

FROM THE EDITOR

Sound affects

Charles Day

The variety of waves is astonishing. Even if you count only the ones named after people, the list is long: Alfvén, Bloch, Dyakonov, Faraday, Gerstner, Kelvin, Lamb, Langmuir, Love, Mach, Rayleigh, Rossby, Stokes, and Tollmien-Schlichting. The swaying motion of the Rayleigh wave, the snaking motion of the Love wave, the planetary scale of the Rossby wave—to pick just three—are beguiling.

By contrast, when sound propagates through a gas or a liquid, it does so by way of the humblest of waves, the longitudinal. But in what is perhaps the greatest irony in physics, those longitudinal waves underlie one of the richest and most varied of physical sciences: acoustics. If you browse a recent issue of the *Journal of the Acoustical Society of America*, you'll see what I mean. The table of contents typically lists around 10 different sections, which include acoustical oceanography, animal bioacoustics, biomedical acoustics, noise, and speech communication—to pick just five.

In celebration of the richness and importance of acoustics, this issue of PHYSICS TODAY is devoted to the International Year of Sound, which kicked off on 31 January with a ceremony at Sorbonne University's Grand Amphithéâtre in Paris. The four feature articles in this issue were chosen with the help of the current president of the Acoustical Society of America, Diane Kewley-Port of Indiana University.

The richness of acoustics is manifest in the news stories I've written for this magazine. That is revealing, because when contributors to the Search and Discovery department choose papers to cover, they prioritize significance of research followed by variety of topic in the issue. We don't set out to build personal bibliographies of wide variety.

My first acoustical Search story (June 2001) reported on research that identified the neurological basis of sound location in barn owls. Next came overcoming the diffraction limit with time-reversed ultrasound (December 2002), mediating the delivery of therapeutic genes to heart muscle with targeted ultrasound (December 2005), mitigating hospital noise with acoustic paneling (August 2007), and the confirmation, using *ex vivo* and virtual cells, of a theory of cochlear amplification (June 2010).

I stopped being a regular contributor to Search when I became online editor in June 2010. But I continue to write news stories for the magazine's website. The most recent was about an ingenious experiment that determined which of two aural cues—interaural level differ-

ences and interaural time differences—crocodiles use to locate squealing hatchlings, approaching prey, and other sources of sound. One of the experiment's subjects appears in the photo.

Although I never learned to play a musical instrument with any skill, music has remained for me one of life's dearest pleasures, the more so during the current pandemic. Listening to music at home is a safe and stimulating pastime. I favor CDs. Among my recent purchases are Anton Bruckner's string quartet and quintet; James Brown's 1973 swansong, *The Payback*; jazz musician Zbigniew Namysłowski's 1973 album, *Wino-branie*; and the Cocteau Twins' 1984 album, *Treasure*.

I list my CDs not to show off my eclectic taste, but to make a point. I've known about and delighted in the variety of musical forms ever since I was a nipper in North Wales. But it took reporting on the physical sciences for me to appreciate the variety of acoustical research, by which time I was well into my 30s. As the organizers of the International Year of Sound put it, "sound is omnipresent in our lives." Understanding of sound and its applications, however, is far from omnipresent. The more IYS and other initiatives engage the public in the science of sound, the better.

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