

SECRETS OF THE “Big Bugs”

Special Effects in 1950s Science Fiction Movies

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During the mid- to late 1950s (1954 through 1958), Hollywood produced a plethora of “Big Bug” science fiction movies, including *Them* (1954), *Tarantula* (1955), *Beginning of the End* (1957), *The Deadly Mantis* (1957), *The Black Scorpion* (1957), and *Earth vs. The Spider* (1958). These movies in some fashion were designed to take advantage of the audience’s natural or innate fear or distaste for arthropods (insects and spiders) with the goal of both entertaining and making a profit (Mertins 1986).

The “Big Bugs” of the movies generally came into being through exposure to radiation (*Them*, *Tarantula*, and *Beginning of the End*); being awakened by some disturbance, such as a volcanic eruption (*The Deadly Mantis* and *The Black Scorpion*); or were unleashed for some other unknown reason (*Earth vs. The Spider*) (Rovin 1975, Naha 1975, Schoell 2008, Warren 2010).

The mid- to late 1950’s was an uncertain time for the U.S. The Korean War (1950–1953) had just concluded, the Soviet Union had launched Spuntnik (1957), and McCarthyism and the Cold War (1949–1990) were prevalent (Collier and Collier 2002). As a reflection of

the political climate, Hollywood film-makers sometimes intentionally had the “Big Bugs” portrayed as some type of communist menace or as a foil to demonstrate the power of the U.S. military (Schneider 2009, Warren 2010).

Special Effects of the Time

It is important to note that the computer-generated special effects that we take for granted today were not yet dreamed of in the 1950s. As such, the special effects that made these “Big Bug” movies possible involved an assortment of techniques and combinations thereof, including large models (*Them*); stop-motion animation (*The Black Scorpion*); miniature sets and models (*The Deadly Mantis* and *Tarantula*); real arthropods (*Tarantula*, *Beginning of the End*, and *The Deadly Mantis*); and matting (*The Black Scorpion*, *Tarantula*, and *Earth vs. The Spider*) (Naha 1975, Brosman 1978, Glassy 2001, Schoell 2008, Warren 2010).

Stop-motion animation is a labor-intensive filmmaking technique in which the camera is stopped during shooting to allow objects or inanimate models to be physically manipulated before shooting commences again. The objects or models are adjusted or repositioned in small increments between individual frames, which creates the illusion of movement when the series of frames are played continuously or speeded up in the finished film (Naha 1975, Taylor 1996). Matting (or matte) involves combining two or more images into a single, final image; typically, a foreground (e.g., actors on a set) is merged with a background (e.g., a landscape). The matte is generally a background painting (Rickitt 2007).

None of these “Big Bug” science fiction films involved an entomologist who supervised the special effects or served as a consultant. As a result, some of the behaviors and morphological characteristics associated with the arthropods are not accurate, such as the lackluster foraging behavior, the absence of antennae, and the incorrect mouthparts of the giant praying mantis in *The Deadly Mantis* and the inaccurate head for the giant scorpion in *The Black Scorpion*.

Them (1954)

Them was released by Warner Brothers, and the special effects of this classic “Big Bug” movie involved two ant models that were built by studio technician Dick Smith; a complete giant ant model and one consisting of just the head and forequarters. The head, mandibles, and antennae could be moved using a series of knobs and levers. The complete model was used for the extended shots (Fig. 1) and the overhead shots. Additional models were built for the scenes involving many ants, which were moved by carefully positioning wind machines (Brosman 1978, Warren 2010). One mechanical problem was the limited mobility of the giant ant models (Schoell 2008). The special effects were convincing enough to be nominated for an Oscar in 1954, but *Them* lost to Disney’s *20,000 Leagues Under The Sea*.

It has been suggested that stop-motion animation

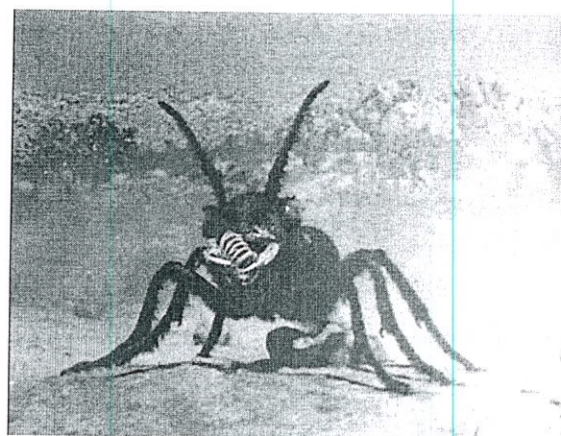


Figure 1. The complete giant ant model used in *Them*.

would have made the giant ants more threatening (Brosman 1978, Schoell 2008), but the giant ant models allowed the actors to interact with the ants in a realistic manner that would not have been possible with stop-motion animation models. The giant ant models are extremely well done for the 1950s, and what is most impressive is that there was a genuine concern to make the models closely resemble real ants, and to accurately portray their behavior (Warren 2010).

Them was originally scheduled to be filmed using the 3-D technology of the time. Due to budget cuts, this was changed to standard format, though the scenes designed for the 3-D format are still easily noticeable (e.g., the final scene with the flamethrowers). This is another reason that giant ant models were used instead of stop-motion animation or miniatures (Schneider 2009, Warren 2010). In the end, *Them* became the model and formula by which the other “Big Bug” science fiction movies would be developed (Warren 2010).

Tarantula (1955)

This film, released by Universal-International, was the first “Big Bug” movie that followed *Them*, and overall is a well-directed and interesting movie. David S. Horsley and Clifford Stine were responsible for the high-quality special effects, with the giant tarantula (played by



Figure 2. Scene from *Tarantula* showcasing the giant tarantula.

a real tarantula) present in numerous scenes (Fig. 2). Some miniature sets were constructed in order for the tarantula to move around, but for the most part, the tarantula was matted into the film (Warren 2010). The movie received positive reviews after its release. Maltin (2013) described the high points: "Scientist Carroll's new growth formula works a little too well, and pretty soon there's a humongous spider chewing up the countryside. One of the best giant insect films, with fast pacing, convincing special effects, and interesting subplot detailing formula's effect on humans."

Beginning of the End (1957)

This film, released by Republic Pictures, was a vain attempt to emulate *Them*, with many similar scenes. Bert I. Gordon, who was known in Hollywood as "Mister B.I.G." because he was associated with several films in which people (*The Amazing Colossal Man*) and arthro-

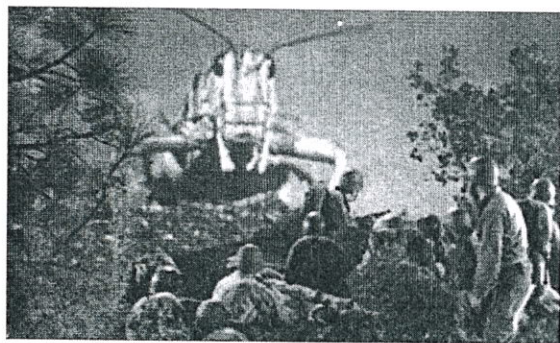


Figure 3. Scene from *Beginning of the End* in which the military attempts to prevent the giant grasshoppers (or locusts) from entering Chicago, IL.

pods (*Beginning of the End* and *Earth vs. The Spider*) were larger than normal, not only produced and directed *Beginning of the End*, but was also responsible for the special effects. Initially, this involved the collection of 200 grasshoppers from Texas, which presented several problems. At that time, laws in California forbade the importation of insects into another state unless they were all males. Gordon had collected a species from Texas with limited mobility, and they were sexed as males. However, they had to be sexed again in California before they would be allowed entry and used in filming the movie. Additionally, the grasshoppers were maintained in cages that were too small, so they became cannibalistic. As such, there were fewer than 20 grasshoppers remaining by the time the scenes associated with Chicago were filmed (Warren 2010). Since live grasshoppers were used in the film, there were no problems associated with behavior or morphology.

The movie's special effects are less effective than the previous two movies, although there are some convincing scenes, including the one in which the military attempts to keep the grasshoppers (sometimes referred to as locusts in the film) from entering Chicago (Fig. 3). However, there are scenes in which it is obvious that real grasshoppers have been randomly placed

onto matted sets (e.g., buildings) (Schoell 2008). Similar to the problems associated with stop-motion animation, it was difficult to have the actors interact realistically with the giant grasshoppers. As such, the scenes including the giant grasshoppers always appear disjointed. In fact, we never see the giant grasshoppers again until they reach the outskirts of Chicago.

One of the major mistakes associated with this film is that after the giant grasshoppers have supposedly drowned in Lake Michigan, there are no dead giant grasshopper bodies seen anywhere in the water. In fact, it is clearly evident that the actual drowning scene was accomplished by simply filming a number of live grasshoppers placed into a small pool.

The Deadly Mantis (1957)

This film was released by Universal-International, and is considered one of their worst science-fiction movies of the period (Warren 2010). Fred Knoth was in charge of the special effects, which were considered unconvincing, if not downright awful. Among the mistakes is the flawed morphology of the giant praying mantis, which has no antennae and incorrect mouthparts (Fig. 4). Furthermore, the hunting behavior of the giant praying mantis is questionable when compared to how an actual praying mantis behaves (Rovin 1975, Warren 2010). For example, instead of stalking prey and pouncing at the last moment, the giant praying mantis simply emerges from the sky, roars at prey, and then grabs anyone who has not fled after hearing the distinct buzzing sound. This results in the giant praying mantis appearing to be an incompetent hunter. Unlike the giant ants in *Them*, the scorpions in *The Black Scorpion*, and the tarantula in *Tarantula*, the giant praying mantis does not behave in an accurately observed, natural manner (Warren 2010). To add to this problematic portrayal, the giant praying mantis makes a noise that has been described

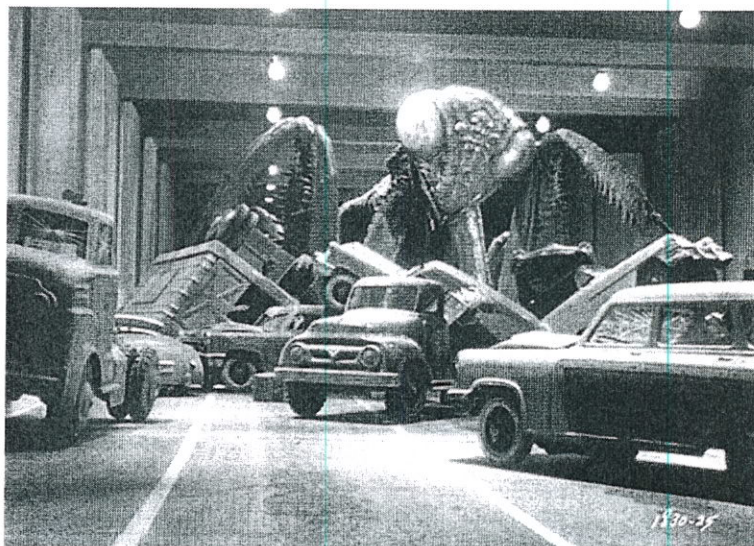



Figure 4. Scene from *The Deadly Mantis* showing its lack of antennae and incorrect mouthparts.



as sounding similar to a “heavy bomber squadron,” but really sounds like a “swarm of bees” (Schoell 2008).

There is only one scene in which a live praying mantis was used, and this is when the giant praying mantis lands and climbs on the Washington monument (Warren 2010). Similar to other late 1950s science fiction movies, stock footage from previous movies was overused throughout (Schoell 2008, Warren 2010). Despite this, Schoell (2008) wrote that the movie “features one of the best mechanical monsters ever put on film,” whereas Rovin (1975) felt that the film was “less memorable on all counts and was ridiculously embarrassing.” Naha (1975) judged the film “entertaining but with better visual effects could have been a winner.”

The Black Scorpion (1957)

This film is very similar to *Them* in terms of content, though giant scorpions replace the giant ants (Fig. 5). In fact, the movie was distributed by the same company—Warner Brothers (Schoell 2008, Warren 2010). Unlike *Them*, this film uses stop-motion animation for the special effects, courtesy of Willis O’Brien (of King Kong [1939] fame) and Pete Peterson, in addition to a traveling matte (Schoell 2008). In some ways, the special effects are effective, and the giant black scorpions make

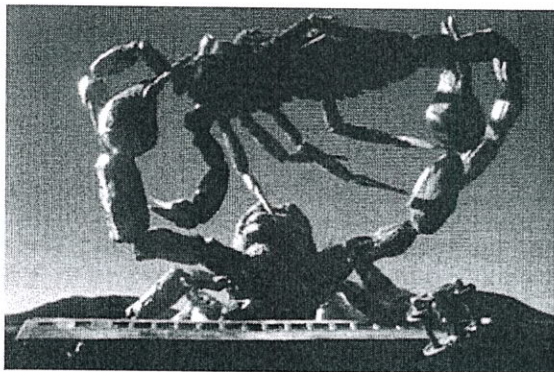


Figure 5. The larger giant black scorpion killing one of the smaller giant black scorpions in *The Black Scorpion*.

the movie watchable (Schoell 2008). As Naha (1975) summarized it, the movie offers “stunning stop motion special effects but little else by way of entertainment.”

However, the special effects clearly demonstrate the difficulties in having the actors interact with the “big bugs,” offering support for the argument that the giant ant models in *Them* are more effective than stop-motion animation models would have been. Nonetheless, there are some exceptional scenes, including one in which the actors descend into a cavern and encounter a horde of both smaller giant black scorpions and a larger giant black scorpion. In addition, there are two ostensibly “chilling” scenes that showcase the excellent special effects: in one, the giant black scorpions emerge from the cavern and attack several electricians repairing telephone lines, and in the other, the scorpions



Figure 6. Close-up of the face of the model used in *The Black Scorpion*.

derail a train, hunt down passengers, and kill them with their stingers.

One of the film’s major problems is the recurring close-up of the giant black scorpion’s head, a ridiculous fabrication that has glassy eyes and drools liquid (Fig. 6). Not only does the head not resemble any natural scorpion, but it doesn’t even look like the one in the animation models (Schoell 2008, Warren 2010). Another problem occurs when the larger giant black scorpion reaches Mexico City. At this point, the producers did not have enough finances to complete the project. As a result, what is attacking Mexico City in most of the scenes is an empty traveling matte of the scorpion, which appears as a featureless silhouette (Pettigrew 1999, Schoell 2008). In one scene during which the larger giant black scorpion rampages through Mexico City, the Empire State Building is visible in the background. In spite of its glaring flaws, this movie is more watchable than the *The Deadly Mantis*, mainly thanks to the quality of the special effects.

Earth vs. The Spider (1958)

This film, initially just titled *The Spider*, was released by American-International Pictures and is really just an imitation of *Tarantula*. The plot is quite simple and involves a giant spider (another tarantula) that has been hidden away in some caverns for who knows how long until it emerges and kills some people. As in *The Beginning of the End*, Bert I. Gordon and his wife Flora handled the special effects, which involved a live spider and the matting format. However, there are significant problems with the special effects. The spider appears and disappears from behind buildings, and the heavy lines associated with the matting are quite obvious. In addition, there are moments when the light-colored parts of the spider, including the leg joints, are transparent. Only one giant spider leg was constructed, which unfortunately doesn’t match the leg of the actual giant spider (Warren 2010). The special effects are poorly constructed and it is apparent that the giant spider changes size several times during the course of the movie (Warren 2010). One positive note is that the behavior of the giant spider (Fig. 7) is fairly realistic, similar to the one in *Tarantula*.



Figure 7. Scene from *Earth vs. The Spider* in which the giant spider (a tarantula) terrorizes the townspeople.

Conclusion

In general, the special effects of the “Big Bug” are adequate for the period of time, with a few notable innovations and some fairly convincing behaviors and morphology—remarkable in a time when computer-generated special effects were not available. Contributing to the special effects is that all the “Big Bug” science fiction movies were filmed in black and white, which provides a sense of realism and heightened drama (Warren 2010). However, as Mertins (1986) points out, the images of insects, spiders, and entomology shown to audiences have been, in general, inaccurate and unflattering. Regardless, these “Big Bug” science fiction movies remain popular with many audiences (especially entomologists) and are still appreciated for their technical accomplishments—and for their endearing flaws.

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