CHAPTER FIVE

O’BRIEN AND HARRYHAUSEN CONTEMPORARIES – 1930-1970

During the 1930s, when Obie was working on his greatest creation and Ray was only just beginning his fascination with the art, there were few other individuals taking any interest in model animation, and those that were saw it only as one of a variety of visual effects. Slowly, however, with the advent of the 1950s, interest in the art increased, largely as a result of the contemporary cycle of monsters-on-the-rampage movies. The public's appetite for these fantasy films encouraged a number of individuals to try their hand at model animation and so the 1950s and 1960s would turn out to be a golden age for the art.

Some of this potential new talent had, like Ray, been inspired by *King Kong*, which would continue to weave its spell over subsequent generations, but these potential animators were also being inspired, not just by Ray's films, but by his methods of bringing his creations to life, using cheaper and more easily available methods. They realized that such techniques could help them bring their own dreams to fruition and they would devise their own methods, working in parallel with or along similar lines to Ray's own Dynamation. Eventually the vogue for the monster-on-the-rampage movies which had inspired this renaissance would decline, giving way to more inventive and ambitious science-fiction and mythological projects.

America was still at the heart of this surge in the fashion for films that showed people co-existing – not always very peacefully – with impossible creatures. However, there were also a few outside America who found their own ways of using model animation; some of them would find a market for simple puppet animation but there others who would recognize its versatility when combined with live action.

Alexandr Ptushko was sometimes called 'The Soviet Walt Disney' but it would be more accurate to say that he was a Russian Willis O'Brien. In 1934 Ptushko saw *King Kong*, and it convinced him that the way forward for model animation was to produce films that featured both animated models and live actors in the same frame.

Ptushko was born in Lugansk, now in the Ukraine, in 1900 and began his film career in 1927 when he went to work for the Moscow-based Mosfilm Studio. Initially he constructed puppets for model animated films made by other filmmakers, but because of his enthusiasm and professionalism he soon became a director and designer in his own right, making a series of stop-motion films between 1928 and 1932 that featured a character called Bratishkin. It was during the making of these films that Ptushko managed to refine his animation techniques and even made tests combining puppets with live action. In 1933 he assembled an animation team and began work on his first feature film, a project called *Novyi Gulliver* (*The New Gulliver*). It tells the story of a Russian boy called Petya (played by Vladimir Konstantinovich Konstantinov whose only film this was) who falls asleep during a commune outing and dreams that he is a new Gulliver, washed ashore on Lilliput. He finds that he has been tied up on the beach but is eventually released and becomes the guest of honour at a feast held by the monarch of Lilliput. Being a good Stalinist, he is appalled to discover that Lilliput is a decadent, bourgeois society controlled by capitalist profiteers, and before he wakes up to reality he helps the workers in the King's underground munitions factory overthrow their decadent rulers. All a bit heavy, perhaps, but the joy of this film is not in its blatant propaganda storyline or political aims, but in its conception and execution. It was a remarkable undertaking as Ptushko reputedly utilized some 'three thousand fingersize character models of revolutionists, bloated plutocrats, crooners and burlesque queens' (to quote the publicity of the time). However, it is more likely that there were actually only fifteen hundred models, although that number, if accurate, still represents an incredible achievement. The models were made largely of clay and the key characters possessed detachable heads allowing them a range of expressions. Over sixty sets were used in the film, and a lot of time, effort and resources were spent completing the optical work that combined the models with the one live actor. It is reputed that over fifty technicians, including artists, modellers and animators, worked on the picture for two years. It was halfway through the making of *Gulliver* that Ptushko saw O'Brien's *King Kong* and was amazed and inspired by the film to such an extent that he utilized some of the techniques he had seen.

Released worldwide in 1935/36 *Gulliver* quickly gained international acclaim, more for its cinematic innovations than its Stalinist plotline, although one reviewer for *The New York Times* wrote, 'In addition to the technical finesse, the film has genuine wit in its sly assault on bourgeois institutions.' *The New Gulliver* counted Charlie Chaplin among its great admirers, which led in part to Chaplin's *Modern Times* (1936). Always on the lookout for new animated pictures Ray also saw it in 1936, when he was sixteen, and he too was inspired, although perhaps not as much as by *King Kong*. Ray remembers that his mother took him to see the film, which had just been released in the US, and he was mesmerized by the huge number of tiny animated figures, although the political message contained in the story went right over his head. The film was responsible, to some extent, for inspiring the Czech animators of the 1950s and although largely forgotten over the intervening years, it is now gaining new admirers and Ptushko is being recognized as the genius he was.

Following the success of *The New Gulliver*, Mosfilm allowed Ptushko to form his own stop-motion production department, which became known as

PREVIOUS SPREAD
Left, three of the seven armatured heads (Pan, Lao and Merlin) that were seen sprouting from the body of the Loch Ness monster featured in the climax of *7 Faces of Dr Lao* (1964). These were animated by Jim Danforth and are now, along with two other heads (these can be seen on page 172), in The Deutsche Kinemathek Museum Für Film und Fernsehen in Berlin.
Right, Ray looking at the models of Pegasus and Perseus featured in *Clash of the Titans* (1981) with Jim Danforth. These are the same models featured in close-up on page 130.

TOP
Alexandr Ptushko circa 1930s.

ABOVE
Alexandr Ptushko circa 1960s.

BELOW LEFT
A scene from *The New Gulliver* (1935) showing the live-action actor's legs and feet bestriding the marching and Lilliputian revolutionaries. This one shot shows just how many tiny models Ptushko had to animate.

BELOW CENTRE
One of the 'thousands' of miniature puppets used in the film.

BELOW RIGHT
The Russian poster for *The New Gulliver*.

'The Ptushko Collective'. Between 1936 and 1938, the unit would produce fourteen animated short films, usually based on Russian folktales, that included *Repka* (*The Little Turnip*) (1936), *Volkl i Zhuravl* (*The Wolf and the Crane*) (1936), *Lisa i Vinograd* (*The Fox and the Grapes*) (1936), *Rodina Zovet* (*The Motherland Calls*) (1936), *Vesyolye muzykanty* (*The Merry Musicians*) (1937), *Skazka o rybakeI i rybke* (*The Tale of the Fisherman and the Goldfish*) (1937), *Zaveshchaniye* (*The Will*) (1937), *Lisa i Volk* (*The Fox and the Wolf*) (1937), *Malenky-Udalenky* (*The Little Darling One*) (1938) and *Pyos i Kot* (*The Dog and the Cat*) (1938). In most cases Prushko is credited as artistic supervisor of these pictures although he was occasionally responsible for the story and the script, and in some cases directed.

In 1938 Ptushko began work on another animated/live-action feature called *Zolotoy Klyuchik* (*The Golden Key*) an adaptation of Carlo Collodi's novel *The Adventures of Pinocchio*. Although hugely successful in the Soviet Union when it was released in 1939 *The Golden Key* didn't receive a wide distribution elsewhere and it was to be Ptushko's last film featuring model animation. However, after the war he did made a number of fantasy films that included *Sadko* (heavily cut and retitled *the Magic Voyage of Sinbad* for the States) (1953), *Ilya Muromets* (retitled *The Sword and the Dragon*) (1956) and *Sampo* (retitled *The Day the Earth Froze*) (1959). In 1968 Ptushko began work on the feature *Ruslan and Ludmila*, which took a total of four years to complete. Sadly, a few months after the film's release in 1972, Ptushko died. Like O'Brien, his near contemporary, Ptushko will always be remembered in film history for one film, *The New Gulliver*, and though its message has somewhat dated, the film is undoubtedly a classic and a milestone in the history of model animation.

Although brought up in America, Lou Bunin was also Russian. Born in Kiev in 1904, he left Russia at a very early age and received a training in art at the Chicago Art Institute. His ambition was to be an artist and sculptor so he went to France to attend the Academie de la Grande Chaumiere with the sculptor Bourdelle. When he returned to the US in 1930 he held a one-man show of his art in Chicago and the following year he travelled to Mexico to become an assistant to the painter Diego Rivera. While he was in Mexico he developed an interest in marionettes and on his return to Chicago began a marionette theatre. This led him to experiment with animating and filming puppets which, in turn, led to his first animated film, a short subject called *Pete Roleum and his Cousins* (1938), made for the Petroleum Industry stand at the 1938/39 New York World's Fair. It was a thirty-minute colour film that featured an animated bug eating a leaf and when insecticide is sprayed on the leaf the bug rolls over and dies. Although not exactly a classic it did lead to other offers of work in the field of information and industrial propaganda and slowly Bunin began to be noticed.

In 1942 Bunin was invited to work for a number of top Hollywood studios including Warner Bros, Paramount and Universal, filming animated inserts and other optical effects and it was whilst there that he met Michael Myerberg with whom he planned an animated version of Richard Wagner's fourteen-hour opera cycle *The Ring of the Nibelung* which they intended to reduce to four hours. The conductor Leopold Stokowski was also to be involved and together they worked for three years on this extremely ambitious project. However, just when it seemed that Universal Pictures might finance the film, it was dropped because the Hollywood executives realized the close association between Wagner's work and the Nazi regime.

The year he arrived in Hollywood Bunin directed as well as animated *Bury the Axis* (1943) , a political propaganda film for the US government, which satirized the leaders of the Axis powers – Hitler, Mussolini and Hirohito. Filmed in colour, the six-minute film lampooned all three figures by using heavily stylized puppets (wonderfully modelled by Bunin) and having them sing derogatory songs. Aside from the three central figures Bunin also animated a stork, a snake (this was an introduction to Hirohito), geese and a tank. It's a wonderful piece of wartime propaganda that is as fresh today as when it was made.

In 1943 Bunin was invited by MGM to work for them on various productions including a prologue for their all-star musical *Ziegfeld Follies* (1946). In one section of this entertaining insert there is a lobby scene for which Bunin animated twenty-five separate models simultaneously. He

BELOW
Nine scenes from the US propaganda film *Bury the Axis* (1943) by Lou Bunin. The three leaders of the Axis – Hitler, Mussolini and Hirohito – are lampooned in this original and still very amusing animated slapstick film. It begins with a stork delivering Adolf, then has Mussolini as Hitler's obedient dog and Hirohito as a 'snake in the grass'.









BELOW
Several images showing Bunin, or at least his hands, at work on a model of a horse or mule. They show the mould, the latex model being extracted and the painting of the model.

BOTTOM
Bunin's greatest achievement, the very ambitious and brilliant *Alice in Wonderland* (1951). Aside from the last image, all the scenes show Alice (Carol Marsh) combined with the models, which were all designed by Bunin.






was assisted by twenty-five other technicians, including some from the Disney and Fleisher studios[1], but the models and animation was designed and executed by Bunin. It is a superb piece of work and is perhaps the best section of a lacklustre film. Bunin remained at MGM for a few years working on minor effects sequences, but was fired and blacklisted as a result of McCarthyism.

Bunin cherished an ambition to shoot a feature film of Lewis Carroll's *Alice in Wonderland* using model animation. Unable to raise the money in Hollywood, he travelled to England in 1948 where the J. Arthur Rank Organisation agreed to find some of the production money for the film in which Bunin would combine a live-action Alice with animated models. Following a prologue sequence that takes place at Christ Church College in Oxford where Charles Dodson (Lewis Carroll was his *nom de plume*) was a fellow and in the garden of Alice Liddell, who had inspired the character of Alice, we then see Alice (Carol Marsh) following the animated white rabbit into Wonderland.

The project began production in 1949. It was photographed in Technicolor, cost one million dollars and was filmed in two versions, one English and one French. All the animation was executed in a studio in Nice, France using eighty technicians, several of whom were on loan from MGM, including Irving Block, a matte artist, and Lloyd Knechtel. The complex and surreal story called for many optical effects including multiple rewinds and travelling mattes, and, most remarkable of all, the synchronization of the voices with the models. The characters and costumes for the models were based on the drawings by Sir John Tenniel, the original illustrator of the book. Bunin set himself the task of animating multiple puppet scenes, including the Queen of Hearts' cricket party in which at least twenty puppets appeared at the same time. Although it might seem that a scene with multiple dancing lobsters would require multiple lobster puppets, Bunin used only two. We see the lobsters dance towards a flower, which is slightly off-centre and it was this flower that concealed the camera lens. Bunin cleverly animated the two models between two mirrors facing each other, which had the effect of creating endless rows of lobsters.

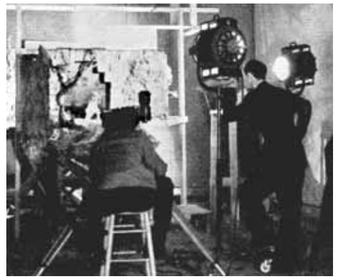
At about the same time as Bunin began animation work on the film, in Hollywood Walt Disney was also beginning his two-dimensional adaptation, also to be called *Alice in Wonderland* (1951). The Disney company approached Bunin and Rank to request that they hold up the release of their version for three years, so that Bunin's film didn't piggy-back on the publicity for the Disney's three-million-dollar film. After spending so many years in planning and production Bunin felt that this was unfair and opened his version first, calling it *Lou Bunin's Alice in Wonderland*. Disney immediately took him to court; but the judge dismissed the case on the basis that there had been several previous ver-

sions of the story and that the novel was by then in the public domain. Sadly, Bunin's adaptation and execution of the novel is mostly forgotten today, although it is far more enjoyable than Disney's sterilized version. Right up to his death in 1994, aged 89, Bunin was still struggling to get the film restored and out to a wider audience.

Following *Alice in Wonderland* Bunin didn't make another animated feature but concentrated, for the remainder of his working career, on animated short subjects, inserts and credits for US television programmes, industrial films and American commercials. Although his body of work was considerable Bunin, like so many other animators, will be remembered for a single film, the technically innovative *Alice*.

Towards the end of the 1930s a project that Obie and Harry O. Hoyt, the director of *The Lost World*, had begun in 1926 at First National reared its head again, although this time without any input by Obie. *Lost Atlantis* was to be about the legendary lost continent of Atlantis on which dinosaurs co-existed with humans. In 1938, Hoyt teamed up with special effects technician Fred Jackman to develop and film this adventure for Columbia Pictures. Twenty-five model dinosaurs were reputedly built (at a cost of $600 each), including a tyrannosaurus rex, a stegosaurus, a ceratosaurus and an allosaurus, all or most of which featured in ten minutes of test footage which was shot at the studio. Sadly, either because of costs or for some other reason, the project was cancelled by the studio head, Harry Cohn. Then in 1940 the same studio again resurrected the project, this time as a Technicolor production, with models designed and constructed by Edward Nassour and Walter Lantz, but once again, after some test footage had been shot, the production was cancelled.

Rather surprisingly, during the war years very little model animation was used in propaganda film-making. Ray had made attempts to show the medium's versatility by making two films, *How to Build a Bridge* (1941) and *Guadalcanal* (1945), but there was little or no interest. However, aside from Bunin's *Bury the Axis* there was another rather odd little film called *Revolution in Toyland* (1942), which we think it is worth a mention because of its bizarre story. The eight-minute black and white film made for Sterling Films tells of a toy-maker who is using toys to smuggle out secrets to the Allies. One day a Gestapo officer comes calling and the toy-maker escapes out of the window. The officer falls over one of the toys and then, in a daze, the nasty Nazi is attacked by the toys. In the end the toys win. The model toys would appear to be made of wood and wire and the animation is somewhat basic. The name of the person or persons responsible for the animation is sadly unknown to us; but the number of animated models in the film is impressive – there is one scene of the toys breaking out of a cupboard in which there appear to be in excess of twenty separate models.



ABOVE
Three images of the unrealized *Lost Atlantis*.

Top left. Two styracosaurus (or possibly arrhinoceratops or anchiceratops).

Bottom left. Two unknown technicians (one could possibly be Fred Jackman) animating and photographing the tyrannosaurus rex in its miniature set. These are the only known photographs showing the effects for the film. According to Stephen Czerkas in his book *Cine-Saurus*, 'Almost twenty minutes of animation were filmed but the movie was never completed and the footage has been lost.'

Above. The same tyrannosaurus rex or allosaurus standing in an ancient gateway.

The 1940s would see the appearance of a number of key figures associated with model animation. The most important of these was animator, director and producer George Pal. Pal was born György Pál Marczinsák in Cegléd, Hungary in 1908, his mother and father were entertainers and his grandparents had been members of the Hungarian National Theatre. It became apparent from an early age that George Jr. also had a leaning towards the arts, in his case architecture, which he studied at the Budapest Academy of Arts. However, whilst there he also studied drawing and carpentry, both of which would be extremely useful to him when he began making films. At the age of twenty, he graduated from the Academy and went to work at Hannia Films in Budapest, designing and making title cards and posters. It was during his time at Hannia that he became fascinated with cartoons, especially American cartoons, and began to research how they were made. Eventually he built his own equipment and started to produce his own two-dimensional shorts.

In 1931 he left Budapest for Berlin where, within only a few months and despite the fact that he could not speak German, he became head of the UFA Studios. Pal was ambitious and in the following year he left UFA and set up his own cartoon studio, which rapidly flourished. It was at this point that he first ventured into model animation when he was commissioned to produce a commercial for a cigarette company. After spending hours and hours drawing cigarettes, Pal had

RIGHT
A rare photograph taken during the early days of *Puppetoons*. George Pal is on the left, reaching over the miniature table, Willis O'Brien is on the right with his arms on the table and Ray is behind him. The cameraman, Paul Sprunk, is behind Pal and someone called Jordan is in the centre, behind the light. The camera assistant between Jordan and Sprunk is unknown.

BELOW
The great George Pal in his office with the Strauss model featured in *Mr. Strauss Takes a Walk* (1943).

BOTTOM LEFT
George Pal looking through a miniature of the Paramount Pictures Studios gateway.

BOTTOM RIGHT
Ray animating the models for *Hoola Boola* (1941). Working on Pal's *Puppetoons* was Ray's first paid job in the world of animation.

the bright idea of animating real cigarettes and, following tests, he asked the manufacturers if they minded if the commercial featured actual cigarettes rather than drawn ones. Pal was given an instant go-ahead and he spent three weeks animating the cigarettes to music. He recalled, 'They liked it so much that they ordered other films where cigarettes spoke. So we put little mouths on them – no face yet, just mouths. And then we put faces on them, and put hats on them, and put arms and legs on them. I built wire legs with buttons for feet and made a series of legs that way. And that was the birth of *Puppetoons*.'[2]

By 1933 the Nazi party was in power in Germany and, as both he and his wife were Hungarian nationals, Pal found himself being investigated by the Gestapo. With the little money they were able to scrape together they left Germany for Prague where Pal wanted to open an animation studio. He searched Prague trying to buy an animation camera and found that there were none, so he designed and built his own stop-motion camera, which, in those days of uncertainty, was so versatile that it could be packed away in a suitcase. It wasn't long before Pal moved again, this time to Paris where he set up a makeshift studio in his hotel room. Here he filmed model stop-motion films for Philips Radio who were based in Holland. After he had produced a number of these very successful films for them Philips asked if Pal would consider basing himself in Endhoven in Holland, which he did. There, working in a garage, he photographed in colour the short film *The Ship of the Ether* (1934) in which a glass spaceship (made from real glass) is propelled by ether waves. Moving his studio to a marginally more up-market butchers shop, he produced more commercials for Philips, Horlicks, Unilever and the US-based advertising company J. Walter Thompson Amongst the best of these shorts are *Philips Cavalcade* (1934), *The Sleeping Beauty* (1935), *Vier Asse* (1936), *Sinbad* (1936), *What Ho, She Bumps* (1937), *Sky Pirates* (1938), *Radjorør – revolusionen* (1938), *Philips Broadcast of 1938* (1938) and *Love on the Range* (1939). It was during this period that he, along with an American film-maker, Dave Bader, came up with the title *Puppetoons*.

Gaining a visa to visit America in 1939, just before the outbreak of the European war, Pal was asked to be a guest lecturer at Columbia University and to exhibit the shorts he had made in Europe. As luck would have it, whilst he was in New York Barney Balaban, the President of Paramount Pictures, saw *Love on the Range* at a party and was so

excited by it that he made some enquiries about Pal and discovered he was visiting the US. He quickly contacted him to ask if he would consider making puppet films for Paramount, basing himself in Hollywood. It was a dream come true for Pal and he eagerly accepted the offer.

Once established in Hollywood, Pal opened a small studio in a converted garage on West McCadden Place and called his company George Pal Productions. He immediately set about planning a series of *Puppetoons*, which he described as 'Color cartoons in three dimensions'.[3] The production process would begin with a script, usually written by Pal and Jack Miller, the story-sketch artist, following which the music was composed and recorded, along with dialogue and sound effects. Pal and his artists would then produce a series of sketches showing the action in each scene and these would be filmed to ensure that the action would flow. Whilst this was going on a team of technicians, including wood carvers, would make the puppets, each of which would be equipped with a range of heads with different expressions, a range of legs for walking and rubber latex arms and hands with wire cores.

Pal produced one *Puppetoon* every six weeks, beginning with *Western Daze* (1941) followed in the same year by *Dipsy Gypsy*, *Hoola Boola*, *The Gay Knighties* and *Rhythm in the Ranks*. It was at this embryonic stage in the development of Pal Productions that an enthusiastic young animator arrived. His name? Ray Harryhausen. Ray recalls that George was a congenial, kind and generous man who always seemed to be looking out for talented technicians, hence Ray's employment. He was very easy to work with and was a perfectionist, working throughout the night reading the next project for the next day. He would take between ten to twenty-five weeks to plan and make copious sketches of each film. Pal was a thorough person, Ray recalls, his drawings were meticulous and his calculations of timings for music and dialogue were exact to the last second. When the twenty-year-old Ray started at West McCadden Place he and George shared the animation work between them, with Ray animating on one set whilst George worked on another to save time. Ray worked on thirteen of the *Puppetoons*, including the five titles mentioned above as well as *Sleeping Beauty* (1941), *Jasper and the Watermelons* (1942), *The Sky Princess* (1942), *Mr Strauss Takes a Walk* (1942), *Tulips Shall Grow* (1942) (which was nominated for an Oscar ®), *The Little Broadcast* (1942), *Jasper and the Haunted House* (1942) and *Jasper and the Choo-Choo* (1942). Later, other technicians, including the cinematographer John Abbott and animators like Wah Chang, Gene Warren, Phil Kellison and Willis O'Brien (who only stayed a week or so), were employed. By 1945, when Ray left, the team had swollen to forty-five.

Pal received an Academy Award® in 1943 for the 'Development of Animation Techniques' and the *Puppetoon* series continued until 1947 when Pal filmed *Romeow and Julicat*, an insert made for the Paramount feature *Variety Girl*. In all, Pal produced forty-two *Puppetoons*, although this number should be compared to the two hundred shorts he is said to have made in Europe before he emigrated to America.

By the time Paramount called a halt to the production of Pal's innovative but stylized *Puppetoons* he had already decided to try and produce feature films, some of which he hoped would use his animation techniques. He had several projects in mind and when Peter Rathvon, a friend of Pal's, set up his own production company, Eagle-Lion, he signed Pal to a two-picture deal, the first of which would be *The Great Rupert* to be followed by a project that had the working title of *Operation Moon*.

The Great Rupert (1949) is a sentimental black-and-white film about a squirrel called Rupert who has been trained to dance a Scottish reel for a Vaudeville act. With Christmas approaching, a down-and-out family of acrobats, led by the hugely enjoyable Jimmy Durante, rent the apartment formerly occupied by Rupert's trainer and Rupert accidentally helps them by stealing money from the landlord's secret horde. The film was directed by Irving Pichel and, in addition to Durante, it starred Terry Moore (who had appeared in *Mighty Joe Young*), Tom Drake and Queenie Smith. However the 'real' star of the film was the squirrel. Although most people believed it to be real (there were some cutaways of live squirrels), it was in fact an articulated puppet animated by ex-*Puppetoon* animator, Fred Madison[4] assisted by cameraman John S. Abbott. The animation of the model (and some other items such as juggled walnuts) is at times erratic but for the majority of Rupert's brief appearances the creature is believable and amusing. Although the film was popular with family audiences and is still shown on television at Christmas, it was not a huge success at the time of its release.

FAR LEFT
A page from *Popular Mechanics* magazine showing Ray and others working on the *Puppetoons*. The photograph at the top left of the page shows two technicians building miniatures for what would become *Gaye Knighties* (1941) and at top right a young lady is painting one of the puppets. At the bottom left are some of the 6-inch knight models and in the bottom, right Ray is looking at assorted replacement sets of hands. The caption claims that 6,000 miniature figures were required for each short film of which 2,000 were for the 'leading man'. Ray never liked to count so we must except that this is correct.

LEFT
Ray reaching over a beautifully constructed miniature set to move the models for *Gaye Knighties* (1941).

ABOVE
The *Puppetoon* production crew outside George Pal Productions Inc on West McCadden Place in 1940. The figure in the center with his mouth open and hand raised, is George Pal and behind him, just looking over his head, is a youthful Ray.

However, Pal's next venture would not only break box-office records but also set a new trend in science-fiction films. *Destination Moon* (1950) was written by science-fiction author Robert Heinlein with Alford 'Rip' Van Ronkel and James O'Hanlon. The film contains a lot of special effects but there are only two sequences that feature model animation. The first is a long shot that occurs whilst the crew of the spaceship *Luna* are on their way to the moon in which several animated models of spacemen are seen walking on the outer hull of the spaceship. The second is the long shot of the spacecraft after it has landed upright in the Harpalus crater in which we once again see tiny animated figures, this time climbing down the exterior ladder onto the moon's surface. Both sequences were animated by the same technicians who had worked on *The Great Rupert* but this time John S. Abbott was credited as 'Director of Animation' with Fred Madison as animator. *Destination Moon* went on to earn Pal the 1950 American Academy Award ® for special effects in 1951.

Pal's next two films were also extremely popular at the box office and have become science-fiction cult classics. *When World's Collide* (1951) and *The War of the Worlds* (1953) raised the technical accomplishments of the genre to a new level and made Pal the top fantasy producer, but neither utilized model animation. Nor did his three subsequent pictures, *Houdini* (1953), *Naked Jungle* (1954) and *The Conquest of Space* (1955) – another venture into science fiction, or as Pal saw it science fact. It wasn't until 1958 that he returned, at least in part, to model animation.

For over twenty years Pal had wanted to make *Tom Thumb* and in 1957 he took the project to MGM who readily agreed to back it with a budget of one million dollars on one condition:





LEFT
Scenes showing the animated squirrel in Pal's *The Great Rupert* (1949). Audiences believed the squirrel to be a trained animal but it was in fact animated by Fred Madison.

TOP RIGHT
David Pal, son of George Pal, animating the elves designed and constructed by Wah Chang for 'The Cobblers and the Elves' sequence from *The Wonderful World of the Brothers Grimm* (1962).

TOP FAR RIGHT
Gene Warren animating 'Con-Fu-Shon' for *Tom Thumb* (1958).

BELOW
Don Shalin animating 'Con-Fu-Shon' for *Tom Thumb*. Shalin is holding a second, replacement, head ready to fix on to the main body of the model.

BOTTOM LEFT
Don Shalin animating a section of the dragon featured in *The Wonderful World of the Brothers Grimm* (1962).

BOTTOM RIGHT
Don Shalin animating the singing elves featured in *The Wonderful World of the Brothers Grimm* (1962).

that the picture was made at the MGM Studio at Borehamwood in England. Pal, too, had one stipulation: because the project contained a huge amount of special effects, which he could visualize better than anyone else, he wanted to direct it himself. However his first directorial venture was not to be a smooth ride: the problems began when he arrived in England, as he explained:

> *Then the problem of British labor laws came up, and they wanted to put an English director on the picture. So I reminded them of our tight budget and said, 'If you put another director on it, it will take an awfully long time to get it ready,' It's very difficult for a director who is not well versed in special effects to direct a picture like this. And I had been producing for so long that it was no problem for me. Fortunately the head of the union loved the* Puppetoons*, and when I showed him my presentation, he said, 'We have nobody who can direct this. You are the one to do it.'*[5]

The young American dancer-actor Russ Tamblyn, who had appeared in MGM's hit *Seven Brides For Seven Brothers* (1954) and had been nominated for an Oscar for *Peyton Place* (1957), was cast in the title role, a part that Pal had originally intended to be played by an animated model. Most of the rest of the parts were played by British actors, including June Thorburn, Terry-Thomas, Peter Sellers, Bernard Miles, Jessie Matthews, Ian Wallace, Peter Butterworth and Peter Bull. *Tom Thumb*, based on the Brothers Grimm fairy tale, tells of an elderly couple who wish for a little boy, 'even if he were no bigger than my thumb', and so are sent the miniscule Tom Thumb by the Forest Queen. The remainder of the film relates his exploits with various unscrupulous characters ending, as one would expect, with everyone living happily ever after.

Although he came to realize that his main character had to be a real actor, Pal had always planned that a number of other key characters should be played by models animated in the *Puppetoon* style. When the project was given the green light, he asked Dutchman Joop Geesink[6] to carry out the work, but Geesink's quote was way over Pal's allocated budget. Pal then considered setting up a special studio and leading the work himself, but as he was already both the producer and the director time would not allow for this. He then looked around for some of the animators who had worked alongside him on the *Puppetoon* series, namely Wah Chang and Gene Warren, but the company they had set up when the *Puppetoons* had finished had gone out of business. However, as luck would have it (and as Hollywood legend tells it), just before Pal was to set out for England to begin principle photography he bumped into Gene Warren in the street. Warren told him that, along with Wah Chang and Tim Barr, he had set up another special effects company called Projects Unlimited. On the spot, Pal signed Projects Unlimited to do the animation effects. It was therefore Warren, Chang and fellow-animators, Don Sahlin and Herb Johnson who designed and animated the characters Jack-in-the-Box, Con-Fu-Shon, the Yawning Man, and all the other toys that come to life, a task that took a total of five months to complete. The animation of these wonderfully original characters was superb and the sequences rate as some of the best stylized model animation ever achieved. Pal was both surprised and delighted, as was MGM, when the film was a huge success on its release. In the studio's eyes Pal could do no wrong and they told him that he could make whatever he wanted, so he chose to film H.G. Wells' *The Time Machine*.

The Time Machine (1959) tells the fantastic story of a time-traveller who journeys from the turn of the nineteenth century into the future. On the way he makes three stops: the first in 1917 when the First World War is raging; the second in 1940 when London is suffering the blitz; and the last in 1966 to witness the beginning of a nuclear war that destroys civilization. The machine reaches its final destination in AD 802,701 by which time mankind has divided into two races; mutated humans called the Morlocks, who had originally sought sanctuary below ground after the atomic war, and the Eloi, humans who stayed and thrived above ground. The time-traveller discovers that the first live off the second and helps the Eloi to defeat the Morlocks and then travels back to 1899 to collect some books and return to help mankind begin again. Produced and directed by





Pal, the film starred unknowns Rod Taylor and Yvette Mimieux with Alan Young playing the time-traveller's friend.

Once again the film contained several model animation sequences, though far fewer than *Tom Thumb*. To render the effects and animation, Pal again approached Projects Unlimited and it was Wah Chang, Gene Warren and Tim Barr, assisted by George Pal's son David Pal, who designed, constructed and executed most of the effects. There are various time-lapse sequences, including flowers opening and closing, a shop mannequin that has its clothes frantically changed as the decades slip by and a candle that melts down as the time-traveller watches it from the time machine. What little animation the film does contain mainly occurs when the traveller is testing his machine in the laboratory. We see a potted plant with its flowers opening (the following shots of flowers are time-lapse), a snail dash across the floor and apple blossom fade and apples grow. Much later in the film, during the final fight with the Morlocks, the time-traveller kills one and it slumps in a corner of the cavern. When the traveller pushes the lever to escape we see the disintegration of the Morlock's body, which includes an eye popping out of its socket. Wah Chang constructed the body of latex and other elements over a full-size skeleton and Dave Pal animated the decay. *The Time Machine* was another huge worldwide success and it won an Academy Award® for its innovative visual effects. As so often happens in the film business, *The Time Machine*, the high point of Pal's career, was followed by a slow and sad decline.

His next picture was *Atlantis, The Lost Continent* (1960), again for MGM. Because there was a writers' strike going on in Hollywood at the time of pre-production, the MGM executives wanted to get the picture under way quickly. Pal tried to argue that the script was nowhere near ready to

put into production and that the miniscule budget proposed would not do justice to the scope of the story, but in the end he was forced to concede. Consequently the film was a disaster. It contained an array of special effects, mostly miniature, all designed and executed by Projects Unlimited. There was to have been a sequence using model animation in which men flew with artificial wings, but these scenes were cut from the final release after unfavourable previews.

Pal's next picture was *The Wonderful World of the Brothers Grimm* (1962), based loosely on the life of the Grimm brothers and their fairy tales. At the time MGM had a deal with the Cinerama Company, which had invented an ultra-wide-screen process using three cameras and projecting the images simultaneously onto three screens.[7] The executives at MGM were looking around for an appropriate subject for which to use the process and, as Pal had been pushing for the project to go ahead for some time, it was chosen to be the first feature to be made in Cinerama. Sadly, the film as a whole is disappointing but it does contain a considerable amount of excellent model animation.

Pal directed the fairy tales and Henry Levin directed the main Grimm brothers story. Again, the Projects Unlimited team took on the special effects, with animator Jim Danforth working on the dragon sequence in 'The Singing Bone' section, the main animation sequence, together with Don Shalin and Dave Pal. The dragon model, designed and constructed by Chang, used a steel ball-and-socket armature covered in latex rubber rather than the usual wooden Pal *Puppetoon* construction. In total, the dragon sequence took four months to execute, as did the other animated model section, the 'Cobbler and the Elves' story. Again Chang designed and constructed the elves, which were approximately twelve to eighteen inches high, but for this section Pal reverted back to his replacement technique with the animation being carried out by Don Shalin and David Pal.

Although *The Wonderful World of the Brothers Grimm* was given a massive amount of publicity and hype by MGM and Cinerama, it was a world-wide box-office failure and, sad to say, it has come to look more and more dated in the years since its release.

In 1963 Pal began work on what would be his last picture of note, *7 Faces of Dr Lao* (1964). Again made for MGM it starred, in a variety of roles, the talented and versatile Tony Randall. The screenplay was based on a novel by Charles G. Finney called *The Circus of Dr Lao* a story set in the 1920s about a Chinese showman, one Dr Lao, who brings his unusual circus to the small mid-western town of Abalone, Arizona. The circus exhibits are Pan, the Greek god of joy, a giant serpent, Medusa, Merlin, Appolonius, the Abominable Snowman (played by Pal's other son Peter) and the Loch Ness monster, all of which play a part in gradually changing the lives of the town's inhabitants. Projects Unlimited were once more employed to design and carry out the effects, the centrepiece of which was the Loch Ness monster sequence, which in itself took three months to animate. In the film the monster grows from a tiny creature into a huge beast and for the sequence showing its growth Jim Danforth constructed and animated twenty separate articulated models, each slightly larger than the last. When the monster reverts back to a tiny creature the entire process was reversed and this part of the sequence was executed by fellow animator Pete Kleinow.

BOTTOM LEFT
Wah Chang with his own Kodak Cine Special camera, circa late1930s. The picture was taken by his wife Glen Chang.

BELOW
The animation models featured in the singing elves section of *The Wonderful World of the Brothers Grimm* (1962).

BELOW, BOTTOM
A set of the replacement heads, designed by Wah Chang and used for the Yawning Man sequence in *Tom Thumb* (1958).

RIGHT
Gene Warren and Wah Chang planning an animation sequence for *Tom Thumb* (1958) with the replacement heads for the character Con-Fu-Shon in front of them.

BOTTOM RIGHT
Wah Chang at home with his model of a tyrannosaurus rex constructed for the short film *Dinosaurs, The Terrible Lizards* (1970); it later featured in the television series *Land of the Lost* (1974) as the t. rex affectionately known as 'Grumpy'.

Kleinow, nicknamed 'Sneaky' Pete, was born in 1934 in Indiana and had developed an early interest in model animation. His first professional employment was at the Clokey Studios working on various television series, *Gumby*, *Outer Limits* and *Davey and Goliath*, and *The Wonderful World of the Brothers Grimm* was his first feature film. However, his ruling passion was for music and during the late 1960s and early 1970s he worked with The Byrds and Joe Cocker. In 1974 Pete returned to animation and effects working throughout the 1980s and 1990s on features that included *Caveman* (1981), *Star Wars: Episode V - The Empire Strikes Back* (1980), *Gremlins* (1984), *Terminator* (1984), *RoboCop 2* (1990), *Terminator 2: Judgement Day* (1991) and *Army of Darkness* (1992). He died in Petaluma, California in 2007 from complications relating to Alzheimer's disease.

7 Faces of Dr Lao was another film that did poorly at the box office and, although innovative, it is not too hard to see why. In places it is quite surreal. Today it is seen by some as a landmark fantasy film but as far as we are concerned it is the quality of the model animation that makes this film special.

The failure of the film reflected badly on Pal and he was not able to produce another feature for almost four years. *The Power* (1967) was his last for MGM and is fundamentally about human beings with superhuman powers. It starred George Hamilton, Susan Pleshette and Michael Rennie. There are several sequences that incorporate model animation, including some *Puppetoon*-like toy soldiers that threaten Hamilton, and a hallucinatory sequence that includes a skeleton falling into blackness, and the freezing and then the melting of Hamilton's head. The film was an even bigger disaster at the box office than *Dr Lao* and in Britain only made it as the second half of a double bill.

Although George Pal was continually working on other projects, like a sequel to *The Time Machine*, he would make only one more picture, *Doc Savage*, *The Man of Bronze* (1975). This was also a box-office failure and a sad end to a productive and pioneering career. Without doubt Pal gained a place in the history of cinema with a number of remarkable films which, in turn, gave the art of model animation a huge boost in the 1950s. Pal died in 1980 in Los Angeles of a heart attack and his passing was mourned by a great many people in the industry, including Ray who had remained close friends with him throughout all the years since his work on the *Puppetoons*.

We have made passing mention of Wah Chang and Gene Warren who worked with George Pal and of their company, Projects Unlimited, which did the effects for his later films, we now need to look at their careers in more detail because of their individual contributions to art of model animation.

Wah Ming Chang was born in 1917 in Honolulu, Hawaii. When he was two years old his parents moved to San Francisco to open the HoHo Tea Room, on Sutter Street. Chang recalled that the tearooms were a haven for various artists and at the age of seven he met an artist, Blanding Sloan, who encouraged his passion for sketching. It was also at this time that Chang developed an interest in marionette construction, which eventually led to him performing in a one-man show with his marionettes. Because of his talent, Chang received a scholarship to the Peninsula School of Creative Education in Menlo Park and whilst there continued his marionette performances in company with several other students.

ABOVE
Gene Warren animating the Julicat model for the *Puppetoon* sequence *Romeow and Julicat* seen in the Paramount Pictures feature film *Variety Girl* (1949).

RIGHT
The wonderfully sleepy but funny Yawning Man featured in *Tom Thumb* (1958).

FACING PAGE
Gene Warren animating the Yawning Man for *Tom Thumb* (1958)

In 1937 he made his first animated model film and, although an amateur like Ray, he painstakingly trained himself in art. Two years later, aged twenty-two he joined the Walt Disney Studios as a member of the effects and model department, where his job was to sculpt wooden models of characters to enable the animators to visualize them from all angles in their drawings. Then in the summer of 1939 tragedy struck. He was hospitalized with severe influenza, which was in fact polio. The result was that Chang lost the use or both of his legs and it would be a year before he was able to walk with the aid of leg braces, which he was still wearing when Ray met him on the *Puppetoons*. Although Ray was on the verge of leaving Pal Productions by then, he got to know Chang very well and, even though the two were never close friends, they stayed in touch over the years. Ray remembers Chang as one of the nicest men and most articulate animators he has ever met, who often came over for dinner with his wife Glennalla (Glen) in those early days. The last time Ray saw Chang was when he went up to see George Web, an art director on *Mighty Joe Young*, who lived in Carmel; since Chang lived in the same area they both went to see him. Glen had recently passed away but Chang was still happily drawing and sculpting.

When the *Puppetoons* wound up in 1947 Chang set up his own production company with Glen to make educational films. Sadly, business was slow so he joined Gene Warren to form Centaur, an effects company. Warren, who was born in 1916, had also begun his career as an animator at the George Pal studio working on a number of *Puppetoons*, one of which was *Date with Duke* (1947) featuring the voice of Duke Ellington. He was also largely responsible for the *Romeow and Julicat* sequence that Pal designed for the 1947 film *Variety Girl* about the romance between a cat and a dog, which used typical *Puppetoons* models with wire for armatures and a series of wax replacement heads.

In 1956/57 one of Centaur's first features was the cheap science-fiction production *Kronos* (1957) about a giant alien robot. The Kronos model, which was very crude and completely impractical, was designed and built by Chang and animated by Warren. Warren recalled, 'All the action scenes with Kronos were accomplished with stop-frame photography of the simple, very unsophisticated puppet (about ten inches in height) against process plates with foreground set pieces to allow the puppets to make actual contact with the ground.'[8]

After changing the name of their company to the more descriptive Projects Unlimited, Chang and Warren were joined by Tim Barr who took a largely administrative role. In 1957 things began to pick up, although their first feature *Monster From Green Hell* (1958) was not perhaps

the most auspicious start. Projects Unlimited was commissioned by effects producers Jack Rabin and Louis DeWitt to deliver the stop-motion work for the picture, although neither the company or Chang and Warren received a credit. Perhaps they didn't mind. The film featured scenes of giant wasps and one scene of a fight with a giant snake, but these were poorly designed and crudely animated. The budget didn't allow for proper ball-and-socket models so Chang and Warren were reduced to using wire as an internal skeleton instead.

Projects Unlimited were then commissioned by George Pal to work on *Tom Thumb* (1958), the beginning of an association which, as we have already seen, was to last for many years. Their primary task was to animate a large number of toys in Tom's bedroom, so they employed Don Shalin and Herb Johnson to assist. In the sequence there are a number of shots that show Russ Tamblyn (Tom) dancing with the toys, these effects were accomplished with the aid of split screens and travelling mattes. Chang recalled

> *The two main puppet characters were Con-Fu-Shon and the Yawning Man, which I made. Both of those had [a] series of faces or heads and these were done in wax. In the Yawning Man's case a wax face was made and put on the head with registration pins, so that they were always accurately registered. The average number of heads will be from twenty to thirty dialogue heads, and faces that smile or laugh or yawn.*[9]

Project Unlimited were again asked by Pal to provide all the effects, including all the time-lapse and miniature work, for *The Time Machine* (1960), which understandably won Gene Warren and Tim Barr an Academy Award ® for best special effects. Unfortunately Chang was left out of the awards because of the way the credits for the film were submitted to the Academy. Although upset at the time, Chang was a forgiving man and celebrated the award alongside Warren and Barr.

For Projects Unlimited 1959/60 was a busy time as they were also commissioned to execute the effects for a dinosaur picture called *Dinosaurus!* (1960). The film featured a brontosaurus and a tyrannosaurus rex (both poorly constructed by Marcel and Victor Delgardo) the latter of which had a fight with a mechanical digger in the climax! It was a slight film redeemed only by the animation delivered by Chang and Warren, assisted by Phil Kellison, Dave Pal, Don Sahlin and Tom Holland

Phil Kellison was one of the many backroom boys who never achieved wide acclaim as an animator but he was in fact a good reliable artist, animator and technician. He, too, worked as an

FAR LEFT
Marcel Delgado putting the finishing touches to the tyrannosaurus rex featured in *Dinosaurus!* (1960). After thirty-five years of building models, beginning with *The Lost World* (1925), this was one of the last films Delgado worked on.

LEFT
Don Shalin animating the tyrannosaurus rex for *Dinosaurus!* (1960).

BELOW
The brontosaurus with a boy on its back, featured in *Dinosaurus!* (1960).

BELOW, BOTTOM
The tyrannosaurus rex (seen in the picture at top left with Delgado) fights the mechanical digger.

RIGHT
The hugely respected Phil Kellison posing with two of the creatures featured in *Jack the Giant Killer* (1962). On the left is Galligantua and on the right is the six-tentacled sea monster.

animator on the *Puppetoons*, built some of the miniatures for Obie's *The Giant Behemoth*, supervised the process photography on *Jack the Giant Killer* (1961) and animated many well known US commercials, for example the 'Pillsbury Doughboy' and 'The Jolly Green Giant'.

Don Sahlin made a cameo appearance in *The Time Machine* as the window dresser and would continue to work for Projects Unlimited as a designer and animator until it folded. He subsequently found true fame when he met Jim Henson at a Detroit puppetry convention and became Henson's main designer and puppet-builder in the 1960s and 1970s, specifically for the hugely successful *Sesame Street* and *The Muppet Show* television programmes. He passed away in 1978 and in his honour Henson had a bench dedicated to him and placed on Hampstead Heath in London.

Journey to the Seventh Planet (1961) was produced by American International Pictures (AIP) and Cinemagic, with the live action being shot in Sweden. The story concerns a group of astronauts who travel to Uranus and encounter various awful (really awful!) creatures, including a very silly and badly animated cave monster that truly defies description. Warren, Chang and Jim Danforth were responsible for the animation and received no on-screen credit for their efforts to enhance this truly bad film. In the same year Projects Unlimited worked on George Pal's *Atlantis, the Lost Continent* (1961), which used model animation for the giant crystal weapon and an unused sequence of birdmen.

Next came two major projects, the first of which must have seemed at first glance to be a potential commercial success. Unfortunately, what may look good on paper doesn't always turn out that way when realized on the screen. After the huge box-office returns for Ray's *The 7th Voyage of Sinbad*, producer Edward Small decided to make *Jack the Giant Killer* (1962), which was a blatant attempt to cash-in on the previous film's success. It must have niggled Small that, when the *Sinbad* project had been offered to him some years before, he had declined, pointing out to Ray that costumes films were not popular and completely failing to recognize that the project's originality lay in the effects. To guarantee *Jack the Giant Killer's* success Small commissioned some of the key talent from *The 7th Voyage*, including the director Nathan 'Jerry' Juran, Kerwin Mathews. who had played Sinbad, and Torin Thatcher, who had played the magician Sekoura. What Small failed to realize was that he hadn't employed the one person who really mattered, the person who had dreamed up the initial storyline and conceived the key sequences for *The 7th Voyage* – Ray himself. Jim Danforth, who worked on some of the *Jack the Giant Killer* animation, said of the film,

> *…they tried to copy all the elements which they felt had made* Sinbad *successful. They got the same leading man, the same villain and spent considerably more money on the film than had been spent on* Sinbad*; unfortunately, in my opinion, at least, they were not able to make a good film. They were so unhappy about it, in fact, that Edward Small doesn't want to hear the word 'animation' again, and would never entertain the idea of doing another one.*[10]

There were, not surprisingly, many problems with the film. The major ones are that the storyline appears to have been pieced together as the live-action production progressed and that the effects were woven around the poor storyline rather than the other way round, which is how Ray and Charles always made their films. Another problem, or problems, are the models themselves. The firm of Howard Anderson (a special photographic effects company founded in 1927 and run by Howard A. Anderson) was commissioned to carry out the special effects and they, in turn, asked Projects Unlimited to deliver the model animation. Wah Chang and Gene Warren designed a great many of the effects and models while the armatures were constructed by Victor Delgado. The featured creatures included a mechanical doll which grows into a Cormoran, a horned giant (remarkably similar to the Cyclops in *The 7th Voyage of Sinbad*), a dragon / gargoyle-like flying creature, a six-tentacled sea monster and another giant called Galligantua, which this time had two heads. In addition there are various human figures and even a dog. Without exception, the models look dreadful, which is surprising considering Chang and Warren were usually such perfectionists. We can't blame the budget either because, as Jim Danforth has pointed out, the production budget was at least healthy. The models seem to possess little or no muscular detail and the skin finishes appear shiny and rubbery, lacking any credibility, even as fantasy creatures. One of the golden rules in animated fantasy is that the creatures must at the very least always look plausible.

The animation was credited to Chang, Warren and Tim Barr, but in reality it was overseen by Phil Kellison with the animation itself executed by Jim Danforth, Tom Holland, Don Sahlin (who did several tests for the animation, though none of his work was used in the final film) and Dave Pal. Before the release Edward Small announced that it had been filmed in a new process called 'Fantascope', 'a revolutionary new system of trick photography';[11] again the reality was rather different, Fantascope was very similar to Dynamation, utilizing split screens and rear-projection plates in exactly the same way.

The key animation scenes begin with the Cormoran mechanical doll, which performs a dance with the Princess throughout most of which the lighting flickers during the animation, which suggests the animators had the same problems as Ray did with his first colour film, *The 7th Voyage of Sinbad*. Next comes the Cormoran growing into a giant and kidnapping the Princess, a sequence which concludes with Jack killing it. Torin Thatcher, who plays the evil Pendragon, then conjures up Galligantua, which appears to be very similar in design to the Cormoran except for his two heads, fair hair and fangs, and this very unconvincing creature then does battle with the awful sea creature that seems to have been designed by a plastic toy-maker on a bad day. Finally, the dragon / gargoyle possessed by Pendragon attacks Jack's boat. Again this creature is very poor in design and resembles something made of Plasticine. Although the animation is not of the best quality, it does have moments of fluidity and occasional glimpses of characterization, especially during the mechanical toy's dance. *Jack the Giant Killer* did have story potential but it seems that Small never realized that the story depended on the animation and visual effects, and although Projects Unlimited and their animators made brave efforts to enhance the overall look of the film, the responsibility for its failure has to lie with the producer.

When 'Jerry' Juran came to visit Ray in London in 2001, a year or so before he died, the three of us talked at length about the films he had directed for Ray and Charles. At one point I asked him about *Jack the Giant Killer*, and he looked at Ray and then me and said that he could never understand why the film wasn't a box-office success. Ray and I had no intention of disillusioning him. Jerry was a wonderful man and an extremely versatile and talented director, ideally suited to fantasy films. When he directed live action he was always able to take full acount of the effects which would be added later.

The next production Projects Unlimited were involved with was another George Pal film, *The Wonderful World of the Brothers Grimm* (1962), which was a prestigious production but would once more prove to be a commercial failure, again not because of poor effects but because of its story construction. The film was shot in Cinerama, which entailed the use of three purpose-made animation cameras, which gave Wah Chang and Projects Unlimited a few headaches. The animation was completed by Jim Danforth, Don Sahlin, Dave Pal, Tom Holland and Peter Von Elk who were all uncredited. Although inconceivable today, it was quite normal before the 1970s for technicians to be uncredited, even when their input was not just crucial to the success of the film but its real 'stars'. *The Wonderful World of the Brothers Grimm* consisted of three Grimm fairy tales, beginning with 'The Dancing Princess' which contains only one animation sequence of a flower that curls its petals into a face and yawns. The next is 'The Cobbler's Tale' which features a group of elves that look much like characters from the *Puppetoons* and even re-used the heads of 'The Yawning Man' from *Tom Thumb*. The models for this sequence were again built by Chang and the animation was executed by Dave Pal, Don Shalin and Jim Danforth with good detail in the characterization of each model. The third and final segment is 'The Singing Bone' which featured a jewel-encrusted, fire-breathing dragon designed by Chang and animated by Danforth. It is this delightful character that is the overall 'star' of the film in terms of both animation and characterization. In an early scene the creature seizes and gulps down a spear thrown by actor Buddy Hackett. When the dragon swallows the spear we see a bulge caused by the spear's progress down its throat. Another lovely touch is the dragon licking its lips as it waits to eat Terry-Thomas. Although the film as a whole doesn't flow, there are moments when the animation brings it to life and at least enables the fairy tale sections of the film to be moderately entertaining.

The next project was *7 Faces of Dr Lao* (1964) which also had its problems. The company were again asked by Pal to execute the effects, with Chang, Danforth, Warren and Pete Kleinow (the last two uncredited) working on the animation. There are a number of animated sequences but it is the finale, showing the appearance and growth of the Loch Ness Monster, as animated by Jim Danforth, Wah Chang and Pete Kleinow, that is by far and away the most exciting and enjoyable. The monster begins as a tiny little fish-like creature and

grows to dinosaur proportions. At one point, when the creature is threatening two humans, it sprouts six heads on long monster-like necks, which are those of the other Dr Lao characters, the purpose of this development is unclear to the audience but it is, nevertheless, an extremely good piece of animation. Overall, the animation in this sequence is superb and the monster's flicking tail and ungainly walk are perfect.

One of the last major projects Chang worked on would be their last for George Pal. *The Power* (1967) was a present-day science-fiction thriller for which Projects Unlimited executed several animation sequences, although all are part of the running storyline rather than being key sequences. They depict, amongst other things, a malevolent battalion of toy soldiers (animated by Dave Pal); the head of the actor George Hamilton freezing and disintegrating followed by his facial skin burning away to reveal his skull (animated by Warren): and finally a skeleton falling into blackness (animated by Pete Kleinow). Warren explained that 'All the scenes involving George Hamilton's head were accomplished [by] stop-frame on a wax model of Hamilton taken from a life mask.'[12] Athough all the brief animation sequences were inventively designed and animated they could not save the film from box-office obscurity.

Soon after *The Power*, Projects Unlimited was wound up and Chang went back to freelancing. However, in 1969 Chang and Warren formed another company called Excelsior! AMP (the AMP stood for Animated Motion Pictures), but in the following year Chang and his wife moved to a house he had designed in Carmel Valley. There Chang decided to use his feature skills to produce educational films, amongst them *Dinosaurs... The Terrible Lizards* (1970) an eleven-minute documentary about dinosaurs, which he made with Douglas Beswick. Chang would continue to work in films and for television, mostly designing props and creatures rather than animation (he had been responsible for designing various prop equipment for the original series of *Star Trek*), but his first loves were painting and sculpting.

Wah Chang passed away on 22nd December 2003. Warren went on to work on a number of television series, which included *Land of the Lost* (1974) for which he was the stop-motion director, and *The Man from Atlantis* (1977) for which he worked on the photographic effects. He continued working in the field of effects until 1996 and died the following year. Excelsior! had closed its doors in 1980 but Warren's son, Gene Warren Jr, took over from his father with his own company Fantasy II, and won an Academy Award® for *Terminator 2: Judgement Day* (1991).

One key animator who had a huge influence on the art and other animators, but whose work did not combine model animation with live-action, was Jiri Trnka. His work is some of the most respected and innovative in the art. Born on 24th February 1912 in Pilsen, in what was then Czechoslovakia, Trnka had a natural leaning towards the arts, especially models, which was perhaps enhanced by his grandmother's talent for making dolls and toy animals. Aged twelve he participated as a designer in the Holiday Camp Theatre, which was a marionette group run by Josef Skupa, a schoolteacher who later became one of Czechoslovakia's most famous marionette players. Skupa taught Trnka the process of making marionettes, how to operate them and, most importantly, how to instil character into them. Between 1929 and 1936 Trnka went on to study at the Prague School of Arts and Crafts and after graduating he established a marionette theatre of his own in Prague, called The Contemporary Theatre of Puppets, which was extremely successful. However, his passion for puppets was soon leading him to experiment with stop-motion animation and articulated puppets and in 1937 he created two characters, Spejbl and Hurvinek, who were to achieve wide acclaim in Czechoslovakia.

The war closed down his theatre and his film production, so for the duration Trnka concentrated on designing theatrical sets and illustrating children's books. At the end of the war in 1945 the Czech film industry was nationalized; so instead of reopening his marionette theatre, Trnka, along with other friends and colleagues, began an animation unit which was called 'Trick Brothers', at the Prague Film Studio. Trnka specialized in model animation because of his fascination with puppets – he once said that they have, 'more presence' than drawings. He liked their slowness of movement (compared with graphic images), their 'solidity and stillness'. His early short films usually drew for their subject matter on Czech traditions and folk tales, which would continue to inspire his work throughout his career. Some of his films from this period were *Grandpa Planted a Beet* (1945), *The Gift* (1946), *The Animals and the Brigands* (1946) and *The Czech Year* (1947). The last (the Czech title is *Spalicek*) was reputedly his favourite and was his first feature film, made in six parts. It was based on the book by Alois Jirásek which illustrated traditional Czech folk customs throughout the year. The success of these films meant that in 1947 Trnka was allocated the complete upper story of an old villa near the city centre where he opened the Prague Puppet Film Studio (today called The Studio of Jiri Trnka). In the same year he also won an award at the Cannes Film Festival.

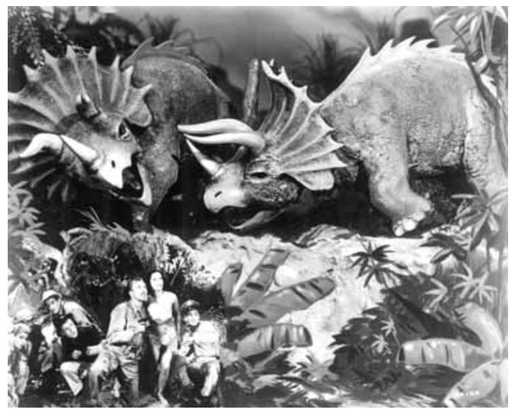
After the Communist coup d'etat in 1948 the new government subsidized all Trnka's work in the belief that animated puppet films could not contain anti-Communist messages, but of course they did, albeit in a subtle manner that presumably escaped the notice of the politicians. The Prague Puppet Film Studio produced at least one puppet film a year; amongst some of the most famous are *The Emperor's Nightingale* (*Císaruv slavík*) (1948), *Song of the Prairie* (1949), *Prince Bayaya* (1950), *The Golden Fish* (1951), *Old Czech Legends* (1953) and *The Good Soldier Schweik* (1954), based on three episodes from the novel by Jaroslav Hasek in which Trnka experimented with commentary and dialogue. In 1959 he made *A Midsummer Night's Dream*, which captured the spirit of Shakespeare's play and which

BOTTOM LEFT
The great Czech animator Jiri Trnka working on one of his stylized models.

BELOW
Top row, Two frames from *Ruka [The Hand]* (1965).

Middle row, from left to right. One of the wonderful models featured in *Cisaruv slavik* [*The Emperor's Nightingale*] (1948); Jiri Trnka animating his uniquely styled models; Tnka's epic folk tale in six parts *Spalicek*[*The Czech Year*] (1947), possibly his favourite film.

Bottom row, from left to right. Another of the models from *Cisaruv slavik* ; Jiri Trnka animating; another still from *Spalicek*[*The Czech Year*] (1947). Note the ghostly driver, resembling a character from Tim Burton's *The Nightmare Before Christmas* (1993).



debuted at the Cannes Film Festival in 1960 when Trnka was hailed as 'The Walt Disney of the East' (journalists often invoked Disney's name because he was best known for animation, even if it was not the same kind of animation), a title he hated as his work bore little comparison to that of his American contemporary. Other films followed. *Obsession* (1961), *Cybernetic Grandma* (1962) a futuristic allegory, *The Archangel Gabriel* (1965) based on tales from *The Decameron*, *Mrs Goose* (1965) and, perhaps his best known film, *The Hand* (1965), a parable of an artist working under oppression.

At a reception to celebrate the screening of *The Emperor's Nightingale* in Paris, the model of the emperor was shown to the famous French director Jean Cocteau. He remarked,

> *I witnessed a strange thing. Friends were struck with awe. They were almost afraid of touching the mysterious and miraculous little creature, who was no longer an actor, nor an emperor, nor a puppet, but Trnka's soul which has assumed the appearance of the emperor. You can no doubt imagine how awful it is to touch a soul and pass it on as if it were an ordinary object of art.*

A very moving and true assessment, not only of Trnka but of all animators, many of whom would agree with Cocteau that they gave their very souls and beings to their models or puppets. In 1966 *Newsday* also paid tribute to Trnka and his unique work by describing him as, 'second only to Chaplin as a film artist because his work inaugurated a new stage in a medium long dominated by Disney'. Trnka died in 1969 in Prague where he had worked all his life. His work has been called 'active dreaming', combining great imagination and poetry with ingenuity, invention, realism and creative vitality.

It would have been interesting to know what Trnka thought of Walt Disney Studios' early foray into the art of model animation, the 1959 short film *Noah's Ark*, which was nominated for an Academy Award that same year. It used Pal-like surreal stick models, which were animated by Bill Justice who, as a two-dimensional animator, had worked on some of Disney's most famous titles. Even though it was a relative success, Disney declined any further excursions into the model field, presumably because he preferred the tried and tested two-dimensional animation. It wasn't until the 1990s that Disney would again produce a model animated film with Tim Burton's *The Nightmare Before Christmas*.

In the 1950s, films that utilized model animation combined with live action were on the increase, to the point where independent low-budget film-makers began jumping on the bandwagon. One such opportunist was Robert Lippert who produced *Lost Continent* (1951). Made twenty-six years after *The Lost World* and eighteen years after *King Kong*, this was a poor man's version of the same theme, a lost island / plateau that contained dinosaurs. The story, which has a contemporary setting, tells of a military and scientific team who are sent by the US government to locate a missing experimental rocket in the Pacific. They trace it to an island, or more precisely to a plateau (on the top of a very unconvincing mountain), which is, of course, inhabited by a variety of dinosaurs, including a triceratops, a brontosaurus and a pterodactyl. The animation, which is poor, is credited to Augie Lohman, a highly respected special effects technician whose work on this film was not one of the his finest moments. The models are basic and the animation is certainly very jerky or, at the very least, intermittently erratic. After various encounters with dinosaurs the group find the lost rocket but are confronted by an aggressive brontosaurus and triceratops, which seem to be just standing around looking for trouble. One of the more exciting animation scenes shows one of the men being gored by a triceratops although the actual killing takes place behind a tree, probably because it would have cost too much to animate the triceratops and a model human.

Little better is *The Beast of Hollow Mountain* (1956). The storyline, about a Mexican town terrorized by a living allosaurus, was based on a concept by Willis O'Brien, although the final product was certainly not designed or animated by him. The models had originally been built by Marcel Delgardo for O'Brien's abandoned *Gwangi* project and the animation of the allosaurus was executed by Jack Rabin and Louis DeWitt, who used both a replacement technique and the more conventional and versatile articulated model animation. The replacement technique used on this film was similar to that used for Pal's *Puppetoons*, movement being achieved by replacing one model with another in a slightly different pose or position. The ads screamed that the film was photographed in 'Regiscope' (based on an uninspired combination of the words 'register' and 'scope') which would have meant little to most people and was basically just another gimmick to get the punters into the cinemas. As Obie once remarked, 'All these name tags for animation, I think I'll call mine "Origimation"'![13]

Rabin and DeWitt had many problems with both the colour (there are many scenes that show severe image grain and fluctuation between the rear-projected image and the lit model) and the fact that producer Edward Nassour had decided to film in 'scope'. Any form of anamorphic lens (commonly known as 'scope' after Cinemascope) tends to accentuate what is known as the 'hot spot', which is an excessively bright point that

FAR LEFT
A poster for Robert Lippert's *Lost Continent* (1951), probably one of the most disappointing animated films because of the soulless models and the lack of imaginative animation.

LEFT
A paste-up image that shows two of the dinosaurs featured in the film. Although the animals are called triceratops, they more resemble arrhinoceratops.

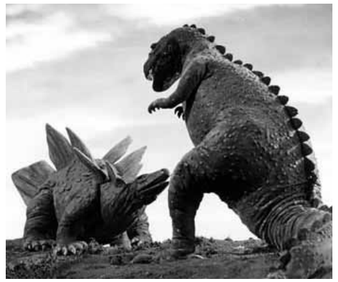
BELOW LEFT
The really dreadful allosaurus featured in *The Beast of Hollow Mountain* (1956) with an unfortunate local in his its claws. Although the story was originally conceived by Willis O'Brien, he didn't work on the final film, a fact which becomes obvious when you look at this model.

BELOW RIGHT
The poster for *The Beast of Hollow Mountain* (1956).

appears at the centre of the projection screen.[14] Obtaining the correct colour balance and at the same time overcoming the hot spot would have presumably entailed a great deal of testing. Overall, the animation for *The Beast of Hollow Mountain* was crude, awkward, jerky and lacked fluidity. No attempt seems to have been made to instill any form of character into either the model (it is so unconvincing, primarily because of its limp-wristed arms) or the animation of the allosaurus (the tail hardly ever seems to move but just lies on the ground). The film is a good example of how not to film model animation and, together with *The Lost Continent*, illustrates how independent producers, while eager to use the technique, were not ready to allocate a decent budget and get the right people for the job.

Another major animator (and another Czech) who was working in the 1950s and 60s and who is, surprisingly, almost forgotten today was Karel Zeman. He designed, directed and animated a number of key fantasy films that combined model animation with live action. Although never mainstream, because of the language problem, his major films with their surreal designs did have a wonderfully exciting and innovative sense of adventure. Zeman was born in 1910 in Moravia in Czechoslovakia, and his interest in marionettes began whilst attending business school, although at this early stage of his life he had no thought of making it his life's work. After business school he had a short stint as a shop window dresser after which he travelled to France to study at the Art School of Advertising. Following graduation he secured a job in an advertising studio in Marseilles designing posters and it was here that he had his first taste of film-making when he was involved with an animated soup commercial. On completion of the film he realized that this is what he wanted to do and when he returned to Prague he continued making animated commercials using puppets. In 1943 he showed some of his films to Elmar Klos, another film-maker, who instantly offered Zeman a job working in the Bata Film Studios in Zlín. There he met animator Hermína Tyrová with whom he made the puppet animated film *Vánocnî sen* [*The Christmas Dream*], which won an award at the 1946 Cannes Film Festival for Best Animation. The two would collaborate on two other short films, *Podkova pro stestí* (1946) and *Krecek* (1946), before Zeman moved on to his first solo creation.

In 1947 he began what would turn out to be an extremely successful series of short films featuring a character called *Mr Prokouk*, the first of which was *Pan Prokouk v pokuseni* (1947). Zeman was always experimenting with new ways of animation and in 1949 he made the unique *Inspirace* [*Inspiration*] in which all the characters or figurines were made of glass and were animated by heating them after each frame was shot to allow them to be moved. It is impossible to imagine how much time and effort must have gone into such a process, one that, to our knowledge, he never used again. In 1950 Zeman made *Král Lávra* [*King Lavra*], which won a National Award the same year, and in 1953 he produced his first



TOP LEFT
The remarkably talented and inventive Karel Zeman animating glass figures for the film *Inspirace* [*Inspiration*] (1949). The amount of painstaking work involved in heating up each figure so that it could be moved for the next frame, was simply extraordinary.

TOP CENTRE
The charming short film *Vánocní sen* [*The Christmas Dream*] (1946), which was animated and directed by Karel Zeman.

TOP RIGHT
A mammoth watching the children row along the river of time in *Ceste do proveku* or *Journey to the Beginning of Time* (1954).

ABOVE CENTRE
Karel Zeman, left, directing a sequence of the boys in the boat for *Journey to the Beginning of Time* (1955).

ABOVE
This rare still shows what is possibly a cerotosaurus facing up to a stegosaurus in *Journey to the Beginning of Time* (1955).

RIGHT
Karel Zeman, left, directing actor Milos Kopecky who plays Baron Munchausen, in *Baron Prasil* [*Baron Munchausen*] (1961).

feature film *Poklad Ptacího ostrova* [*The Treasure of Bird Island*]. This was followed by *Pan Prokouk, prítel zvírátek* (1955) the last of the *Mr Prokouk* films, and in the same year Zeman discovered his forte with his first pure fantasy feature film, *Cesta do praveku* [*Journey to Prehistory* aka *Journey to the Beginning of Time*], which would make his name internationally. The film, like so many of Zeman's subsequent features, was partially inspired by the imagination of Jules Verne and tells of four boys who journey in a rowboat into a mysterious cave in Manhattan's Central Park and in doing so travel back in time through various ages to witness the prehistoric period and, finally, to the primordial ocean where life began.

The film was shot in Agfacolor (Technicolor was too expensive), and had the distinction of being the first feature film made in Europe in which stop-motion dinosaurs played a major role. Zeman incorporated a variety of stop-motion model animals and dinosaurs, around fifty in total[15], including woolly mammoths, rhinoceros, giraffes, a phororhacos, a deinotherium, a sabre-toothed tiger, brontosaurus, stegosaurus, a phororhacos, styracosaurus, ceratosaurus and pteranodons, some of which he incorporated with live action by using split screens and mattes. Antonin Horák, who worked with Zeman on this film and subsequently on *Vynález zkázy*, recollected that, 'the rubber models were fairly small, about 50cm. Everything was photographed on the original negative with mattes and counter mattes.' First the live-action children who appeared in the bottom section of the frame were photographed by a cameraman from Prague with Horák as stand-by. Later, back in Zlin, the dinosaurs where inserted into the upper part of the frame. Horák goes on, 'For each scene about 10 metres of test footage was shot to determine the matte line for the counter matte and special filters to match the live-action and lighting animation.'[16]

Although some of the shots are rudimentary, the inventiveness of many of the scenes, for example the boys being attacked by pteranodons, are exciting and occasionally spectacular, especially when one considers that the film is shot in colour. There are some mechanical props employed, but the bulk of the creatures are animated and most are animated with fluidity, style and originality. The models themselves are good, although not as detailed as either Delgado's fine work or Ray's. The success of *Cesta do praveku* permitted Zeman to indulge his passion for fantasy and allowed certain of his subsequent features to find favour and even bigger success with audiences abroad.

In the same year as *Cesta do praveku* was released, Zeman had already begun work on another fantasy film, this time almost entirely based on the fictional adventures of Zeman's hero, Jules Verne. *Vynález zkázy* [*The Invention of Destruction*, *The Fabulous World of Jules Verne*, *The Diabolic Invention*, *Weapons of Destruction*, *The Deadly Invention*] (1958), is an extraordinary achievement and is perhaps Zeman's most accomplished feature. The story tells of a professor and his assistant who are kidnapped by pirates and held captive in a laboratory beneath a volcano so that the pirates can extract details of the professor's wonderful inventions. The film is stunning; the backgrounds are made up of Doré-like drawings and engravings which serve as the settings for both the live action and the model animation. The combination creates a totally unique fantasy world, although one which is not, it has to be said, to everyone's taste. The German film historian Dr Rolf Geisen, who has studied Zeman's work, calls *Vynález zkázy* 'the first truly synthetic movie', which seems an excellent way of summarizing such fantastic backgrounds and animation. Although Zeman designed all the effects it was Antonin Horák, his cameraman, who worked out and realized all the optical effects; because the film was even more complex than *Cesta do praveku* they composited all the images in-camera. Another problem was that there was no Mitchell camera available so Horák was forced to use Slechta cameras, which were far inferior.[17] For some in-camera, bi-pack composites, consisting of five or six different elements, a week or more was required to complete the live-action, miniatures, cut-out animation and stop-motion. Sadly after completing all the difficult trick shots in-camera Horák was released by Zeman because he thought Horák too slow!

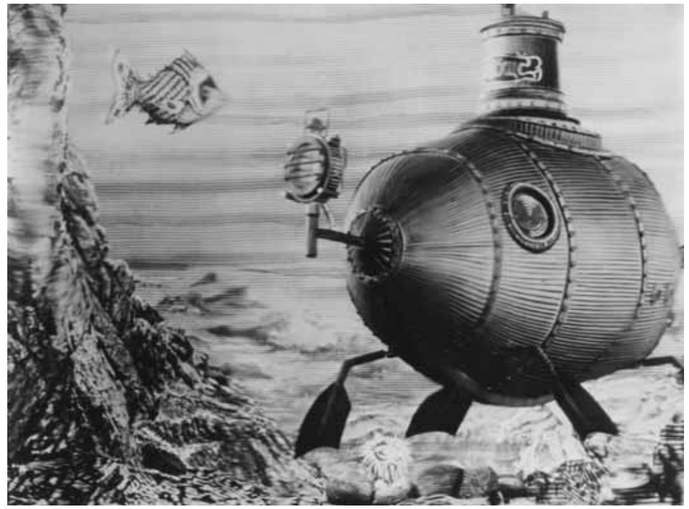
When the picture was released in America[18] the posters heralded it as 'The first Motion Picture Produced in the Magic-Image Miracle of Mystimation', a phrase which perhaps takes the prize for the silliest-ever coinage to describe the combination of animation and live action. However, Zeman's animation for the film is on the whole superb and features several birds, humans, fish, various machines such as airships, an eccentric submarine, and finally a giant octopus that emerges from a dark underwater ravine and attacks a group of divers. This last is perhaps the most spectacular and Zeman's animation for this scene and all of the other incidental animation is fluid and consistently ground-breaking.

For many years Ray had entertained the idea of making an animated version of Gottried Bÿrger's classic stories *The Adventures of Baron Munchausen* but the project never came to fruition. However, in 1961 Zeman did realize an animated version of the stories called, not surprisingly, *Baron Prásil* [*Baron Munchausen*] in which a modern-day astronaut lands on the moon where he meets a number of literary space pioneers, including Cyrano de Bergerac, Captain Nichols, Barbican and Baron Munchausen. The Baron realizes that the astronaut needs to experience what a real adventure is like, so takes him on a journey back to his own time, the eighteenth century. There, amongst other adventures, they visit the Ottoman court, rescue a noblewoman, encounter the Turkish fleet, are swallowed by a gigantic fish, visit the bottom of the sea and go to the North Pole. Zeman once again utilized Gothic Doré-style backgrounds and, to add another element to the fantasy, photographed the film in black and white but with colour tinted scenes. Animation scenes include a sailing ship pulled by seven flying horses, a sea serpent, a dragon, a giant spider, a flying fish, a huge whale, a huge carnivorous bird and a sea horse on which the Baron rides. The whole film is a tour de force of fantasy adventure and model animation, with Zeman again achieving an effortless fluidity.

In 1964 Zeman made his fourth feature film, *Bláznova kronika* [*The Jester's Tale*], which is one of his most surreal and rarely seen films. The story tells of a cowardly peasant, a mercenary and a female jester and their attempts to survive the Thirty Years' War and the stupid generals who perpetuate it. Although he uses the same innovative visual backgrounds of Gothic-styled drawings there is only a small amount of animation, confined to two-dimensional cut-outs and tiny humans seen in the distance.

Urradená vzducholod [*The Stolen Dirigible*, *The Stolen Airship; The Two Year Holiday*, *The Two Year's Vacation*] (1967) saw Zeman returning to Verne's Victorian fantasy. Five boys steal an airship from the Prague Centenary Exhibition of 1891 and fly it to the Pacific where it crash lands on an island and they meet the legendary Captain Nemo. The animation of airships, a car propelled by horses' legs and a shark is smooth and seamlessly flows with the live action.

Zeman's next film was based on Verne's novel *Hector Servadac* and was called *Na komete* (*On the Comet*) (1970), an unusual adventure that has an underlying moral suggesting the futility of war and how humans seem to revel in fighting each other. It is set in 1888 and tells of a group of French, Spanish and English soldiers who are swept off on a comet, which has skimmed the Earth. When they realize they cannot escape and that the comet is inhabited by a variety of dinosaurs, they agree to a truce and help each other but when the comet eventually returns them to Earth they resume their fighting. Sadly, the film does show a lethargy which suggests that Zeman felt that he had been here before, although this may be due to an obvious lack of production finance. Once again he places his characters into Gothic settings which provide the adventure with a suitable surreal quality. The first animated sequence features a group of dinosaurs, which include sauropods and a tyrannosaurus rex, attacking a makeshift fort, which has been erected by the soldiers to protect themselves from such monsters. Sadly, although there are



TOP LEFT
The wonderfully eccentric submarine featured in *Vynález Zkázy* [*The Fabulous World of Jules Verne*] (1958).

ABOVE, TOP PICTURE
Karel Zeman animating the submarine for *The Fabulous World of Jules Verne*.

ABOVE, MIDDLE PICTURE
A giant octopus rears up from a deep abyss to attack divers in *The Fabulous World of Jules Verne*.

ABOVE, BOTTOM PICTURE
The interior of the submarine that shows the gothic or Doré style of the backgrounds against which Zeman set all his characters and models.

LEFT
An American poster for *The Fabulous World of Jules Verne*.

a large number of models, none interact with the live action. Other creatures encountered are a sea serpent, pterodactyls, a dimetrodon and styracosaurus.

Karel Zeman went on to make more highly original and inventive feature films amongst which were *Pohádky tisíce a jedné noci* [*Tales of a Thousand and One Nights*] (1974) which consisted of seven stories about Sinbad, *Krabat, carodejuv ucen* [*The Sorcerer's Apprentice*] (1975) and the Grimm Brothers' fairy tale *O Honzíkovi a Marence* [*Hansel and Gretel*] (1980). However, they didn't surpass or indeed equal any of his Jules Verne-influenced fantasy classics. By 1970 he had completed and delivered his best. Zeman's last film was made in 1979/80 and he died in Prague in April 1989 before he was able to witness the advent of the Velvet Revolution. His unique styles of visualization, storytelling and animation have survived him and, although not in the same league as O'Brien and similar animators, his work is now highly respected and has, gratifyingly, found a new audience with today's fantasy-loving public.

It is quite extraordinary how many model animators were born in Czechoslovakia. Perhaps it was the Czech tradition of puppetry that inspired them to experiment with puppets and cinema or perhaps it was the Czech love of storytelling. Whatever the reasons, there are far too many Czech animators to mention them all, but we feel that we have to give credit to one final example. Bretislav Pojar was closely associated with Jiri Trnka and is famous for his two- and three-dimensional short films but his forte seems to have been the latter. Born on 7 October 1923 in Susice, he studied architecture at the Academy of Fine Arts but when the Nazis closed the universities he went to work in the AFIT Studio, a pivotal point in his life. Following the end of the war, Pojar, along with Trnka and other animators such as Jan Karpas, Bohuslav Srámek and Stanislav Látal, became part of a new animation department at the Prague Film Studio, which was affectionately called 'Trick Brothers'.

ABOVE TOP
A young Bretislav Pojar in the process of animating circa 1950s.

ABOVE LEFT
Pojar's *Velryba-Abyrlev* [*Elahw the Whale*] (1977).

ABOVE CENTRE
More wonderful Pojar puppets featured in *O te Velké Mlze* [*Thick Fog*] (1975).

ABOVE RIGHT
Bretislav Pojar back in Czechoslovakia working on a project, circa 1990s.

RIGHT
The versatile and extremely talented Jim Danforth working on *When Dinosaurs Ruled the Earth* (1971). A giant crab is seen on the animation table in the foreground.

His first films of note were as puppeteer assistant to his mentor Jiri Trnka and these included *Román s basou* [*The Story of the Bass Cello*] (1949) and *Cisaruv slavik* [*The Emperor's Nightingale*] (1949). In 1951 he made his directing debut with *Perniková chaloupka* (1951) and, although he continued assisting Trnka, he also produced his own films which included *Lev si zaridit byt* [*The Lion and the Song*] (1959), which won the Grand Prix at the first annual Annecy Festival in 1960.[19] The following year Pojar left Czechoslovakia for Canada where he began a long association with the National Film Board of Canada and it was during his time there that he produced some of his best-known work. Pojar was, and still is, an animator who loved breaking boundaries and experimenting with new techniques to enhance the art of animation, whether it was two- or three-dimensional. After the fall of Communism in Czechoslovakia he moved back to what is now the Czech Republic and his last film to date is *Filmfám 2* made in 2006.

To complete this chapter we have kept one of the most respected and underrated model animators till last. Although mentioned earlier, Jim Danforth is perhaps not a name that would instantly trip off everyone's tongue; but to animators the world over he is up there with O'Brien and Ray. Danforth is a master animator and matte painter who has worked hard in the dark back rooms refining his animation and all the tricks of the trade that accompany it.

Danforth was born in 1948 in Ohio and grew up near Chicago, Illinois. At the age of twelve his parents moved to California which is where he first saw *King Kong* and *The Thief of Bagdad* (1940) and, like Ray, became fascinated and obsessed with the fantastic images in both films. Intrigued by how Kong moved, he began experimenting with ventriloquism and then marionettes, giving puppet shows to the local kids. It wasn't until three years later, aged fifteen, that he found out about stop-motion animation via some Kodak publications. Although he had no idea about armatures and latex, he began tentative experiments using his father's 8mm Keystone camera that didn't have any stop-motion facility; only when he had saved up enough money could he progress to a more professional 16mm Bolex. Like Obie and Ray before him, the course of Danforth's life was determined by his early experiments and the wonder of seeing inanimate objects come to 'life'.

RIGHT
The versatile and extremely talented Jim Danforth working on *When Dinosaurs Ruled the Earth* (1971). A giant crab is seen on the animation table in the foreground.

When he finished high school, aged eighteen, he looked around for a job in the animation field and found one with a small company called Clokey Productions (run by Art Clokey) working on *The Dinah Shore Show* television series, including a sequence for an Easter special in which Dinah 'danced with an animated rabbit that appeared to be about five feet tall'.[20] This was followed by six months of work on a number of fourteen-minute films for the Lutheran Church called *Davey & Goliath*. Making full use of what little spare time he had, Danforth got to know Wah Chang and Gene Warren at Projects Unlimited and helped out as an uncredited assistant animator on George Pal's *The Time Machine*. This led to him being offered a job working for the company full time. Two years before, Danforth had begun working on a personal project called *The Princess of Mars* for which he had produced a range of drawings and paintings. George Pal had presumably thought these visualizations good as he helped Danforth to 'stage a presentation at MGM for Hulbert Burroughs and ERB Inc, Attorneys'.[21] Sadly, despite Pal's enthusiasm, this intriguing project remained unrealized.

His first film as animator at Projects Unlimited was *La Vendetta di Ercole* (*Goliath and the Dragon* or *Hercules' Revenge* or *Vengeance of Hercules*) (1960) followed by the disappointing science-fiction adventure *Journey to the Seventh Planet* (1961). However, his first big break came in 1961when he worked on much of the animation undertaken by Projects Unlimited for the fantasy adventure *Jack the Giant Killer* (1962). Ironically, at an earlier date Danforth had independently quoted $3000 to Howard Anderson[22] for the construction of the models for the film but it wasn't accepted. The models were designed and made by Wah Chang and Danforth has remarked that 'I didn't like the puppets. It's quite difficult to animate a puppet when you don't find it aesthetically pleasing. Especially when you have to look at it with intense concentration, day after day.'[23] Almost the climax of the movie (and perhaps the best sequence) is the fight between Galligantua (the two-headed giant) and the sea monster. Danforth recalled how the sequence came about: "The battle between the two-headed giant and the sea monster was shot once by two other animators and [Edward] Small didn't buy it. So it was re-shot. I didn't do all the second fight; we used a couple of shots from the first and the other animators [working on the project] re-did a few shots. But I did most of the second fight myself.' Like Ray, Danforth prefers working on his own. 'It's much easier that way, especially when they're [the models] are all tangled up as they were with the tentacled sea monster. It's hard to co-ordinate it with two people and you find you're tripping over each other.'[24]

The effects took nearly ten months to complete and the production was Danforth's first experience animating with professional rear projection, a process he had witnessed when he had visited Ray during the final stages of production of *The 7th Voyage of Sinbad*. 'I suggested that they use the system of split screens in conjunction with process projection – a system which I freely admit was "stolen" from Ray Harryhausen, who devised it. No one there knew about that system, and there really had never been any intention of using it in the film.'[25] Ray remembers Danforth visiting when he was animating the dragon and Cyclops fight. Danforth was a very intense and knowledgeable young person who arrived carrying a notebook and throughout the time he was there showed an interest in absolutely everything and made copious notes.

TOP LEFT
Jim Danforth animating the complex sea monster sequence for *Jack the Giant Killer* (1962). The rear-projection screen can be seen behind him whilst the model sits on a miniature rock that will exactly match the one on the rear-projection plate.

FAR LEFT
The dragon/gargoyle creature featured in *Jack the Giant Killer* animated on wires to react to the rear-projected image of the escaping boat.

LEFT
Jim Danforth at work animating the jewelled dragon featured in *The Wonderful World of the Brothers Grimm* (1962).

ABOVE
Another shot of Jim Danforth animating the dragon from *The Wonderful World of the Brothers Grimm*. In this and in the previous image the all-important surface gauge can be seen.

ABOVE RIGHT
The jewelled dragon as it appears in the film with actor/comedian Buddy Hackett.

In 1962 Projects Unlimited worked with Pal again, on the effects for *The Wonderful World of the Brothers Grimm* on which Danforth, along with the other animators, was forced to struggle with the three-camera Cinerama process. There were two cameras constructed specially for the film 'which shot the frames in succession'; Danforth recalled the frighteningly time-consuming method of shooting the animation. 'A panel was exposed then the camera was moved to a click stop. B panel was shot. The camera was moved into a third position and C panel was shot. Then it was all racked back to the beginning again. In some cases we were shooting six exposures for one frame on the screen.'[26] Danforth helped Dave Pal with a few of the elf scenes for 'The Cobbler's Tale' and also a scene in 'The Dancing Princess' that showed a flower going to sleep. However, the key sequence to which he contributed was the one featuring the dragon in 'The Singing Bone' story.

In preparation for the task he studied animal movement at the local zoo where he would sit for hours watching the exhibits in their cages. Along with George Pal and Gene Warren, he worked out the dragon's human-like character that allowed the creature to be the most entertaining element of the movie. It seems extraordinary that Danforth didn't receive a screen credit for his extensive work on the picture, an omission that he admits made him extremely angry.

In the summer of 1962 Danforth went to work for another company, called Film Effects of Hollywood, on a short animation sequence for Stanley Kramer's *It's a Mad, Mad, Mad, Mad World* (1963). He was employed to construct some mechanical miniatures and to shoot some high-speed miniatures and seventeen animation shots, of which only a few were used in the final cut. He recalls: 'I did that [the film] because I had hoped to work with Willis O'Brien who was working on the film. However, between the time that I made the arrangements and the time I actually started working, Obie had died.'[27] Danforth had first met Obie at Projects Unlimited when the pioneer had come in for a visit, and subsequently when he had his interview at Film Effects.

Danforth returned to Projects Unlimited in early 1963 to work on the pre-production for *7 Faces of Dr Lao* designing and then on the animation of the Loch Ness monster, which began in the late summer of 1963.[28] In total, the sequence took three months to shoot and required the exposure of some 12,900 frames for the nine minutes the creature appears on the screen. Danforth recalled,

> *The fish [the first tiny model] was a little clay thing that we just flopped around. Then six solid clay models were substituted in series to grow into the first wire-armatured Loch Ness monster. That was positioned and animated for a second or two. Then the next six series were used for it to change into its second intermediary stage, which was a wire-armatured puppet animated for another second or two. Then finally it was the full-grown puppet, which had a ball-and-socket armature. The camera was tracking in to make it grow also. Then the monster was matted in over the live action. The shrinking of the beast was shot just the reverse. That was animated by Pete Kleinow.*[29]

Although Danforth was not pleased with the final design of the model, the sequence remains the best and most complete model animation sequence in the film for which Danforth was nominated for an American Academy Award ® but lost out to *Mary Poppins*.

Between 1964 and 1969 Danforth worked on various projects, all uncredited, building the miniatures on *Father Goose* (1964), as an animator on *I'd Rather be Rich* (1964), as a model-maker on *Strange Bedfellows* (1965), as a matte artist and animator on *That Funny Feeling* (1965) and designing and constructing miniatures for *The War Lord* (1965). He returned to Projects Unlimited to work on several episodes of the television series *Outer Limits*, a credit sequence for *Hallmark Hall of Fame* for designer Saul Bass, a few commercials and educational films and then, finally, the last film Projects Unlimited made, *Around the World Under the Sea* (1966) for which he designed and built several miniatures.

The day Projects Unlimited closed down he went over to Cascade Pictures to design and animate the 'Pillsbury Dough Boy' and 'Nestles Man' commercials and an animated sequence for a television episode of *Here's Lucy* (1968). In all, Danforth was at Cascade for about three years. In between the projects at Cascade he worked on an amateur project called *Equinox* (1967) with Dave Allen and Dennis Muren[30] and *Raiders of the Stone Ring* (1968/69), an uncompleted feature that was resurrected in 1978-84 as *The Primevals*. The story was to begin with an adventurer relating his trip into a lost world inhabited by Vikings and dinosaurs which included a giant lizard and a giant ground sloth, with the climax showing a flock of pterodactyls attacking a Zeppelin.

In March 1968 Danforth heard about a project to be made in England by Hammer Films, a follow-on rather than a sequel to *One Million Years BC* (1966) called *When Dinosaurs Ruled the Earth* (1971). However, it wasn't until later that year that he was contacted by the distributor Warner Bros to see if he was available to animate the creatures for it. Of course he said yes, but wanted to get his other commitments for Cascade out of the way first. He travelled to England in August to talk with Hammer and then returned again in September for the live-action photography in the Canary Islands and at Shepperton Studios. It wasn't until January 1969 that he began animation and effects, which took him a total of seventeen months, ending on 17 June 1970.

When Ray was working on *One Million Years BC*, he demanded and was given involvement with the screenplay. But the script for *When Dinosaurs Ruled the Earth* had already been written by Val Guest and J. G. Ballard and had

BELOW LEFT
Two more armatured heads (Appolinius and Medusa) out of the seven seen sprouting from the body of the Loch Ness monster in *7 Faces of Dr Lao* (1964).

BELOW RIGHT
Two frames showing the Loch Ness monster on the rampage in *7 Faces of Dr Lao* (1964). In the top image he has a victim in his mouth. This was one of the finest and smoothest animated sequences to appear in any of the Pal productions.

RIGHT, IMAGES FROM *WHEN DINOSAURS RULED THE EARTH* (1971).
Top left. A beautifully designed and sculptured, but unnamed, dinosaur protecting its young from cave girl Victoria Vetri.

Top centre. A baby dinosaur just hatched. This was one of the best sequences in the film.

Top right. The dinosaur with its back to the camera threatening cavemen on the rear-projection screen. In this shot the realistic wrinkles and folds of skin can be seen on the back and neck.

Second row left. The beach cavemen try to capture the rampaging plesiosaur. Although in black and white this is an excellent example of the use of split screen. The foreground cavemen and hut are part of the bottom section matte while the cavemen in the background are part of the rear matte.

Second row centre. Jim Danforth animating the plesiosaur.

Second row right. Another shot of the plesiosaur lumbering along the beach towards the cavemen.

Third row. Three frames showing the giant crabs (designed and animated by Jim Danforth and built by David Allen) attacking the beach village.

Fourth row. The model rhamphorhynchus (a pterosaur), designed and animated by Jim Danforth. The rhamphorhynchus aerial scenes were some of the best in the film because Danforth tried to avoid a strobing effect. In Neil Pettigrew's book *The Stop-Motion Filmography* he states, 'In most of the flying shots, he [Danforth] tapped the puppet's wings, causing them to swing slightly on the wires during the long camera exposure, thereby suggesting a blur and eliminating much of the offensive strobing that had marred similar sequences.'

received final approval. The creatures, too, had already been selected[31] although Danforth did get to design and construct them and was allowed some leeway when sequences required experience and creativity.

The original death of the plesiosaur was to have been achieved by having several men stand on each other's shoulders in a human pyramid to pour fat on the back of the monster and try to ignite it. When that didn't work out they tried their second plan, which was to grab a dead tree, which is lying on the beach. They all run forward towards the plesiosaur, which obligingly sticks its neck down and opens its mouth so that they can shove it down its throat. I just couldn't see that on the screen. Besides, a plesiosaur thrashing around with a tree sticking out of its mouth seemed a bit ludicrous so I talked them into a fire death.[32]

Creatures featured in the film included a pterodactyl, a chasmasaur (a horned dinosaur, part of the triceratops and styracosaurus family), a plesiosaur, huge man-eating crabs and an unnamed dinosaur and its newly hatched baby. There were to have been other sequences including a dimetrodon, a triceratops, sea monsters (that one would have included the monsters being swept up by a tornado) and giant ants but these were all cut before the final script. The screenplay was way too ambitious in terms of both the budget and the time constraints set out in the schedule. Even with scene cuts, Danforth was forced to bring over another animator, David Allen, whilst he concentrated on producing glass shots and matte paintings (needed because Hammer had cut back on sets). Allen executed approximately 80% of the chasmasaur sequence and several of the baby dinosaur shots.

Just after the film was completed, Danforth commented on the animal motion.

It depends on the animal. If it's a realistic animal – something specific – then it would have to move in a specific way. Of course no one has ever seen a dinosaur, but we do know the proportions of the limbs and, roughly, how they were articulated. So you try to conform to that and you go to the nearest living animals that might be similar and these won't always be reptiles. You might look at an elephant. For the chasmasaur sequence we spent a lot of time studying films of baboons because it's one of the few animals in which the legs are jointed in the same way.

He went on, 'It tends to inhibit your style if you just copy the action. There might be time when you would want to do that, like if you were duplicating a human figure. But usually it's better to understand the action thoroughly and then do it.'[33]

Although the animation work on the picture by Danforth and David Allen is exemplary, the picture is, as already suggested, ultimately let down by a less than competent script and the use of general stock footage, including lizards made up to look like dinosaurs (from the 1960 version of *The Lost World*). Costing far more than its predecessor, the film didn't achieve the success of the *One Million Years BC*; although the effects were nominated for an American Academy Award® Danforth was again unsuccessful, losing out to yet another Disney film, *Bedknobs and Broomsticks* (1971).

Although there had been constraints, Danforth had now had, to a degree, the opportunity of designing and animating his own feature film, which provided him with an international profile. Regrettably, neither the film nor the Oscar nomination led to another such offer and he spent the next few years working on a series of mediocre features as a matte artist. Although a feature of sorts, *Flesh Gordon* (1974) is one that Danforth is allegedly not pleased to own up to, which perhaps accounts for his name being spelt on the credits as Mij Htrofnad (Jim Danforth backwards). This soft porn film was a spoof of the old 1930s Buster Crabbe *Flash Gordon* serials, complete with wires, shaky miniatures and ill-proportioned smoke effects; but the list of those involved is also a Who's Who of future effects and animation artists, including David Allen, Dennis Muren, Doug Beswick, James Aupperle, Stephen Czerkas and Laine Liska (see Chapter 6).

The film includes three key animation sequences. The first features a seven-foot creature called a penisaurus, a cross between a snake-like cyclops and a triceratops, which was animated by Bill Hedge. The second involves a creature called a BeetleMan,[34] a robotic creation made of metal and constructed by Rick Baker (who would become famous as a makeup artist), which was animated by Danforth. The conclusion of this sequence shows Flesh fighting the creature on a stone staircase, which is reminiscent of the stone spiral staircase in *The 7th Voyage of Sinbad*. The final creature is the Great God Porno or Nesuahyrrah (Harryhausen spelt backwards and Ray has never been too sure whether this was a compliment or otherwise) who climbs to the top of a tower with the girl much like Kong did before him. The excellent animation for this model was mostly done by Robert Maine, with James Aupperle and David Allen animating several scenes. Also involved on this sequence were Dennis Muren and Danforth who worked on the lighting set-ups for some shots.[35] Aside from executing the animation for the Beetle-Man sequence, Jim also did the superb matte paintings seen in the film. There was a sequel made in 1990 called *Flesh Gordon 2 – Flesh Gordon Meets the Cosmic Cheerleaders* but Jim didn't work on that. The first had obviously been enough.

In 1974/75 Danforth was working again at Cascade Pictures. In addition to that he was offered more work as a matte artist on *The True Story of Eskimo Nell* (1975) and *The Reincarnation of Peter Proud* (1975). Although Danforth possessed a reputation as a multi-talented artist who could turn his hand to painting, model and miniature construction and animation, the animation jobs seem to have been few and far between. In 1976 he was offered a small amount of work, although uncredited again, on *The Crater Lake Monster* (1977) a rural version of the 1950s monster-on-the-rampage craze but this time with a plesiosaur. David Allen was credited as the Stop-motion Supervisor with Danforth, Randy Cook, Phil Tippett and Jon Berg (more future names) all uncredited. Allen did almost half the animation but brought in Randy Cook and Phil Tippett to help, with Danforth being involved with only a few shots. There was only one model (fifteen inches long and designed by Allen and Tippett with an armature designed and built by Jon Berg) so using multiple set-ups was not a possibility; they had to shoot the model scenes one by one.

In 1980 Danforth was asked to help Ray on *Clash of the Titans* (1981) alongside Steve Archer when Ray began to get badly behind schedule after problems with the animation film stock.[36] Based at Pinewood Studios in England Danforth executed a large amount of the animation of the flying horse Pegasus and most of that featuring the two-headed guardian Dioskilos, with Archer assisting when necessary. Ray had set ideas about how the characters should react and so what you see on the screen is how Ray storyboarded the sequences but Danforth's animation is, as always, fluid and realistic.

Immediately after *Clash* Danforth returned to the US to work on *Caveman* (1981) as a visual effect supervisor although he was once again uncredited, allegedly because he left the project two-thirds of the way through production.[37] The film was a silly comedy that never rose above zany schoolboy humour and it seems a pity that so much good design and animation was wasted on such a poor storyline. Danforth's contribution was to design and construct various models, including the horned lizard and a superb tyrannosaurus rex which was mostly animated by Randall Cook. *Caveman* was followed thirteen years later by *Dragonworld* (1994) about a dragon discovered and captured in the Scottish Highlands and put on exhibition in a theme park called Dragonworld. The armatures were constructed by Jeff Taylor and most of the animation was executed by Danforth, Paul Jessel, Joel Fletcher and Harry Walton and shot at the David Allen Studios with Chris Endicott supervising. The cartoon design of the dragon sadly lets the film down but the animation does achieve charm.

Although Jim Danforth's talents far surpassed that of many contemporary artists, the opportunities to work with his first love, model animation, were coming to an end. Danforth's last picture to date was *The Prophecy* (1995) for which he worked as a matte artist and executed the matte photography. He once commented that 'Animators and trick film-makers were considered by Hollywood to be technicians rather than performers, or artists, or film-makers,'[38] a sentiment that would be echoed by Ray and, we suspect, most other animators. However, there were other animators working and waiting in the wings, animators who had every intention of changing the face of model animation and the way in which it was perceived by producers.

FACING PAGE, TOP
This is an advertisement that Cascade Pictures put together circa 1975 to show the creative talent pool at Stage 6. Stage 6 was the home of the animation and visual effects division of Cascade Pictures of California. Standing to the right is Jim Danforth; lying down in front is Dennis Muren; sitting in the middle row are, from left to right, Bill Hedge, Laine Liska and Mike Minor; in the back row, from left to right, are David Allen, Ken Ralston, Tom Scherman, Harry Walton and David Stipes.

FACING PAGE, BOTTOM LEFT
Jim Danforth executing one of his superb matte paintings for the finale of *Planet of Dinosaurs* (1978).

FACING PAGE, BOTTOM RIGHT
Jim Danforth, Ray and an unknown technician posing during the production of *Clash of the Titans* (1981).

ABOVE
Jim Danforth, one of the industry's most respected animators posing with a key drawing he executed for an unrealized project called *Dark Continent* (1994) (subtitled *A Sherlock Holmes Adventure*) in which the detective was to have stumbled into a prehistoric arsinotherium in darkest Africa. In the foreground is the maquette of the creature.