characteristic features of *l*-β-phellandrene, forming, for example, a nitrosite[3] and a nitrosochloride[4]. That the tetrabromide was derived from this hydrocarbon was supported by the formation of a crystalline derivative from a sample of *l*-β-phellandrene isolated from Canada balsam oil. This had practically identical physical properties, and on admixture with the sample from the eucalyptus oil there was no depression of melting point.

The chief feature of the tetrabromide from β-phellandrene is the change of sign of rotation, the *lœvo*-rotatory hydrocarbon giving a *dextro*-rotatory tetrabromide. The investigation was further extended by formation of a crystalline tetrabromide from a sample of *d*-β-phellandrene derived from water fennel oil (*Phellandrium aquaticum* L.)[5]. This also had a melting point of 118–119° and had a specific rotation of − 53°.

A detailed account of the work will be published elsewhere.

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Symbols Used to Indicate Hydrogen Ion Concentration and Similar Quantities

THE symbols *pH* and *pK*, commonly encountered in chemical literature, each consist of two letters, the second of which may, or may not, be used as a subscript, and either or both of which may be set alternatively in roman type or in italics. There appears to be no generally accepted convention governing the choice from the many resulting possible forms, and inconsistencies are often encountered even within a single published article.

According to its origin, the letter '*p*' in the symbol *pH* is an operator describing a function of the variable denoted by the letter '*H*'. Presumably in order to show the different significances of the two letters in the compound symbol, it was originally written with a subscript '*H*' by Sörensen. This arrangement, besides being somewhat inconvenient, seems to give undue prominence to the operator. In the more recent and common form *p*H, the difference in type sufficiently marks the different duties of the two letters, but is opposite in direction to that conventionally used in other functional symbols, such as log *T* or d*t*. From this point of view, p*H* appears a more consistent form. There is, however, much to be said in favour of dropping the distinction in type between the two letters, and of regarding the quantity denoted by *pH* as an important independent variable without reference to its derived origin. Although the compound symbol may have a unique meaning, this is not necessarily true for its component letters; thus, *H* may denote a concentration and *p* a negative logarithm, or—sometimes more conveniently —*H* a dilution and *p* its logarithm. It is suggested that, in agreement with the accepted convention for single-letter symbols, all compound symbols in which *p* is used as an operator should be set in uniformly italicized type, as *pH*, *pK*, etc., without special advertisement of their derivations.

In chemical texts, the symbol *pH* (or its type variants) is commonly used as a noun, as in the phrase "The determination of *pH*", though for this purpose it is sometimes expanded to '*pH* value'. There is little to be said in favour of '*pH* value', which is longer, and no more descriptive, than *pH*. If the demand for brevity constrains us in the future to replace the noun 'time' by the symbol *t*, the inconsistency of '*t* value' will quickly become obvious. Much the most common plural form of the noun is '*pH* values' (or its type variants), a fact that probably reflects our uncertainty as to the correct plurals of the letters of the alphabet, and our resolve to mind our grammatical P values and Q values. The correct plurals of pH, p*H*, *p*H and *pH* are respectively pH's, p*H*s, *p*H's and *pH*s. The rule is simple. If there can be any doubt whether the final 's' is a plural ending or a part of the symbol proper, an apostrophe is required; but if a difference in type between the final letter of the symbol proper and the plural 's' avoids this ambiguity, no apostrophe should be used.

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Unshrinkable Wool

ONE of the more recent processes for making wool unshrinkable consists in synthesizing an organic polymer on the surface of the fibres[1], thus masking the surface-scale structure which is the primary cause of shrinkage. Precisely similar results may be obtained with inorganic polymers.

For example, when flannel is immersed in a solution of silicon tetrachloride in carbon tetrachloride, a vigorous reaction takes place between the adsorbed water of the wool and the silicon tetrachloride, a siliceous deposit being formed on the surface of the fibres. In consequence, the treated fabric shrinks very much less than untreated fabric during milling, as may be seen from the following data. These were obtained by treating 2·5 gm. patterns of flannel, previously conditioned at 65 per cent relative humidity and 22·2° C., with 100 c.c. of a solution of silicon tetrachloride in carbon tetrachloride for five minutes at 25° C. After treatment, each pattern was washed in two changes of 100 c.c. of carbon tetrachloride, followed by running water overnight, and the series of patterns was then milled by hand in 5 per cent soap solution.

Concentration of silicon tetrachloride (per cent by volume)	Percentage shrinkage in area during milling
0	28·9
2	18·9
5	6·2
7	3·6
10	2·6

A high degree of unshrinkability is readily obtained, and it is clear that polymerizable inorganic compounds are likely to find important practical applications in the wool textile industry.

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