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ANIMATORS: Milt Kahl, Anita; Marc Davis, Cruella— 101 Dalmatians.

The animators' drawings show the freedom used in interpreting the action on the photostats. Milt. animating Anita, chose not to use the cringing body position suggested by Helene, while Marc went even further with Cruella, adding the thrust to the neck and a thin, bony body. By working closely together, the two animators were able to make the drawings match in size and scale, while the performances of the actresses maintained the personality relationship.

for this to be useful it had to relate to the work on our drawing boards. Running film at half-speed in our action analysis classes was helpful for a general understanding of weight and thrusts and counter thrusts, but the principles were not directly applicable to animation. Our instructor Don Graham had chosen certain film segments as clear, isolated examples of movements he could use in his lectures, but, while they gave us insight into articulation, they were still essentially classroom exercises.

One day, during a discussion of how the *Snow White* dwarf Dopey should act in a particular situation, someone suggested that his actions might be similar to those of burlesque comedian Eddie Collins. This led to everyone's going down to the theater to see the exceptional Mr. Collins perform. We invited him to the studio, and a film was shot of his innovative interpretations of Dopey's reactions—a completely new concept that began to breathe life into the little cartoon character. Dopey had been the "leftover" dwarf, with no particular personality and not even a voice; so, now, to see the possibility of his becoming someone special, and, particularly, someone entertaining, was an exciting moment! And best of all, everything Collins had suggested was on film.

There was nothing in the film that could be copied or used just the way it was, but as source material it

was a gold mine. Freddie Moore had the assignment of doing the experimental animation on Dopey, and he ran the Collins film over and over on his Moviola, searching not so much for specifics as for the overall concept of a character. Then he sat down at his desk and animated a couple of scenes that fairly sparkled with fresh ideas. Walt turned to the men gathered in the sweatbox and said, "Why don't we do more of this?"

Immediately other comics were brought in—entertainers from vaudeville, men who had done voices for the other dwarfs; all were put before the camera. No routines were filmed, just miscellaneous activities and expressions that might help delineate a character. Our own storymen who had a special talent for acting were dragged to the sound stage, and animators even photographed each other. As Bill Cottrell said years later, "It all seems so amateurish now—but it was fun! It was fun!" And that spirit of fun and discovery was probably the most important element of that period.

Now we had film that had been shot just for us, directly related to the characters we were drawing, and even though the acting was crude, we all picked up ideas to enrich our scenes. We quickly found that there were two distinctly different ways this film could be used. As resource material, it gave an overall idea of a character, with gestures and attitudes, an idea that

could be caricatured. As a model for the figure in movement, it could be studied frame by frame to reveal the intricacies of a living form's actions.

At that time, the only way of studying live action frame by frame was to trace the film on our rotoscope machine. This was simply a projector converted to focus one image at a time, from below, onto a square of clear glass mounted in a drawing board. When drawing paper was placed over the glass, tracing after tracing could be made, each sheet kept in register by pegs at the bottom of the glass. It was tedious work and time-consuming, but this was the way it had been done for twenty years.

Naturally, Walt changed that situation in a hurry. He had the film processing lab work out a system of printing each frame of a film onto photographic paper the same size as our drawing paper. These sheets, which we called photostats, were then punched to fit the pegs of an animation desk, and the animator could now study the action by flipping 'frames of film' backward and forward, just as he did his drawings. Here could be seen every tiny detail of changing shapes and relationships in the movements. At last, the animators could study all of the mysteries that had intrigued them so long.

We were amazed at what we saw. The human form in movement displayed far more overall activity than anyone had supposed. It was not just the chest working against hips, or the backbone bending around, it was the very bulk of the body pulling in, pushing out, stretching, protruding. Here were living examples of the "squash and stretch" principles that only had been theories before. And here was the "follow through" and the "overlapping action," the changing shapes, the tensions and the counter tensions, the weight shown in the "timing," and the "exaggeration"—unbelievable exaggeration. We thought we had been drawing broad action, but here were examples surpassing anything we had done. Our eyes simply are not quick enough to detect the whole gamut of movement in the human figure.

Some actions were so complicated they were impossible to draw in caricature, and many of the moves that gave touches of personality were too subtle to capture at all. The tilt of the head as it turned, the changing shape of an eye, the slight swelling of a cheek in a





