

Dolly spawns nightmare

Dawn
1/1

Science & Tech.

By Pearce Wright

THE controversy that began smouldering a year ago with the creation of Dolly the sheep, the world's first cloned mammal, has finally flared up.

A United States scientist, Dr Richard Seed, has brought the science-fiction nightmare of many doctors, politicians and religious leaders closer to reality. This month, he said on radio: "It is my objective to set up a human clone clinic in Chicago."

His announcement conjured up images from the film, *The Boys From Brazil*, the story of a Nazi doctor who escaped to South America to set up a clinic to create "racially pure" German clones.

Dr Seed said he planned to develop a treatment for infertile couples, using the technology that was developed to clone Dolly at the Roslin Institute in Edinburgh, Scotland.

Although 74-year-old Dr Seed is a nuclear physicist, his brother, Randolph, is a biotechnologist. Twenty years ago they founded a business, Embryo Transfer Corporation, that used "test-tube baby" technology, or in-vitro fertilisation, for cattle breeding.

Ten years ago, one of their businesses funded research into a method of surrogate birth in which an egg fertilized in a woman was transferred and donated to another woman, who would then have a normal pregnancy.

Dr Seed has already recruited a team — including gynaecologists, embryologists, psychologists and nurses — for his proposed clone clinic. He says: "There is no difference in the science of cloning between all large mammals. The embryology is very similar."

Dr Ian Wilmut, head of the Edinburgh team that devised the cloning technology to create Dolly, is less sanguine. He says it took more than 275 eggs and 29 poten-

tial surrogate mothers to produce one sheep.

He believes a human clone would probably involve several hundred eggs to obtain one success. Yet even when treated with hormones to increase ovulation, a super-ovulated woman produces only five or six eggs. So the process would depend on having squads of super-ovulating women, and probably up to 50 surrogate mothers to secure one birth.

Dr Wilmut says he "would encourage" Dr Seed to think again about his suggestion.

Other reactions are far more hostile.

President Bill Clinton is urging the US Congress to outlaw attempts at human cloning. He called for action by legislators after the cloning of Dolly last year, and set up a Bioethics Commission to look at a possible ban. As an interim measure, he blocked the use of US government funds for research into human cloning.

He has also called on private medical research foundations and charities to shun such work.

The American Society of Reproductive Medicine (ASRM) has asked for a five-year moratorium on attempts to clone humans to treat infertility.

"I have very serious reservations about cloning human beings," said Dr Marian Damewood, a fertility expert and ASRM board member. She pointed out that critical technical issues needed to be resolved before human cloning would be possible.

The Dolly cloning technique takes the DNA from an adult cell and inserts it into an unfertilised egg from which the DNA has been removed. The cloned egg is then artificially stimulated to grow as an embryo, and is implanted in a surrogate ewe.

Professor (Lord) Robert Winston, a pioneer of test-tube baby treatment at London's Hammersmith Hospital, gave warning of the

potential dangers of a method that was still at such an experimental stage. There were various reasons why the technique could lead to embryos with genetic abnormalities, making cloning a type of experimentation that was totally unacceptable in humans.

"You would be putting aging DNA into an egg with all sorts of risks — not the least a child with damaged DNA or cancer," he said.

Similar fears were voiced at the recent Hamburg meeting of the World Medical Association. Representatives from 70 countries voted unanimously for doctors to stop work in this field until there were agreed scientific, ethical and legal regulations.

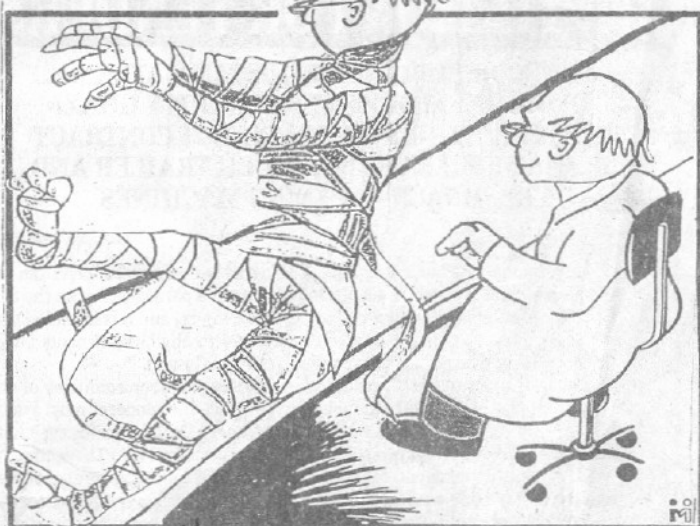
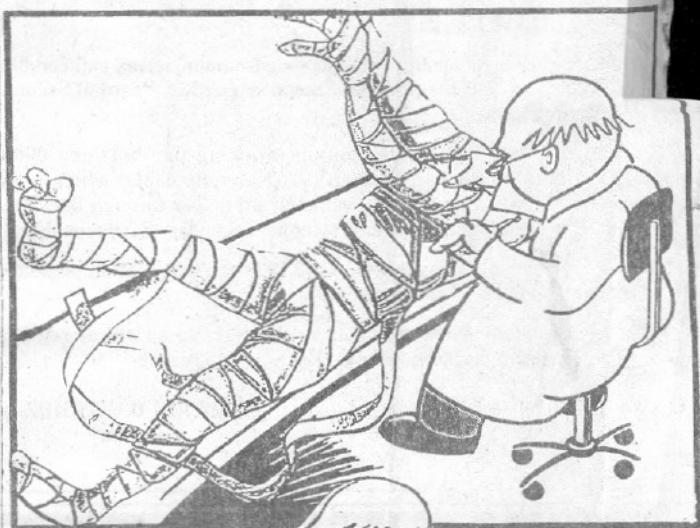
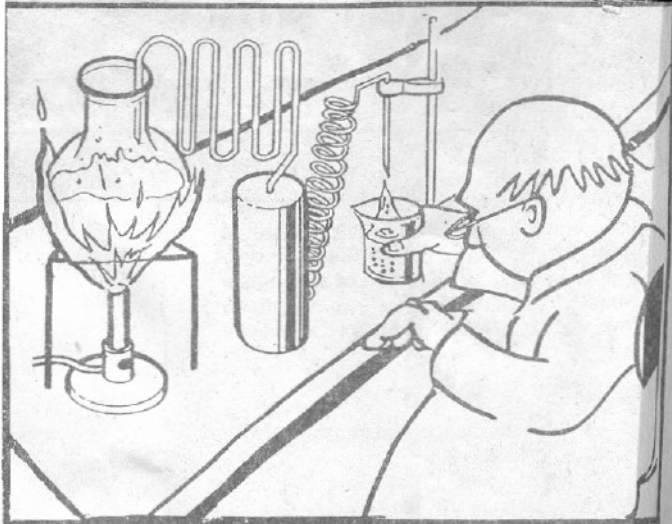
Dr Seed's response to the barrage of criticism has increased the outrage of his opponents. He said that if the US government passed a law banning human cloning on ethical grounds, he might go south and open a cloning clinic in Mexico.

His attitude is a reminder of another controversy over medical ethics and developing countries: the morality of drug experiments in the Third World when the stringent rules of the drug-safety agencies of the industrialized North prevent trials from taking place among their own people.

Yet the cloning of Dolly the sheep was voted the most important scientific breakthrough of 1997. The potential social and medical benefits were believed to outweigh ethical concerns, provided human cloning was banned.

Scientists pointed to the good that might come from animal cloning techniques, from making identical copies of prize livestock to cloning genetically modified animals to generate human proteins useful in medicine and other areas.

A step in that direction was taken quickly. Building on the Dolly experiment, the Edinburgh researchers cloned transgenic sheep capable of providing a supply



Benefit

of Factor VIII, a human blood coagulant used to treat haemophilia, and other medically useful molecules.

But the pessimists who argued

that once cloning in mammals could be done, it would be done in the human species, look like being proved right — and sooner rather than later. — *Gemini News* ■

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8/2

Science and Tech.

The personal communicator of the future

IT is an indispensable item for the crew of the starship Enterprise in the television series Star Trek. The suave celluloid secret agent James Bond often had to rely on this electronic gadget to get him out of trouble. Now, the hand-held communication device - the multimedia personal communicator — is about to step out science-fiction into everyday usage.

At the 1997 Telecom Interactive exhibition held in November, in Geneva, leading British electronics product designers Cambridge Consultants Limited (CCL) attempted to predict what is going to happen next in the fast converging telecoms, computing and entertainment industries with a futuristic multimedia personal communicator.

The firm recently unveiled the device which, it hopes, could be in use by the year 200. The gadget's full functions go beyond those of a pocket-sized mobile telephone with the additional facilities of image capture and display, and a screen-oriented interface capabilities.

Designed to exploit powerful multimedia technology to enable more effective working and communication, the personal communicator is more than a mobile phone. It can process voice, image and text. It has a touch sensitive screen, wireless input/output devices, a comprehensive organiser and an intelligent communications agent to assist the user.



When in camera mode, the personal communicator can be used to take a picture of an object or a document, and transmit still images down the telephone line. In the "digital assistant" mode, documents and facsimiles can be created, edited and processed with a unique timble stylus. This allows handwriting or drawing on any hard surface to be transcribed by a remote link to the commu-

nicator.

With the increasing popularity of video conferencing the gadget can be turned into a desk-top video-conferencing equipment using a detachable microphone and earpiece to facilitate a hands-free communication during which both users can be shown on screen.

"With the convergence of the telecommunications, computing and broadcasting industries, it makes sense to seek an integrated multi-media communications product like the personal communicator. Our concept of the personal communicator has been designed to test and stimulate the search for new modes of living, working and communicating as we head towards the 21st century", said a CCL official.

The CCL says it is evaluating the whole concept and other personal communication products with interested service operators and equipment suppliers in the related industries.

The CCL is one of Europe's leading innovation companies in the design and development of all kinds of consumer and industrial products, ranging from consumer goods and domestic appliances and telecommunications equipment to industrial tools and instruments. It also builds complex electronic and software systems in a range of technology consulting services, serving clients worldwide.