need bang for bucks," says Craig Johnson, head of the department of zoology at the University of Tasmania and a member of the science and technology panel. Oceanographers, for example, have suggested that Australia team up with New Zealand in buying and operating a geological survey ship to map abutting territorial waters.

Dealing with such a range of issues is a tall order, and some worry that the government may fall back on old habits to resolve them. "There's still evidence of turf wars in the bureaucracy," says McKinnon. "There's not a strong enough sense of urgency yet."

For Marsh, a sense of urgency means providing sanctuary to the world's dugong population. The animals inhabit tropical and subtropical waters from Africa to Asia, but Marsh says Australia is the only developed nation with a low human presence along a significant coastline in tropical waters. "If we can't manage to conserve them, who can?" she wonders.

D. B. FLEETHAM/ANIMALS, ANIMALS

Warm feelings. Marsh has spent a career monitoring the dugong, an endangered marine mammal.

Last month the government gave the species a small break, creating a chain of dugong sanctuaries in the Southern Great Barrier Reef region with zones where gill netting is banned. But protecting the dugong's food source poses a bigger challenge. Protecting the sea grass involves not just managing the marine environment but also land-based activities. Farmers and developers inadvertently contribute to soil erosion, killing the grass with river-borne sediments and nutrients that screen the light the sea grass needs to survive. As Marsh puts it, "One thing I've learned is that we don't manage the marine environment; we manage people."

So far, only one Australian marine ecosystem, the Great Barrier Reef, is overseen by a single authority. Created in 1975, the Great Barrier Reef Marine Park Authority is viewed as a paragon of multiple-use ecosystem management. Members of the science panel hope the government's current review will create similar models for other areas.

The final plan, due out early next year, "should deliver a national program and the means to deliver it," says Pigram of the geological survey. If it does, it may also offer the best hope for the dugong.

–Elizabeth Finkel

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TRADITIONAL MEDICINE

India Applauds U.S. Patent Reversal

NEW DELHI, INDIA—It's rare for defenders of traditional Indian medicine to speak kindly of the U.S. Patent and Trademark Office (PTO), usually viewed as a tool of piratical multinational corporations. But this month, leaders of India's research establishment called a press conference to praise the PTO for its "transparency and fairness." The reason: The PTO has effectively killed a patent it granted 2 years ago on the medical uses of turmeric—a yellow-colored spice used in curry—after an Indian scientific organization asked to have the patent quashed.

The defeat of the turmeric patent is being celebrated as a national triumph by India's Council of Scientific and Industrial Research (CSIR), the consortium of 40 national laboratories that sought to block the patent. "This success is likely to enhance the confidence of the people of India and remove unfounded fears about India's helplessness in preventing biopiracy," says CSIR Director-General Raghunath A. Mashelkar.

Foreign exploitation of traditional medicines and folk technology became a rallying cry in the 1980s, when the U.S. firm W. R. Grace & Co. won a series of patents for extracts of the indigenous neem tree. Neem seeds and bark have been used for centuries in natural pesticides and medicines in India. Grace's attempt to exploit neem products aroused deep antagonism, particularly as it threatened to raise local prices (*Science*, 28 February 1992, p. 1070). Following that controversy, CSIR members were outraged when they discovered a 1995 patent (#5,401,504) had been issued to two Mississippi physicians for the traditional use of turmeric as a healing powder. The "inventors"—Suman K. Das and Hari Har Cohly—are Indian-born faculty members at the University of Mississippi's medical center in Jackson. Their patent lists the university as owner and itemizes six claims, based on the primary claim to "a method of promoting healing of a wound in a patient, which consists essentially of administering ... an effective amount of turmeric powder."

After moving to the United States and becoming chief of plastic surgery with a lab at the medical center, Das says he felt the time was right "to check out the old mother's tale" that turmeric could heal scrapes and wounds. In 1991 he and Cohly began experiments in rats. "There was definitely an enhancement of healing with turmeric," he recalls. In vitro studies with human endothelial cells also showed a growth-enhancing effect, so Das moved to clinical trials in patients with intractable leg ulcers. Again, Das says, the results indicated that using turmeric was better than no therapy in "healing some ulcers which had been written off" as untreatable. (Its efficacy was not compared to an antibiotic.)

That discovery led them to the patent office. "We felt that the compound should be popularized," says Das. "The only way to do that in this country is by developing it, and you cannot do that without a patent."

K. SCHAFER/PNI

"Obvious" value. Medicinal use of turmeric plant is widespread.

Upon learning of the patent, CSIR hired a U.S. firm and petitioned the PTO. The University of Mississippi, meanwhile, withdrew as owner of the patent, ceding rights to Das and Cohly. And in a relatively rare reexamination proceeding, the patent office agreed to look into the CSIR's contention that the "discovery" was both unoriginal and obvious in light of earlier writings in India. Among 32 references, CSIR cited an authorized translation of an ancient Sanskrit text that spoke of the medical use of turmeric. On 13 August, the patent office informed the patent holders that it was rejecting all six of their claims.

CSIR's Mashelkar believes this is "the first case" in which a patent on traditional Third World knowledge "has been contested, and the case has been won." The decision, he says, "sends the signal that if patent cases are fought on well-argued and well-supported techno-legal grounds, then there is nothing to fear about protecting our traditional knowledge base."

Das, having spent more than $15,000 on the case, is dispirited by the PTO decision, which he hasn't fully read. He says he has not decided whether to appeal but that, after this setback, "I have got my doubts as to whether it has any commercial value." He says he had hoped to make turmeric a popular alternative to antibiotics, but now, "my feeling is, why bother?"

–Eliot Marshall in Washington and Pallava Bagla in New Delhi