

PHIMSY

Cerenkov acoustics

So you thought that Cerenkov radiation occurs when a charged particle has a speed greater than that of light in the medium? Well, it does. But suddenly we are becoming aware of other situations to which the same rules apply: the source moves faster than the radiation it stimulates, and the radiation pattern is a cone moving outward from the stimulus. Our sonic-boom article on page 31 offers one good example. Others are well known: shock waves, radiating arrays, etc.

Georges Mourier, who is affiliated with Compagnie Générale de Télégraphie sans Fil (often "CSF") has studied what happens in a piano string when the impulse moves faster than sound in the air around it. If the string were infinite, radiation from it would follow the Cerenkov pattern.

In a real piano radiation in air is slower than impulse in string for about the upper two thirds of the range. Moreover, when wavelength is short compared with string length (in other words, for higher harmonics) radiation behaves like that from an infinite string, and the direct radiation from the string has appreciable magnitude. String lengths used are such that higher strings radiate more effectively than lower ones; if you wanted the same radiation efficiency in all strings, your lowest A string would have to be 21 feet long.

Mourier finds that the soundboard plays an interesting role. It is, of course, an impedance matcher—the kind of thing a flute doesn't need because its air column is already well coupled to the air. Then, because its wave equation is fourth order in space but only second order in time, phase velocity becomes very great at high frequencies whatever the size of the piano. Therefore treble is always well radiated. Mourier published his results in *Compt. Rend.* 258, 3225 (1964).

Few reprint requests. Why?

We are always happy to find that a PHYSICS TODAY paper has commanded a lot of interest—and frequently disap-

pointed if an author says he has few requests for reprints. At last, though, we have found a reason we like for the few-request illness.

John Howard says that since PHYSICS TODAY goes to all physicists who are members of member societies (page 6), few of them need to ask for PHYSICS TODAY reprints. On the other hand, a lot of them find out about papers in journals with smaller circulations by reading titles and abstracts in current-awareness journals and such like. Please get your chemist and engineering friends to flood our authors with requests.

Poet Gove of Oak Ridge

Another poet among us: Norwood B. Gove who uses computers on nuclear data at Oak Ridge National Laboratory. His wife asked him for some poems suitable for her third graders. Gove came up with a collection that has now become *The Little Green Child and Other Poems* (Vantage Press, 1967, \$2.50).

A sample:

I like rabbits
With no bad habits.
I like cats
Better than rats.
I like dogs,
Also frogs.
I like squirrels
And girrels.

The physicists' secretary

Associating with great physicists has become a career for Priscilla Duffield, new secretary of Robert R. Wilson while he is making plans for the 200-GeV accelerator at the National Accelerator Laboratory. The career started when she was secretary to Ernest O. Lawrence in Berkeley. From that job she moved to Los Alamos as secretary to the project director, Robert Oppenheimer. Along came Robert Duffield, now director of Argonne National Laboratory, and she married him during the Los Alamos job. After a stint at the University of Illinois, both Duffields were off to La Jolla, Calif., and Priscilla became sec-

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ELECTRONICS

retary to Roger Revelle, director of the Scripps Institution of Oceanography. William Nierenberg became director, and she stayed on as his secretary. Another move brought Robert Duffield to Argonne and Priscilla Duffield to the National Accelerator Laboratory. Next...

Do it with a ruler

How do you measure the wavelength of light? You do it with a ruler, Arthur Schawlow told my friend Gloria Lubkin when she visited him recently at Stanford, and he showed her how.

You just take your laser beam and allow it to glance off the scale markings of a foot ruler onto a wall. Diffraction produces four or five orders of fringes, and you can measure their separations to find the wavelength.

"And here's one that you can't do in the Soviet Union," Schawlow told some recent Russian visitors. Having perplexed them sufficiently, he shifted his ruler slightly so that the light glanced off 1/64-in. markings instead of the 1/32-in. ones and he got twice as many fringes. That's one you can't do if your divisions are decimal (as they ought to be).

Sorry about that ad

My face is red. A bundle of complaining letters arrived after I wrote, "If you want to buy a page to explain your attitude to the Vietnam war, you can't have it." They pointed out that page 131 of the same issue had an advertisement promoting government bonds and that it expressed an attitude to the Vietnam war. The explanation that I got from our advertising department is that "public service" ads are run free as space fillers when someone else drops out at the last minute. Normally the department just takes one from the top of the pile assuming that it is against sin or for motherhood. This one turned out to be loaded. The editors acknowledge that letter writers like Antonia Crago, Rolf Sinclair, Leslie Foldy, David Greenberg and Gilbert Shapiro (and my telephone callers whose names I didn't record) had a legitimate complaint. The advertising department and I plan to read all the ads in the future and to keep PHYSICS TODAY away from motherhood, sin and other matters not specifically related to physics. □



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