

nearly a dozen factors of stair use were under investigation. "As is common in field research," Pauls notes, "other factors were rapidly added in the course of the work, some of which proved to be very important. One example is the debilitation many spectators experienced sitting in the hot sun all afternoon. In retrospect, we regret not interviewing people we knew had been filmed to find out how they felt about using the stairs. Occasional spectators, one woman in particular, seemed to be desperately holding onto the handrail with both hands. We would like to have found out the reasons for this behavior. Perhaps it was concern over the long, steep aisles."

A complete cross section of people came under the scrutiny of Pauls and his team and a few surprises emerged. "We observed many more elderly people than we expected," he says. "There were also pregnant women and many young children being led or carried on the stairs. Spectators with various physical disabilities were also quite common." This led Pauls to suggest that designers avoid assuming that



The vista — view along the handrail of the upper deck aisle. The sports field is 80 m away. (Photo: Larry Smith, DBR)

Perspective qui s'offre à la vue lorsqu'on regarde le long de la rampe de l'allée d'une tribune supérieure. L'arène est à plus de 80 m. (Photo: Larry Smith, DBR)



Elements of competition — both ascenders and descenders are on the same side of the rail. Using stairs while on crutches presents special problems. (Photo: "The Stair Event")

Situation de conflit: certaines personnes montent et d'autres descendent l'escalier du même côté de la rampe. Emprunter un escalier alors qu'on fait usage de béquilles présente aussi des problèmes particuliers. (Photo: "Les jeux de l'estrade")

people attending stadia events will be made up largely of relatively fit, college-age, mostly male crowds that frequent football games.

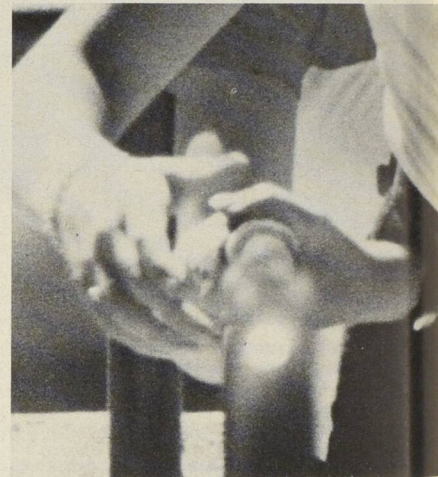
Among the many aspects of the research study was the problem faced by the vendors at the Games. "If anyone deserved a gold medal for their efforts at the Games," he says, "it was the soft-drink vendors who often carried double trays of drinks weighing as much as 15 kg up and down those steep aisles. Not only was the work awkward, with no free hand for the handrail, but the trays obstructed the view of the stairtreads. Moreover, unlike the spectators they also had the distraction of calling or beckoning customers."



How do you use handrails? This girl, for no apparent reason, keeps both hands on the rail in her climb to the upper deck. (Photo: "The Stair Event")

According to Jake Pauls, the cameras showed that the handrails were used very extensively. In fact, between 50 and 100 per cent of the people on the aisles used them. This finding alone makes a strong case for installing handrails on aisle stairs.

Over the last 10 years, stair use has been the subject of much discussion among a small group of researchers, but despite the pervasive nature of stairs, information on their use and safety has been limited. In fact, according to Pauls, it will take many studies and discussions among designers and researchers to develop comprehensive guidelines for safer stairs. "To promote these discussions," says Pauls, "NRC has produced a 19-minute film derived from the records made at Edmonton's Commonwealth Stadium. We have named the film 'The Stair Event' because stair use is



Comment utilisez-vous les rampes? Sans raison apparente, cette jeune fille tient la rampe à deux mains en montant à la tribune supérieure. (Photo: "Les jeux de l'estrade")

introduced, with tongue in cheek, as the twelfth event at the Commonwealth Games. This recognizes the athletic and gymnastic achievements of spectators using the long, steep aisle stairs. While the 'event' is largely cooperative, under certain crowded conditions it has some elements of competition, though these are subject to the unwritten rules of human social behavior. The film is an effective way of bringing the use and safety of stairs to the attention of the general public, designers and those responsible for drawing up codes and standards."

The study, summarized in the film, is being extended to residential stair design as well since this is where most stair accidents occur. □

Stephen A. Haines