THE SCIENCE OF EVERYTHING

ISSUE 9 • UK£3.95 • NZ$9.95

COSMOS

HUNT FOR THE GOD PARTICLE

The universe needs it – so where is the Higgs boson?

FUTURE SPECIAL

LIFE IN 2020

15 experts reveal what to expect

WASTE INTO OIL

Power from almost anything!

THE WATER CRISIS

Is Australia a sign of things to come?

Jane Goodall: changing the world

Pluto & Xena: distant and mysterious

Ice caving: diving to cool depths

The eclipse chasers: Libya goes dark

09

0 74470 04732 2

DESERTS OF THE WORLD • ART OF CYBER LIFE • PLUS REVIEWS OF BOOKS, DVDs AND THE BEST TELESCOPES

STORY *Véronique Morin*

THE NATURAL

Her detailed observations of chimpanzees in the wild changed the way we view our primate cousins – and now she wants to change the world.

As a little girl, Jane Goodall used to joke about Tarzan and Jane. She thought she would make a much better Jane: "She was a wimp," says the primatologist, still laughing about this childhood conviction at the age of 72.

She's probably right. The fictional Jane was often scared and inept in the jungle, whereas the real one, the one in this story, has shown little fear throughout her life. She has breathed the jungle and made it her home. "I really have no fears," she says in a soft, determined voice, but after a pause she confides: "the only fear that I have is about the fate of our planet".

Not a small matter. In fact, that thought now consumes every minute of her life. "It depends on my health, but I shall work until my very last day to raise awareness about our gloomy future."

"She realised primates were in desperate trouble – their habitats were endangered by deforestation and resource depletion. "I knew I could no longer just sit and observe them in the forest I love."

VALERIE JANE MORRIS-GOODALL departed poverty and war-stricken England to follow her dream and go to Africa to study primate behaviour in her early 20s. Following that dream made her one of the most celebrated and admired women scientists in the world.

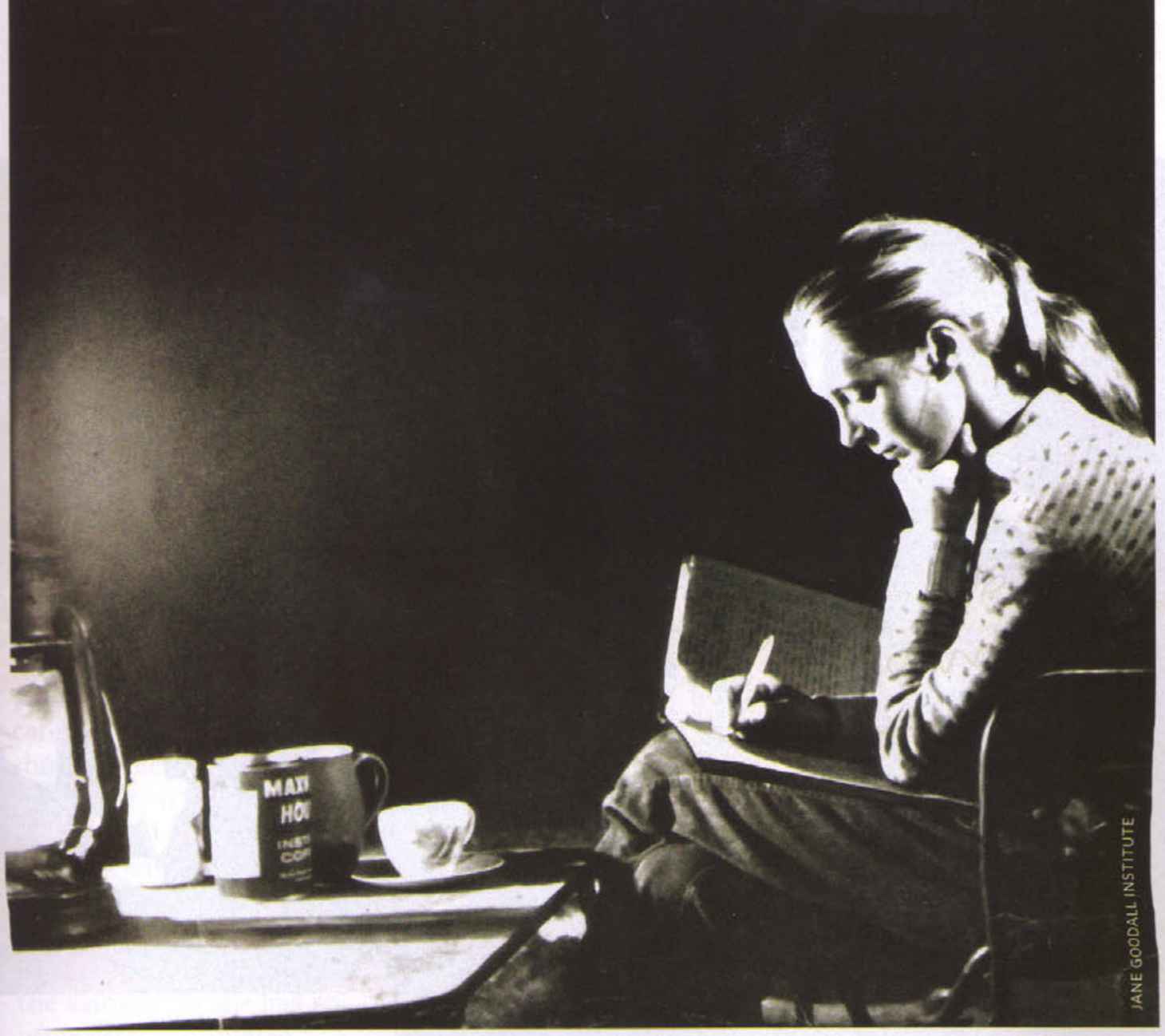
She was brought up in the south of England, in Bournemouth, which is known today as a centre of 'sea, sex and Sun'. It was not so in her early days. Most of England was living on rations, and many fathers were away at war. Although hers chose not to come back to his young family when World War II was over, she hung on tight to the first toy he gave her, a stuffed chimpanzee; she liked animals so much. She also had a dog, Rusty. "In those days, only human beings were considered to have feelings. I knew by looking at Rusty that animals did as well."

One day, when she was about five, she disappeared in the garden to watch how the chickens laid their eggs. She waited for hours until she saw the proof. When she came back to the house, proud of her findings, the police had been called in; her mother was looking for her. But instead of being admonished, she received the full attention of her mother who was in awe of Jane's story. "My mother always encouraged my enthusiasm and my curiosity. I think this gave me a great deal of confidence and helped me become who I am."

She was taught self-reliance, to be happy with herself – and to have the courage of her convictions. "It goes back to knowing what you want and going after it," says her sister Judy, who is four years – to the day – younger than the renowned primatologist. "Jane always knew what she wanted, so I've never been surprised by her great success. She is driven by the conviction that what she is doing is right."

Jane and her sister were raised in a 'matriarchal' family. "Ours was a female household," says Judy, during an interview at their family home where they were brought up by their mother, aunts and grandmother. The Birches, as they called their house, was bought by their grandmother and was passed down from one generation of women to the next. Today, it is Jane Goodall's pied-à-terre when she is not in a plane, which is rare – the primatologist now spends 300 days of each year travelling. She is building a network of school children through the 'Roots and Shoots' program, which is run by the Jane

Above left: Goodall as a young researcher with Flint in Tanzania's Gombe National Park.
Left: During her first months in Gombe in 1960, Goodall spent many months scanning the hills with her binoculars for signs of chimpanzee activity.



The young Goodall records her observations at Gombe National Park by lamplight in her tent during the early 1960s.

Goodall Institute. She makes speeches to raise awareness about depleting resources, but also about peace and hope, and the state of animal and human welfare.

"I have never had anyone say 'You can't do this because you are a girl'," recalls Goodall, whom I met in Budapest where she was attending the World Science Forum. Looking around the room at the Hungarian Academy of Sciences, where the interview took place, she gazed at all the portraits of men hung on the walls: "Not a single woman," she muttered. And looking straight at me with a smile, she added, "I am grateful to all the men that have been placed on my path; they have helped me a great deal."

ONE OF THE FIRST important men put on 'her path' was celebrated palaeoanthropologist Louis Leakey. She had paid her way to Kenya through waitressing work, and intended to make the most of it. Once in Africa, she engineered a meeting with the great scientist. She'd heard Leakey had set out on a field trip in the area, tracked him down and introduced herself. "Louis Leakey made everything so passionate, it was impossible not to be absorbed by his words." They shared similar interests and beliefs, especially about the need to prove scientifically that animals had feelings; he took her under his wing.

He thought she had an amazing talent and showed extraordinary patience in the field. After meeting her mother, Vanne Goodall, with whom he wrote *Unveiling Man's Origins*, he put Jane in charge of observing chimpanzees at the Gombe National Reserve in Tanzania. "There I was in the jungle, where I had always wanted to be. It was a magical world, a world that many people will never have a chance to see. I felt at one with nature. And I knew I was privileged to observe and record the history of beings that cannot do it for themselves." It was there that she made her first discovery; one that would change the way the world perceives and understands animals.

She was quite nervous at first; she badly needed to bring back results to justify her work in the wild, and the chimps seemed frightened by her presence. It took four years before they really grew accustomed to her. Then, one day, she saw something no one had recorded before. "I was walking in the forest, and saw a chimp picking a piece of grass. He pushed it down a termites' hole, and used it to scoop out the insects to eat them as humans use spoons for cereal. It was too exciting! It certainly was not like a eureka moment, because I had to see it again a few more times before I was sure it was intentional."

That discovery was a turning point in the behavioural study of primates. Her mentor, Leakey, suggested she should formulate her findings in academic terms to make them useful for the scientific community. She returned to England in 1962 to embark

Jane Goodall Tour

Jane Goodall is visiting Australia in July 2006 to share her messages of hope and promote the programs and mission of the Jane Goodall Institute, in particular the global youth program, Roots & Shoots: *www.rootsandshoots.org*. Please contact the organisers to register if you intend to attend an event.

ADELAIDE, SOUTH AUSTRALIA

Wednesday, 12 July 2006
Midday to 2pm – Adelaide Zoo. Event for teachers and school representatives
7pm – Adelaide Town Hall. Public lecture as part of the Flinders University 40th Birthday celebrations

Thursday, 13 July 2006
7pm – Adelaide Convention Centre. Fundraising dinner for the Jane Goodall Institute and Future Zoo Foundation

BOWRAL, NEW SOUTH WALES

Sunday, 16 July 2006
10am – Oxley College. General community public lecture

SYDNEY, NEW SOUTH WALES

Monday, 17 July 2006
6pm – John Clancy Auditorium, University of NSW public lecture

Tuesday, 18 July 2006 – Gala dinner fundraiser for Tchimpounga Sanctuary

CANBERRA, AUSTRALIAN CAPITAL TERRITORY

Tuesday, 18 July 2006
11.30am – National Press Club address

ALEXANDRA, VICTORIA

Thursday, 20 July 2006
7pm – Alexandra Shire Hall. Public community event

MELBOURNE, VICTORIA

Friday, 21 July 2006
6pm – University of Melbourne. Public Lecture - Vice Chancellor's International Series

Saturday, 22 July 2006
Details to be confirmed – Melbourne Zoo. Zoos Victoria Event

Monday, 24 July 2006
Details to be confirmed – IMAX Event for schools
7pm – IMAX Theatre. Australian Conservation Foundation event

To attend these events, contact Alicia Kennedy aliciakennedy@mac.com

UNITED NATIONS

MICHAEL NEUGEBAUER

Left: Goodall receives a Messenger of Peace medal from United Nations Secretary-General Kofi Annan during a ceremony at U.N. heaquarters, New York, in 2002.
Right: With members of the Roots and Shoots group, run by the Jane Goodall Institute, in Tanzania in 2002.

on a doctoral thesis at the University of Cambridge. Goodall did not, at the time, have any academic qualifications. She is, to this day, one of the very few established and respected scientists who have jumped the queue and earned a doctorate despite a lack of more basic scientific credentials.

The aspiring young scientist took to her first encounter with the academic world with the enthusiasm and the determination she still feels today. But she quickly hit a brick wall: her peers dubbed her "unscientific". Her thesis supervisor, Robert Hinde, described her methods as unprofessional. One of her great sins was to name individual chimps. In her thesis, she called the 'toolmakers' David Greybeard and Goliath. The paper was returned to her with the names scratched out. "Cambridge was a very difficult time for Jane," recalls Judy. "She couldn't understand why they gave numbers to primates instead of names. Looking back today, she has single-handedly changed the way people look at animals and the way scientists study them, which is amazing when you think about it."

Goodall refused to budge, and insisted on giving names to chimps. "Robert Hinde had a lot of difficulties dealing with this extraordinary person who was making waves," Goodall recalls. He ultimately softened towards her, and taught her to express herself in ways her peers could understand. "He taught me how to avoid being torn apart by them."

Her discovery had a major impact indeed: it forced science to reconsider its definition of *Homo sapiens* as 'man the toolmaker', a common sobriquet used at the time. She went on to make many other discoveries and findings about primates. She was the first to observe them eating meat, and described a 'meal session' in engaging terms in *National Geographic*. The idea of 'meat for sex' also came from those observations, and was later studied by students who came to her research centre at Gombe. Males appeared to share their food with a female in order to obtain sex afterwards, and females seemed to be the driving force behind such male predatory behaviour: hunting for the best food would bring the best females. The stories delighted readers. But in science circles, she came to be known as the magazine's 'cover girl'.

Behind the amusing, intriguing and the fascinating aspects of some of her work, and above the envy it created among some colleagues, Goodall was concerned with serious matters: "the ethical implications of realising that chimps were in so many ways like us," she says. "If we ascribe human emotions to non-human animals, we are accused of being anthropomorphic – a cardinal sin in ethology. But is it so terrible? If we test the effect of drugs on chimpanzees because they are biologically so similar to ourselves, if we accept that there are dramatic similarities in chimpanzee and human brain and nervous system, is it not logical also to assume that there will be similarities in at least the more basic feelings, emotions, and moods of the two species?"

Reflecting on her Cambridge years, and the critics she faced throughout her lifetime, she says: "Science can be a narrow-minded way to understand the world. The resistance to my work came from the very same people who were doing nasty things to animals. They don't want to know. They keep their visors down, to avoid guilt and pursue their constricted scientific experiments."

It is difficult to imagine that behind her peaceful blue eyes there is any anger. But she admits that she gets "mad as hell" about things. "It makes me sick the way scientists, knowingly, are still building nasty weapons after all we know about the atomic bomb. We live in a frightening world, where science can serve very nasty purposes."

CREATING THE Jane Goodall Institute in 1977, supervising students and research papers, and continuing her own research in the field was not enough for Goodall.

In 1986, she decided almost overnight she would not return to her world of wonders and discoveries, the forest of Gombe, for research. Attending a four-day conference entitled "Understanding Chimpanzees", held by the Chicago Academy of Science, she realised primates were in desperate trouble – their habitats were endangered by deforestation and resource depletion. "I could no longer just sit and observe them in the forest I love."

The seemingly magical and pure world of the forest she had discovered 25 years earlier was becoming contaminated and polluted to an irreversible extent, like the rest of Africa, like the rest of the world. In her 2005 book, *Harvest for Hope*, co-authored with Gary McAvoy and Gail Hudson, Goodall described how she opened her eyes to the misery, poverty and apathy of the world. In a sense, she dropped her 'scientist's goggles' to apply her knowledge and expertise to a bigger and wider purpose than the study of our primate cousins. Since that day, she hasn't spent more than three weeks in any one place. "No wonder we don't care about animal welfare," she tells me. "Look at the way we treat each other, why would we do any different with chimps?"

She decided to dedicate the remainder of her life to helping humans rise above the selfishness she has so often seen in primates.

Now a Dame of the British Empire and a Messenger of Peace for the United Nations, Goodall is on a mission. "There isn't very much time left to stop the destruction of our planet," she says. And the United Nations Millennium report in 2005 amplified her sense of urgency: if we continue consuming the planet's resources at our current, rapacious rates, there will not be enough resources for everyone by 2050; and first on the list is the shortage of water (see page 64). "I have very little hope for the future of this planet," she adds gravely, "our only hope is in future generations."

The grandmother of three is counting very strongly on children to make a difference and change the way the world consumes right now. "Every day I meet children who are so eager, so filled with energy and enthusiasm; it is a delight to empower them with the knowledge I have." Through the 16 offices of her institute worldwide, through her speeches and programs, she tries to reach out to children and adults with her message of peace and of hope. "I had a path," she says. "How could I speak to poor people and give them hope that their life will be better if I had been born into a wealthy family? If I had had money to study, how could I stand up in poverty-stricken rural Africa, or in city slums and say, 'Follow your dreams'? Now I have the joy of meeting people who tell me, 'You taught me, because you did it'."

Her message is not heard by all. Although considered famous, she's little known outside the English-speaking world. But this is now changing: while visiting Paris in January 2006 to receive a 60th Anniversary Medal from the United Nations Educational, Scientific and Cultural Organisation (UNESCO), she received a surprise. She was presented with France's Legion of Honour, the chivalric order established by Napoléon Bonaparte... and it opened doors to Francophone Africa. "It was a wonderful occasion. I had a little group with me, from the Legion. I don't understand why that happened, why I got this award, but it is extremely useful to help raising money for French Africa," she says.

Her fame and missionary zeal is not always met with open arms: she is usually rebuffed when she tries to meet with senior corporate executives. She considers the major oil companies "wicked", and global food giants dismissive. "They use vast amounts of oil to transport food, half of which will be thrown out at banquets, and then you have companies like Monsanto with its GMOs [genetically modified organisms] which encourages mass production of food."

She gets utterly discouraged when discussing large corporations. "I get very frustrated," she says. "When someone does not listen, I always find it is my fault. I have not found the key to unlock their hearts. But shouting does not work." Her theory is that in our modern lives, we have disconnected our brains from our hearts: "We don't think of the next generation."

"There I was, in the jungle, where I had always wanted to be. It was a magical world, a world that many people will never have a chance to see. I felt at one with nature."


MICHAEL NEUGEBAUER

AT 72, GOODALL IS IN full control of her agenda. She would love to stop, but feels she cannot: "People want me to travel, to meet them face to face. I would like time to write, but I haven't." Work and life has all been the same to her: "I don't make any difference between them."

She has been without a companion since her second husband, Derek Bryceson, died in 1980. A politician and former head of the national parks in Tanzania, he died of cancer after they had been married for only five years, and she retreated to the forest of Gombe for a while to grieve. "I find peace by myself in nature," she explains. There is still much more to learn and understand about primates; she feels more work should be done on the mother-daughter relationships in primates, which she's found to be particularly strong, and the effects different kinds of mothering have on offspring. All her notes, dating back to the 1960s, are being computerised now by the Centre for Primate Studies at the University of Minnesota.

And there's still much research to be done. "For instance, understanding why some females go back to their place of birth after childrearing, while others don't." She smiles. Although she's had a long and eventful life, you can still see the energy and intensity in her face. There's still so much to do.

VÉRONIQUE MORIN *is a science journalist in Montréal, Canada, and a former president of the World Federation of Science Journalists and the Canadian Science Writers' Association.*