self-organize into stacks or columns, which typically order themselves into hexagonal lattices. It was 1994 before the first example[3] of fast light-induced conductivity in such systems was obtained. But since then the ability of synthetic chemists to bring molecules together selectively, in well-defined architectures, has increased tremendously.

The upshot has been that materials scientists have discovered the world of supramolecular chemistry, which has the potential to marry the best characteristics of high-molecular-weight polymers and low-molecular-weight organic molecules. As their name implies, supramolecular materials self-assemble and are therefore often easier to synthesize and process than crystalline materials. And provided the individual building-blocks are carefully 'programmed', the self-assembly should yield structures and molecular orientations that are suitable for the desired function. For example, the macroscopic orientation of the π-conjugated components in organic devices is of central importance for determining the direction of charge-carrier mobility, as has been demonstrated for semiconducting polythiophenes[4].

Combining the strengths of classical polymers and single crystals will require new thinking. The way forward is to take functional, disordered molecules and allow them to self-assemble — through information programmed into the molecule — into well-defined arrays. To obtain a general scheme for making such self-processable organic materials, Percec *et al.*[1] apply several different concepts from supramolecular chemistry. The details of the chemistry and the liquid-crystal assembly are shown in Figs 1 and 2, respectively, on page 385. In short, the authors have synthesized fluorine-carrying clusters of highly branched polymers called dendritic wedges. When electron donor and acceptor groups are attached, the wedges self-assemble into supramolecular columns. It is self-assembly of these wedges that drives the liquid-crystal formation of the organic component. Both low-molecular-weight organic materials and polymerized species can be used as donor and acceptor groups. By selecting the right ingredients, the molecules co-assemble into columns in which a donor–acceptor complex is formed in the core of the liquid-crystal column. The fluorinated periphery of the molecules shields the core of the column from external influences such as moisture. Remarkably, even disordered polymers self-assemble into well-defined columns.

Percec and colleagues' in-depth analysis of the liquid-crystalline phases, including the use of X-ray and NMR spectroscopy, provides a wealth of information about the organization of the molecules within the column, as well as showing that the columns are oriented perpendicular to the surface. These studies reveal that the regularly packed nanocolumns are of high density, with roughly 10^{12} columns per square centimetre. The charge-carrier mobilities, as determined by the time-of-flight method, fall in the range of 10^{-4}–10^{-3} $cm^2 V^{-1} s^{-1}$, well within the values needed for molecule-based devices. The data showing at high resolution how the system is packed are particularly striking. Using an especially sophisticated NMR technique[5], a group of the authors in Mainz resolved the distances between different building-blocks in the liquid-crystalline phase to the proton–proton level.

The true significance of the systems described by Percec *et al.*[1] will only become clear when they are incorporated into electronic devices (for transistor applications, the column orientation will preferably be parallel, rather than perpendicular, to the surface). An even more exciting prospect would be the independent use of individual columns, with the goal of producing supramolecular electronics as an alternative to molecular electronics. Several groups, including our own, are currently engaged in such work. Columns with diameters as small as 3–5 nm and lengths of 50–100 nm should self-assemble between electrodes with a single-crystal-like packing, providing alternatives for single-walled carbon nanotubes or inorganic wires. All in all, the concepts outlined by Percec *et al.* constitute a good starting point in the search for supramolecular electronic materials. ■

E. W. (Bert) Meijer and Albert P. H. J. Schenning are in the Laboratory of Macromolecular and Organic Chemistry, Eindhoven University of Technology, PO Box 513, 5600 MB Eindhoven, The Netherlands.
e-mail: e.w.meijer@tue.nl

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corrections

In Giles Cory and Anne Ridley's article "Cell motility: Braking WAVES" (*Nature* **418,** 732–733; 2002), the wrong attribution appeared for the time-lapse film of a neutrophil chasing a bacterium, provided as a spectacular example of cell motility. The movie was made by the late David Rogers at Vanderbilt University, Nashville, Tennessee (see http://expmed.bwh.harvard.edu/projects/motility.html).

In "Global change: Oceanic action at a distance" by Raja S. Ganeshram (*Nature* **419,** 123–125; 2002), the author list for one of the two main papers under discussion (ref. 3) contained an error. The correct citation for that reference is Matsumoto, K., Sarmiento, J. L. & Brzezinski, M. A. *Glob. Biogeochem. Cycles* **16,** 10.1029/2001GB001442 (2002).

100 YEARS AGO

Only one subject — Latin — is really educational in our schools. I do not mean that the average boy reads any Latin author after he leaves school, or knows any Latin at all ten years after he leaves school. I do not mean that his Latin helps him even slightly in learning any modern language, for he is always found to be ludicrously ignorant of French or German… But I do mean that as the ordinary public-school master is really able to give a boy easy mental exercises through the study of Latin, this subject is in quite a different position from that of the others. If any proof of this statement is wanted, it will be found in the published utterances of all sorts of men… who, confessedly ignorant of "the tongues", get into a state of rapture over their school experiences and the efficiency of Latin as a means of education. All this comes from the fact, which schoolboys are sharp enough to observe, that English schoolmasters can teach Latin well, and they do not take much interest in teaching anything else.

From *Nature* 25 September 1902.

50 YEARS AGO

"My particular mission has been to make men of science conscious of their power and influence in shaping civilized life." So wrote Sir Richard Gregory in his message of farewell published in *Nature* of January 7, 1939, when he resigned from the editorial chair which he had occupied with such distinction for so many years. Throughout his long life, which came to a close on September 15, his interest in science for its own sake, and equally for the appreciation by others of its value and significance for humanity, was a driving force which brooked no obstacle… He was a true working editor, marking manuscripts for the printer and seeing the journal through the press week by week with all the attention to detail such work demands. There was never an editorial committee; neither was there even a special panel of reviewers. The entire scientific world, both at home and abroad, has always been *Nature*'s willing advisers and critics. Thus, through this valuable freedom from committee control… was Sir Richard able to contribute very largely towards making the journal what it is… He accepted the saying that 'a good editor wears out the soles of his shoes before the seat of his pants'.

From *Nature* 27 September 1952.