

that the LEP tunnel, once built, could be used for many other purposes at CERN, with its complex of accelerators.

Over at DESY, Professor Schopper is at pains to protest that there is no competition between his laboratory and CERN; but other DESY physicists see it differently. "We are planning moves like a chess game", said one. And DESY can afford to sit tight for the moment: it is in a strong position, technically and politically. On the technical side, pressure from physicists for the highest possible energy favours DESY. High energy means large ring size to reduce the synchrotron radiation losses from the circulating electrons (and so keep down the power bill). But the CERN site is restricted by the Jura mountains to the north. DESY's presently favoured site, in a national park 40 km south of DESY near Hamburg, is not so restricted.

However, an early CERN study of a 100 GeV machine (LEP-100) was abandoned. The 'Blue book' argues that there will be many difficulties in handling electron beams at 100 GeV. The summer study concluded that "improving the energy [beyond 70 GeV] requires far more knowledge of a theoretical and technical nature before a realistic design may be settled upon"; but Schopper says that such conclusions are premature, and based on a too-pessimistic interpretation of work on the problem at DESY. In principle DESY should know, but it is not easy to disentangle physics from politics on this point.

The present half-cost LEP planned by CERN is a project for 70 GeV beams (LEP-70), with a possibility to upgrade to 100 GeV if superconducting rf power cavities become feasible. One of the key tasks for LEP will be to produce the intermediate vector bosons, which have masses and properties such that the neutral Z^0 could be produced with single beam energies of about 45 GeV, while the charged W^+ and W^- would need 80 GeV. The Higgs bosons, which are essential to the unification of the forces, and hold the key to the masses of the quarks and leptons, require the highest possible energy. LEP-70 is not therefore the most comfortable machine for physicists—100 GeV would be better—although there will be a cornucopia of treasures on LEP-70 from the "resonance" in the interaction at the Z^0 , which should yield a thousand-fold increase in interaction rate.

ECFA is just beginning studies of the machine parameters for LEP, under the chairmanship of Professor Antonino Zichichi—who intends to be entirely "Galilean" in his considerations. In other words he wants his committee to come up with the physi-

cists' perfect proposal, without regard to politics. That study is due at the end of 1979 for presentation to ECFA and to CERN Council. It will be interesting to see whether it more nearly approaches LEP-70 or LEP-100. ECFA will then have to juggle with site and politics to come to its recommendation.

John Adams, CERN's machine-building director-general, said in Geneva recently that he would like physicists to reach agreement on a site "by the end of next year". He added "If the physicists can't decide where to put the thing they can't blame governments for delays". And there are further battles to be won at governmental level.

Germany lost the fusion project, JET, to the UK, and might welcome a new international laboratory. Professor Schopper insists that any extension of

Argentina— where thought is a crime

DR CLAUDIO BERMANN, a professor of psychiatry held *incommunicado* in Cordoba prison in Argentina without specific charges since April 1976, was released last month, following pressure from the US National Academy of Sciences' Committee on Human Rights, the Israeli embassy in Buenos Aires, and international human rights groups.

Dr Bermann was released into the custody of an Israeli representative only when he was actually aboard the aircraft bound for Israel. On arrival in Israel, he avoided any formal contact with the Press, apparently fearing for the safety of fellow-prisoners still in custody. It was, however, possible to learn informally some interesting sidelights on the position of psychiatrists in Argentina, and, in particular, the reason why so many psychiatrists figure in the lists of political prisoners and 'disappeared persons'.

"Thought is a crime there," explained a friend of Dr Bermann's cynically. More particularly, psychiatry which, as a therapeutic discipline, aims at establishing the autonomy of the individual, is seen by the present regime as potentially subversive—an opinion which draws some substantiation from the fact that, until 1973, the Argentinian Federation of Psychologists did, as a matter of fact, have a large number of members whose political leanings were leftist or liberal. Freudian psychology is banned from the universities (where it is seen as a Marxist subversion unlike the Soviet Union where it is condemned for being anti-Marxist!), and, according to

DESY would be "fully international", with contributions from no country ruled out (including Japan). And the small countries at CERN will not be happy with the closure of CERN's low energy synchrocyclotron and the intersecting storage rings, as will be necessary if CERN is to build LEP within its 600 MSF ceiling. The Scandinavian countries, in particular, make good use of the synchrocyclotron for nuclear physics, and the intersecting storage rings are now ready for nuclear physics experiments with light nuclei.

CERN's problems with LEP are manifold, and it is no wonder that before John Adams gave his recent talk at CERN on "steering LEP" to an enthusiastic audience of physicists his colleagues told him, "And for God's sake be cheerful".

Robert Walgate



"I keep thinking I'm two psychiatrists!"

another expatriate psychologist, university teaching in psychology goes no further than the writings of St Augustine and St Thomas Aquinas.

Furthermore, said the same psychologist, difficulties can arise in the therapeutic situation. A psychiatrist might attempt to treat a patient's anxieties by presenting the current regime as an unpleasant, unavoidable fact of life, which one must somehow learn to live with. Further there are reports of members of guerilla groups actually receiving treatment from psychiatrists without the psychiatrist actually knowing anything about this side of their activities—a proposition which seems at first glance somewhat unlikely, but which, within a group therapy context, is quite feasible.

Acting on suspicion of some such link between psychiatrists and guerillas, the Argentinian authorities have, according to Dr Bermann and his friends, been putting pressure on practising psychiatrists to betray their professional confidentiality, and, in some cases, it would appear that *agent-*

provocateurs have been used, posing as guerrillas in need of treatment, to determine the "loyalty" of the psychiatrists.

According to Dr Bermann, when first arrested, he was himself tortured in an attempt to establish a link between him and the guerrillas. When the authorities finally realised that he had no information to give them, he was put in a cell with other "political prisoners who knew nothing," from which the sounds of others being tortured could be heard.

Dr Bermann, as a professor and former director of a psychiatric clinic, ranked as an important prisoner—and as such was chosen as a kind of hostage when President General Jorge H. Videla visited Cordoba last year. Twenty such hostages were arrested—though as incommunicado prisoners they could do nothing to avert any possible attack on the presidential party. Nevertheless, their fate depended on the safety of the President and his entourage, according to an equation

which seems to be a peculiarly Argentinian way of assessing the value of its leading citizens.

If there was any attempt on the President's life, they were told, all 20 would be shot; if a General was killed, 14 would be shot, if a colonel, eight, and if any other official or policeman were killed, only two. So, by the new Argentinian mathematics, it would appear that one leading psychiatrist equals half a policeman!

Vera Rich

US producers fear ban on 2,4,5-trichlorophenol

SOME of the producers of 2,4,5-trichlorophenol fear that it might be banned in the US. The Environmental Protection Agency (EPA) has recently issued a notice of 'rebuttal presumption' against current and continued registration of trichlorophenol and its salts. The notice—the first of several which the agency intends to issue—says that they exceed "certain risk criteria".

The issuing of a rebuttal presumption is not, says the agency, notice of intent to ban the products. Such action would only be taken after careful evaluation of all the evidence had shown that their continued use would cause "unreasonable adverse effects to the environment". However, the notice does require that the users and manufacturers of trichlorophenol submit evidence to the EPA, proving that its continued use does not constitute a hazard.

This is not the first time that the EPA has reviewed these particular chemicals. 2,4,5-trichlorophenol is used in the manufacture of the herbicide 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and of the bactericide, hexachlorophene. The reaction process used to make trichlorophenol produces an extremely toxic by-product, tetrachlorodibenzo-p-dioxin (TCDD). It is the presence of TCDD—a known teratogen and potential carcinogen—which is causing the current concern.

2,4,5-T has been reviewed recently by government committees in the UK and Australia; both review bodies pronounced the herbicide safe if used for the purposes for which it is intended. Manufacturers are less optimistic about its chances in the US.

Among the most recent evidence that the EPA will examine are two sets of documents relating to the safety of the manufacturing process. The first is the Italian Parliamentary Commission's

report of its investigation into the accident which occurred in the ICMESA trichlorophenol reactor near the Italian town of Séveso nearly two years ago. The second is the report of ICMESA's Swiss owners, Givaudan and Hoffman-La Roche, on their own research into the cause of the accident.

Their report is in reply to the commission, but it has been prepared especially for the EPA. The commission's report, which runs to several hundred pages, accuses Roche and Givaudan of being less than candid about their operations at ICMESA and of running an unsafe chemical plant. The commission also claims that ICMESA was producing trichlorophenol without an up-to-date 'fire precautions certificate'; that it failed to inform the Labour Inspectorate that it had begun production of trichlorophenol; that it failed to notify the authorities of the accident for twenty-seven hours; and that when it did inform them, no mention was made of the release of TCDD.

ICMESA produced 130 tons of trichlorophenol in 1975 and 1976; a sizeable amount, according to the Italian commission. Roche and Givaudan will contend in their report that compared to the output of companies in the US and Germany this is a small amount. The commission's suggestion that the trichlorophenol reactor was poorly designed, is refuted by Givaudan, who claim that their design incorporated all the features necessary at the time for safe reactor operation.

The ICMESA reactor did not incorporate a dump tank to collect unwanted discharges from the reactor vessel. Givaudan thought this unnecessary, in view of the plant's other safety features. The commission, however, thinks this was a serious error.

A safety disc on the vessel was designed to rupture at the pre-set pressure of 3.5 atmospheres, and so discharge TCDD over Séveso. The Italian report states that a lower value would have caused a rupture at a less advanced stage of the reaction, with less disastrous consequences. Givaudan argue that the disc was incorporated to cope with mishaps at the beginning of the trichlorophenol reaction process—the accident at Séveso happened some six hours after the reaction was completed—and that the rupture pressure of the disc was selected for sound chemical reasons.

Central to the concern about the health of Séveso's inhabitants is the two week delay in their evacuation from TCDD contaminated areas. The commission says that Roche and Givaudan did not act swiftly enough to determine the extent of contamination. The companies contend that after a map of the polluted area had been made—a task which took two weeks—the proper authorities were informed and recommended by Roche to evacuate the area. Roche says that the authorities resisted initially until they appreciated the gravity of the situation.

Many scientists think the Séveso residents were exposed to low levels of TCDD. The commission disagrees, and recommends further studies to assess the long-term effects to health. TCDD is a potential carcinogen, and numerous scientists consider such studies essential. The International Agency for Research on Cancer (IARC), which has recently published a new report on the polychlorinated dibenzodioxins is currently assessing the chemicals' carcinogenicity. It is reviewing evidence from a number of the fourteen accidents which have occurred in trichlorophenol plants since 1949.

Alastair Hay