

## Conference Jottings

AMONG the results presented and the happenings which took place at the AAAS meeting last week are the following:

● Dr George O. Abell of the University of California at Los Angeles told a symposium that the universe may be twice as old as generally believed. He bases this suggestion on a study of eight galaxy clusters in which he measured the distance from Earth of several hundred individual galaxies. Using the "big bang theory". Abell estimated that some of the galaxies have travelled between 1.5 and 2 times as far as previously believed, extending the age of the universe between 15,000 and 20,000 million years.

● A symposium on the biological basis of destructive behaviour was told of studies on monkeys which suggest that aggression is not a learned behavioural trait, but on the contrary, it is the ability to control aggression which must be learned. Dr Allyn C. Deets of the University of Pittsburg and Dr Harry Harlow of the University of Wisconsin described experiments in which monkeys were raised in isolation during their early development. The monkeys were later unable to control aggressive behaviour directed at others and even at themselves. Dr Louis S. B. Leakey of the National Museum, Nairobi, disagreed with the suggestion, however. He pointed out that archaeological records show that aggression in man did not appear until about 40,000 years ago—after more than two million years of human evolution—and suggested that aggression started when man learned how to make fire, a discovery which radically altered the life style of early man.

● One of the targets of radical scientists was an article by Harvard psychologist Richard Herrnstein which was published recently in *Atlantic*. Herrnstein's thesis is that the economic stratification of Western society is inherited since the stratification into rich and poor is a product of inherited intelligence. Since Herrnstein was not present at the AAAS to defend his theory, radical scientists held discussion meetings to present their own analyses of his article and distributed numerous leaflets explaining why they disagreed with him. Part of the public education was a guerilla theatre, containing two songs, one of which, to the tune of "Ain't she Sweet", had the chorus:

"Ain't they sweet,  
They're the ruling class elite,  
and it's all determined quite  
genetically,  
Ain't they sweet."

● A panel considering the implications of the rising demand for energy sug-

gested the need for reducing the demand for power to conserve energy resources and to preserve the environment. The leading advocate for such a course of action was Dr Barry Commoner, of Washington University, St. Louis. Drawing on a study being conducted by the Scientists' Institute for Public Information, Commoner asserted that the use of electricity has been doubling every fourteen years, while the efficiency with which it is being used has been steadily declining, the chief reason being a switch to power-intensive processes for producing consumer products and the substitution of plastics for wood, aluminium for building materials, detergents for soap and so on. Commoner accepted the inevitable conclusion that his suggestion would reduce the productivity of labour, but argued that such a consequence may be the lesser evil. Scientists affiliated to the energy industry naturally took a different viewpoint, arguing that more energy is needed to reduce pollution and recycle wastes. The discussion followed close to the paths charted during recent discussions of Dr Commoner's book *The Closing Circle*.

● As the meeting dragged on, a noticeable phenomenon was the proliferation of lapel badges among the participants. Apart from the red clenched fist and the hand holding a laboratory flask, depicting affiliation to the Science for the People movement, participants wore badges proclaiming "I am aware", and "Save the Environment". One participant was even seen with a badge bearing the words "Sorry I missed your Paper".

### BOMB DAMAGE

## Unsung Destruction

by our Washington Correspondent

WHILE radical scientists were noisily venting their frustrations about the Vietnam war on Senator Hubert Humphrey at the AAAS meeting last week, a more coherent and perhaps more effective statement was being made by two biologists in a parallel session of the conference. Arthur H. Westing of Windham College, Vermont, and E. W. Pfeiffer of the University of Montana described in a session aptly entitled "The Social Consequences of Unsuitable Technologies", the environmental damage suffered by Indochina from craters and shrapnel. Both had visited Vietnam with the AAAS herbicide commission which reported to the annual meeting in 1970 but, as Westing later remarked in an interview, damage from bomb craters has been a sadly neglected area of potential ecological study.

Westing estimates that the 23,000 million pounds of munitions expended in Indochina between 1965 and 1970 have made about 23 million craters,

with an average width of 30 feet and a depth of 15 feet each. Nineteen million such craters are in South Vietnam alone. Based on the few figures released by the Department of Defense and on observations made during a visit to Vietnam in August 1971 sponsored by the Scientists' Institute for Public Information, these estimates suggest a scale of destruction that will have a lasting impact on the ecology of South-East Asia.

One environmental consequence is that the flying metal fragments from bombs and shells are hurled over an area much greater than that of the actual crater. The chief effect is damage to surrounding trees, which quickly succumb to fungal infections, and when badly damaged by fragments, are unusable for lumber. As for rubber trees, Westing says that the rot which enters through shrapnel wounds weakens the stems so that they simply break off in high winds. The damage from bombing and shelling thereby adds greatly to the environmental damage to Indochina from herbicides and bulldozers.

By far the greatest ecological bomb damage comes from the craters themselves. Westing estimates that each crater displaces on average some 200 cubic yards of soil, scattering the infertile subsoil over a large area. Persistent and worthless bamboo and other weeds often colonize the areas around craters in forested regions, making subsequent agriculture more difficult. Another effect is that the craters often will not fill by natural processes, and subsequent reclamation of the land must therefore be accomplished by laboriously filling them in by hand. (Westing described craters that were four years old with less than three feet of soil washed into the bottom.)

Many of the craters are filled with water during most of the year, providing breeding grounds for mosquitoes and presenting an additional threat to public health and increasing the difficulties in reclaiming the land for agriculture. A few of the craters which remain filled the whole year round may, however, be used for fish farms, which could help to offset some of the loss resulting from disruption of the intricate irrigation systems.

Perhaps the chief threat to the environment comes, however, from the fact that farmland that has been badly bombed or shelled is not recultivated because of the danger to water buffaloes from metal fragments, and to the farmer from unexploded bombs and shells. Consequently agricultural land quickly becomes overrun with weeds and bamboo, making reclamation even more difficult. About 10 per cent of the agricultural land of South Vietnam has been abandoned because of the ravages of the war.