Probably the most technically ambitious computer-based artefact yet made anywhere is the Senster, which was officially set in motion in 1971 at the Evoluon, a permanent industrial exhibition run by Philips, the giant electrical firm, at Eindhoven in Holland. The physical context is distracting, for the Evoluon is a paean to technology in the form of a flying saucer on legs, opened in 1966 and already something of a period piece. But Philips are to be congratulated on their intelligence and enterprise in commissioning this costly project.

Edward Ihnatowicz, a wartime refugee to Britain from Poland and now a British subject, studied at the Ruskin School of Drawing and Fine Arts at Oxford, and has worked as a sculptor, photographer, designer and furniture manufacturer. He exhibited SAM (Sound Activated Mobile) at 'Cybernetic Serendipity' in London in 1968, and was commissioned by Philips at the suggestion of the designer James Gardner.
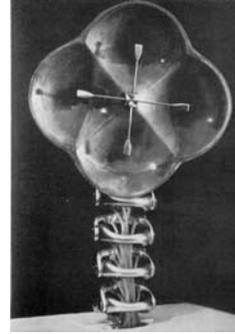
Realization of the Senster took more than two years. Ihnatowicz was helped by engineers from Mullard and Philips, and by the mechanical engineering department at University College, London, but his own self-taught command of scientific and technical detail is equalled by very few other artists.

About 15 feet long by 8 feet high, the Senster consists of six independent electro-hydraulic servo-systems based on the articulation of a lobster's claw, allowing six degrees of freedom. Crustaceans move by means of hinges, whereas most animals move by pivots, which are more difficult to reproduce in engineering.

The Senster has a 'head' with four sensitive microphones which enable the direction of a sound to be computed, and also a close-range radar device which detects movement. The whole is controlled by a digital computer, which tells the servo-system how to move in response to various

combinations of sound and movement from visitors to the Evoluon. The acoustic 'head' is so designed as to give a vivid impression of an animal's eyes flicking from one object to another. The servo-systems can position the head within a second or two anywhere in a total space of more than 1000 cubic feet.

No attempt is made to conceal any of the mechanical or electronic components, or to give the surface of the machine a biomorphic ('lifelike') appearance.

Ihnatowicz decided that the most economic way of moving the claw would be by effecting constant acceleration and deceleration. Halfway through any movement, an instantaneous reversal is made from a constant rate of acceleration to a constant rate of deceleration. An electronic predictor was designed to achieve this. Only after beginning to implement his idea did Ihnatowicz discover that measurements made on human beings, for the purpose of designing artificial limbs, had proved that human movement follows a similar principle.

The computer programme is not fixed but can be varied so as to generate different responses. At present, the head moves swiftly towards any source of quiet motion, as though hunting for food. But if the motion becomes violent - say, a spectator tries to strike out at the claw - or if the amplitude of the sound rises - one person is monopolizing attention by shouting at it - the head will shy away as though frightened. Ihnatowicz hopes that new computer programmes will be developed so that the Senster will 'learn' new behaviours.

It will be easier to say how fully successful the Senster is when it has settled down with the half a million visitors who come to the Evoluon annually, and with the scientists who wish to experiment with it. In any case, the Senster is no monument to an artist's genius but a step towards new forms of creative collaboration on the highest level between scientists and artists. Ihnatowicz likes to work on projects where everyone involved is intellectually stretched.