winter, 1971). Frederick S. Clarke, P.O. Box 270, Oak Park, Ill. 60303. Back issue price $7. "The History and Technique of Stop Motion Animation," by Mark Wolf. Part 1 of a detailed survey of the animation field. Many photos. Recommended.

CINEFANTASTIQUE, Vol. 1, #4 (Fall, 1971). Back issue price $4. "The Five Faces of George Pal," by Dennis S. Johnson. Part one of a detailed career article on Pal. Covers Puppetoons and early feature work.

CONEFANTASTIQUE, Vol. 2, #1 (Spring, 1972). Back issue price $4. Part 2 of "The History and Technique of Stop Motion Animation" by Mark Wolf. A very technical examination of various techniques. Illustrated with many photos. Issue also has short article on *Flesh* Gordon.

CINEFANTASTIQUE, Vol. 3, #4 (Winter, 1974). Back issue price $4.00. "*Flesh* Gordon"—A lengthy interview with Howard Ziehm, producer of the film. Interesting for its stories and information regarding the making of the film and the creation of the special effects. Some good photos, in color, and a review of the film.

CINEMAGIC, Don Dohler, P.O. Box 125, Perry Hall, Md., 21128. Issues #1-7. Varying back issue prices. Covers special effects techniques for the amateur, including miniatures construction, model building, stop motion techniques, and other topics. Written by those who've done the work. Recommended.

CLOSEUP, Vol. 1, #1. Dave Prestone, 46-16 Marathon Parkway, Little Neck, NY, 11362. $1.50. A new, slick magazine devoted to animation and special effects. This issue features a series of articles on the various aspects of *Golden Voyage Of Sinbad*, an article on the filming of *Flesh Gordon* and a behind the scenes look at the TV kid show *Land Of The Lost*.

CLOSEUP, Vol. 1, #2. $3.25 per copy. Inquire as to availability (address above). Features extensive interviews with seven noted puppet film animators, including Lou Bunin, Kermie Love, and Richard Catizone. Dozens and dozens of rare, behind-the-scenes photos. Highly recommended.

FANTASCENE, Vol. 1, #2. $2.00 per copy. Edited by Robert Skotak and Elaine Edford. (Note: the editorial address of this magazine has recently changed; the new address is unavailable as of this writing. You may purchase *Fantascene* from Bud Plant—see address at the end of the bibliography.) A beautful new magazine printed on heavy, slick paper. This issue includes a six-page interview with Jim Danforth, as well as fifteen stills from Danforth work (some of them very unusual).

FAMOUS MONSTERS OF FILMLAND, #20, 21, 23. Out of Print. "Son of Kong," by Forrest J. Ackerman. Detailed biography of Ray Harryhausen, illustrated with many photos.

FILM COLLECTOR'S REGISTRY, Vol. 5, No. 2, Mar-April 1973. Earl Blair, P.O. Box 66393, Houston, Texas, 77006. $1.00. Interesting interview with Jim Danforth, concerned primarily with *When Dinosaurs Ruled The Earth*.

FILMMAKER'S NEWSLETTER, Vol. 7, #12. Filmmaker's Newsletter, 41 Union Square West, New York, NY, 10003. $2.00. "The Art of the Matte," by Tom Greene. Detailed and informative interview with matte artist Albert Whitlock. Illustrated with many fascinating before/after scenes, and photos of Whitlock with his paintings.

FOCUS ON FILM, #16 (Autumn, 1973). The Tantivy Press, 108 New Bond Street, London W1Y OQX, ENGLAND. $3.00. "Willis O'Brien—Creator of the Impossible," by Don Shay. Lengthy, detailed and highly informative biographical career article on the creator of *King Kong*. Accompanied by many rare photos. Highly recommended.

FXRH (SPECIAL VISUAL EFFECTS CREATED BY RAY HARRYHAUSEN), #1-4. Out of Print. #4 available from Bud Plant. The four issues cover all aspects of Harryhausen's career, and include interviews with Ray and producer Charles Schneer, technical articles and historical observations. Profusely illustrated with many photos, many of an exclusive nature.

KALEIDOSCOPE, Vol. 3, #1. Out of Print. "This is Ray Harryhausen," by Don Shay. Excellent, though brief, interview with Ray Harryhausen.

L'INCROYABLE CINEMA, #5 (Autumn, 1971). Orion Press, 81 Marlborough Road, Salford M8 7DT, ENGLAND. Inquire as to availability and prices. "Talking to Ray Harryhausen." Superb interview with Harryhausen conducted in his London home. Accompanied by photos of Ray with his models. Highly recommended.

LUMIERE, July, 1973, #25. Incorporated News Agencies Company Pty., Ltd., 113 Rosslyn St., West Melbourne, Australia. Inquire as to availability and price. "Danforth's Dinosaurs," by Graham Shirley and Bill Taylor. In depth interview with Jim Danforth, very informative and entertaining. Recommended.

MILLIMETER, Vol. 3, #4 (April, 1975). Millimeter Magazine, Inc., 139 East 43rd St., NY, NY 10017. $2.00. Entire issue devoted to various animation techniques and artists, featuring an interview with Ray Harryhausen.

MODERN MONSTERS, Oct/Nov 1966. Out of Print. *"Jack The Giant Killer."* Good article on this film, including behind-the-scenes animation photos and partial interview with Jim Danforth. "Miniatures—Kill or Cure?" Knowledgeable examination of the effectiveness of miniatures in film production, and the problems involved in their use. "*King Kong*—A Double Take." Interesting evaluation of *Kong*, weighing its merits and faults. Some nice photos. "The War Eagle." Exclusive story on Willis O'Brien's unfinished film project from the '40's. Accompanied by 3 never-before-seen photos from the production. This issue highly recommended.

MONSTER TIMES, THE, #40 (April, 1975). The Monster Times Publishing Company, Inc., 11 West 17th St., NY, NY, 10011. $1.50. "When Danforth Ruled the Earth," by Gail Morgan Hickman. Brief but interesting interview with Jim Danforth. Some good photos as well.

THE MOVIE PEOPLE, Vol. 1, #1, (Sept., 1975). The Movie People, 1425 South Main St., Tulsa, Oklahoma, 74119. $1.50. Lengthy article on the *King Kong* remakes, particularly centered on the Universal/Danforth version and the troubles in getting the project going. Very opinionated article on Jim Danforth's career and his work, accompanied by some nice photos (photo of Chasmasaur armature from *When Dinosaurs Ruled The Earth*). Cover of this issue is full color oil painting by Danforth of his conception of *King Kong* for the planned remake.

PENTHOUSE Magazine, Vol. 4, #6 (Feb., 1973). Penthouse International, NY, NY. Inquire as to availability and price. *"Flesh* Gordon." Preview of then-unreleased X-rated sci-fi parody. Film features much animation and special effects, and this article has numerous color behind-the-scenes photos of the studio work.

PHOTON, #20. Mark Frank, 801 Avenue "C", Brooklyn, NY, 11218. Out of print. "The Stop Motion World of Jim Danforth." A lengthy, informative, and entertaining interview with Jim Danforth. Mark Frank's questions are organized according to Jim's films in chronological order, and the result is the most comprehensive career article on Jim ,published so far. Many interesting facts and thoughtful opinions. Few photos, but in this case, the text is the important thing here. Highly recommended.

PHOTON, #22. $3.00. "Dramatic Principles in Stop Motion," by David Allen. Allen explores the aesthetics of the art in a fascinating essay, accompanied by an excellent selection of photos. Highly recommended.

PHOTON, #25. $2.00. "*The Golden Voyage Of Sinbad*," by Les Schwartz. Thoughtful, in-depth article on the pros and cons of the film. Illustrated by many interesting behind-the-scenes photos. "Anything God Can Do, John Can Do Better," by Paul Mandell. Paul examines the special effects career of John P. Fulton, whose most famous work was the parting of the Red Sea in the *10 Commandments*, via an interview with Fulton's long-time associate and co-special effects man, David S. Horsley.

POPULAR MECHANICS, Vol. 75, #4 (April, 1941). Out of Print. "Cashing In on a Fantasy." Article on Ray Harryhausen before his professional career began. Features many photos of his early experimental work.

SUPERNATURAL #2 (1969; British). Out of Print. "Dinosaurs on the Hall Cupboard," by Tim Stout. An excellent interview with Ray Harryhausen, illustrated with many photos. Detailed, and highly entertaining.

TAKE ONE, Vol. 4, #8 (March, 1975). Unicorn Publishing Corp., Box 1778, Station B, Montreal, Quebec, H3B 3L3, CANADA. $1.00. "The Monstrous World of Ray Harryhausen," by Joel Uman. A career article tracing Harryhausen's work over the years. "*The Golden Voyage Of Sinbad*." by Frank Jackson. A very non-technical interpretation of the "meanings" of the film.

DEALERS

The following dealers usually have good stocks of various fantasy and film publications and books. If certain editions are not available through the publishers, try these outlets:

BUD PLANT, P.O. Box 1886, Grass Valley, CA. 95945. Write for a free catalogue. Bud carries *Cinefantastique*, *Cinemagic*, *Closeup*, and *Fantascene*. As of our latest contact with Bud, he said that he had a fairly good supply of rare and elusive *FXRH* #4 available for $2.00, plus 50¢ postage and handling.

CINEMABILIA, 10 West 13th St., New York, N.Y. 10011. A well-stocked film book and memorabilia store. They carry back issues of *Cinefantastique*, *Cinemagic*, *Famous Monsters*, *Photon* and others.

COLLECTORS BOOK STORE, 6763 Hollywood Blvd., Hollywood, CA. 90028. A prolific west coast book store. They carry many film publications, including Cinemagic. Write for wants before ordering.

NEXT ISSUE:

CINEMAGIC #9, our January/February edition, will feature a variety of intriguing how-to articles, profiles, and features.

FILMMAKER PROFILE—Dennis and Robert Skotak: The Skotak brothers are incredibly talented and ambitious fantasy filmmakers who have been into this field since they were young teenagers. They have produced all sorts of fantasy/science fiction/horror films, from monster parodies to feature-length sci-fi epics. Skill, patience, and close attention to detail are evident in the Skotaks' meticulous miniature sets and models—realism as good as any Hollywood production! More than 20 beautiful photographs accompany this insight of two ingenious filmmakers, who obviously will someday be big names in the professional fantasy film genre.

ON LOCATION WITH DEATH CORPS: An interesting behind-the-scenes report on a professional horror film, with several candid photos of the stars (Peter Cushing and John Carradine). Writer Fred Ray, who assisted in the production, also shares some amusing anecdotes—those "unscheduled" goof-ups and ad-libs by the actors that always happen, but we rarely get to know about.

SNEAK PREVIEW: Your CINEMAGIC staff is currently in the midst of producing a feature length horror film for theatrical release, and we will share with you some of our behind-the-scenes photos and production experience. There will also be photos of some of our original creature make-ups—published for the first time anywhere.

Left: Creature designed for a Skotak brothers film. Dennis and Robert Skotak will be profiled in #9. Below: Make-up artist Ed Litzinger adds a laceration to the face of Baltimore radio personality Johnny Walker for his role in *The Alien Factor*. Special preview of the film will be featured next issue.

CREATING A SIMPLE GUN-BLAST EFFECT: Filmmaker Ted Rae tells you his method of creating gun-blasts on Super-8 film. An easy technique that yields a nice effect—and no, it isn't film-scratching.

SINGLE-8 VERSUS SUPER 8: The two modern film formats for today's ambitious filmmaker are explored in regard to stocks available, cameras and projectors, editing and splicing equipment, and special effects possibilities. Britt McDonough digs deep to find out which format is really more versatile. Evaluations of desirable equipment will be given, as well as normal prices. You should read this before you go plunk down $500.00 on any elaborate movie camera!

PLUS: The results of the Amateur-8 and Piedmont-8 film contests; Press Notices; Convention Report; book and record reviews; letters; and more!

We're kicking the new year off to a great start with issue #9, and we have many blockbuster features coming all year long! Now is the time to subscribe to CINEMAGIC, or to renew your current subscription. A subscription is the most economical way to keep CINEMAGIC coming to your mailbox on a regular basis. Because of increased third-class postage rates, and higher envelope costs, we are forced to charge $2.00 per individual copy ordered from us. A four-issue subscription is still only $6.00 (and saves $2.00 over individual copies ordered from us); or you can sit back and relax for a couple of years by taking an eight-issue subscription for only $12.00 (saves $4.00). Make checks and money orders payable to CINEMAGIC, and mail to:

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This ape is a stop-motion animation model created by Craig Reardon. To find out how you can make models like this, see page 22 inside.

Cinemagic
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Scanned cover to cover from the original by jodyanimator.

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