

Roback and Stein (*Quart. Bull. Northwest Univ. Med. School*, 16, 298; 1942) with 'Carter's Little Liver Pills'. Using dogs, these workers injected the pills in solution in alcohol intravenously, or in solution in water intraduodenally, giving the equivalent of 2-4 pills per dose. None of the doses produced any significant increase in the flow of bile or of the pressure inside the gall bladder. The makers of 'Carter's Little Liver Pills' claim, says the annotation, that the pills flush the poisons out of the system with two pints of bile and that they are the standard medical formula for waking up the liver. Each pill, says the *British Medical Journal*, is said to contain 0.25 gr. of Curaçao aloe and 0.0625 gr. of Podophylli resin. The annotation adds: "These experiments point to a distant goal—the authoritative study of the pharmacological action of all proprietary preparations and the unbiased publications of the results".

That the Newspaper Proprietors' Association is alive to the importance of control of the advertisement of proprietary medicines is shown by the following rules governing such advertisements which have been unanimously adopted at a recent meeting of the Association. They appear in the *British Medical Journal* of October 9, p. 462.

(1) No advertisement will be accepted by the newspapers represented in the Newspaper Proprietors' Association which offers for sale to the public any medicine or treatment which is directly or by implication held out in terms calculated to lead to the belief that the medicine is effective in: (a) The treatment of Bright's disease, cancer, tuberculosis or consumption, diabetes, epilepsy, fits, locomotor ataxy, cataract, glaucoma, disseminated sclerosis, osteoarthritis, spinal, cerebral and venereal diseases, lupus, or paralysis or for preventing any of those ailments. (b) For the cure of amenorrhœa, hernia, blindness, rheumatoid arthritis, or any structural or organic ailment of the auditory system. (c) For procuring the miscarriage of women. (d) For the treatment of habits associated with sexual indulgence or for any ailment associated with those habits.

(2) No advertisement will be accepted from an advertiser who by printed matter, orally, or in his advertisement undertakes: (a) To diagnose by correspondence diseased conditions or any particular diseased conditions in a human being or to receive from any person a statement of his or any other person's symptoms of ill-health with the view of advising as to, or providing for, the treatment of such ill-health by correspondence; or (b) to treat by correspondence any of the ailments specified in Section 1 above.

(3) No advertisement will be inserted containing a testimonial other than one limited to the actual views of the writer, or any testimonial given by a doctor other than a recognized British medical practitioner unless it is manifest that the doctor is not a British doctor of medicine.

(4) No advertisement will be accepted containing illustrations which are distorted or exaggerated in such a manner as to convey false impressions.

(5) No advertisement will be accepted which in any way may lead persons to believe that the product recommended emanates from any hospital or official source or is other than a proprietary medicine advertised by a particular manufacturer for the purpose specified, unless the advertising agent submitting the copy declares that the authority of such hospital or official source had been duly obtained.

These rules are now in operation in all the London

morning, evening and Sunday newspapers and all advertisements will, in addition to conforming to these rules, be submitted to medical scrutiny and the product to chemical analysis if it is considered necessary. This is the first time that the national newspapers of Great Britain have unanimously laid down and insisted on a standard of control over statements and claims made in advertisements.

A SYNTHESIS OF A 42-CHROMOSOME WHEAT

THE solution of the jigsaw-like puzzle of the origin of the 42-chromosome wheats of the 'vulgar' or bread-wheat type has been attempted by various methods. A recent endeavour to synthesize a bread-wheat by crossing *Triticum turgidum* ($2n = 28$) with *Aegilops speltoides* ($2n = 14$) adds a new piece to the puzzle (W. P. Thompson, E. J. Britten and Joan C. Harding, *Canad. J. Res.*, C, 21, 134; 1943). It is generally agreed that the monococcum group of wheats ($2n = 14$) has the chromosome sets *AA* and the majority of the emmers ($2n = 28$) the genomes *AA* and *BB*, while all the bread-wheats have the constitution *AA BB CC*, the *C* sets being derived in some way from some species of the genus *Aegilops*, one of the species of which, *Aegilops cylindrica*, seems to have the genomes *CC DD*. The new species is the result of an attempt to repeat the hypothetical events in the origin of common wheat by first crossing one of the emmer section with a species of *Aegilops* with 14 chromosomes, and then producing the fertile amphidiploid by doubling the number of chromosomes with the aid of colchicine.

The new type has leaves with a single line of long hairs on the summit of each ridge, a hollow stem, the collar at the base of the spike open, rounded U-shaped glumes with wide truncated 'shoulders' and weakly developed keels, all of which are regarded as typical bread-wheat characters. In the bearded varieties of the vulgares, the awns are shorter than those of the emmers and in this character too the amphidiploid is near the bread-wheats. The teeth at the apex of the glumes are short and blunt as in most varieties of *T. vulgare*. The hairs of the brush at the apex of the grain are intermediate in number and length between the emmers and the vulgares. The rachis, however, is fragile, with a disarticulation which is characteristic of the emmers, and the slender rachis segments have their tops wider than the bases, as in the emmers.

In undoubled F_1 plants, the pollen mother-cells showed 1-3 trivalents in more than 80 per cent of the cells, while 5 or 6 bivalents occurred in 26 out of 57 cells, and 4-7 bivalents in 51 out of 57 cells. In the pollen mother cells of the amphidiploid plants the greater majority showed a few unpaired chromosomes as well as associations of three or four. 75-95 per cent of the pollen appeared good and about three to a dozen grains were set in most heads. Back-crossing with *T. vulgare* and *T. Spelta* was possible both with the amphidiploid as the male or the female parent, but the resulting grains were badly shrivelled and germinated poorly. Of the 8 backcross hybrid plants obtained, 5 had 42 chromosomes and the remaining three 41, 40 and 39.

Thus it can well be said that a wheat-like species which in most essentials is a vulgar type has been synthesized: a new piece has been found for the

puzzle, though whether it has been inserted in the correct place remains to be seen. There occur a number of perplexing difficulties which the authors do not set out. Thus, although they do not find as great a proportion of bivalents as Jenkins in the pollen mother-cells in their undoubled F_1 , it is still high. This, together with the report of seven perfectly normal bivalents and fairly regular tetrad formation in the hybrid *Aegilops speltoides* × *T. monococcum* (Chizaki, 1932) and the 6-7 bivalents reported by Lilienfeld and Kihara (1934), as usually occurring in the hybrid *A. speltoides* × *T. Timopheevi* (AA GG), are difficult to reconcile with the assumption that *A. speltoides* contains the C sets of chromosomes. Again, the authors make no mention of the number of nucleoli in their new wheat. In both *A. speltoides* and the emmer wheats there are four nucleoli (Pathak, 1940), so that the resulting amphidiploid will probably have 8 nucleoli, whereas true vulgare wheats have only 6. It may well be that the new type in reality has the constitution AA BB A'A' rather than the elusive AA BB CC.

B. C. S.

ROOTS OF MOUNTAINS

PROF. BENO GUTENBERG, of Pasadena, California, has been doing a considerable amount of work recently on problems connected with the earth's crust immediately beneath high mountains. He has investigated in great detail the structure of Southern California as it may be interpreted in the light of data from 'near' earthquakes. In a recent paper he summarizes our present knowledge (much of which is due to himself) concerning the roots of mountains throughout the world ("Seismological Evidence for Roots of Mountains", by Beno Gutenberg, *Bull. Geol. Soc. Amer.*, 54, 473-498; April 1, 1943).

Prof. Gutenberg states that all results based on the study of seismograms of nearby continental earthquakes indicate that below the sediments is a layer in which the velocity for longitudinal waves is between 5.55 and 5.60 km./sec. It is considered granitic. Below it, intermediate layers showing higher velocities definitely show regional differences. Their lower boundary is the Mohorovičić discontinuity, below which a material, probably ultra-basic, in which the velocity is about 8.0 km./sec., is found nearly everywhere. The velocities through the granitic as well as those through the ultra-basic layers are the same in different regions, within ± 0.4 km./sec.

The maximum thickness (60-70 km.) of the 'continental layers' above the Mohorovičić discontinuity thus far has been found under the southern Alps and about the same under the Sierra Nevada. Whereas the root of the Alps seems to be due mainly to an increase in the thickness of the granitic layer, present indications are that the granitic layer under the Sierra Nevada extends roughly down to the same depth (about 20 km.) as generally in Southern California; mainly the intermediate layers are thicker under the Sierra. In other continental regions, the Mohorovičić discontinuity is in general at a depth of about 50 km. under areas with moderately high mountains, and of about 40 km. near oceanic coasts. An especially low value of 30 km. has been found in New Zealand. Under the Atlantic and Indian Oceans these layers have probably an even smaller total thickness and are practically absent under the Pacific Basin. The boundary of the crystalline crust is within the ultra-basic material.

DESIGN OF ALTERNATORS FOR SWITCHGEAR TESTING

A PAPER by V. Easton (*J. Inst. Elec. Eng.*, 90, Pt. 2, No. 16; August 1943) deals with some of the factors which affect alternator design. Due to the rapid growth of interconnexions on many systems during the last fifteen years, the greatly increased voltage and current likely to be caused by a fault at many switching stations has necessitated the design of circuit-breakers of larger capacity, and in turn this has made desirable improved facilities for technical investigations and for proving the rating of the breakers. The paper discusses the mechanical and electrical factors which affect the design of alternators supplying power for switchgear testing, and a review is made of several methods of increasing the output of such alternators, the merits of each being critically examined.

In the section on electrical design the author deals with reactance, time-constants and damping circuits, recovery voltage, and speed of plant and losses. The section on mechanical design covers slot conductors, end windings, foundations and couplings. Finally, the author discusses various methods of increasing output and considers the effect of external reactance, increased initial voltage, shorter duration of test, super-excitation, and parallel operation of plant. All the methods to increase output may be applied to existing plant, the most suitable probably being an increase in the initial voltage or a reduction in the duration of the test period. Super-excitation may also be adopted, but if complete neutralization of the stator M.M.F. is desired the super-exciter set must be of large capacity, probably designed for a high voltage, and the arrangement may be relatively inefficient.

The method to be adopted for an extension to existing plant may be influenced by the arrangement of the sets with which it is required to run in parallel, but for a new installation some degree of super-excitation should be provided. The choice lies between a large excitation set capable of maintaining the stator current at the initial value and a small set with controlled switching to eliminate the d.c. component of the stator current and permit the switch under test to be opened a few cycles after the master switch closes. Technically, the former scheme is the more satisfactory from the point of view of the flexibility of the testing procedure, the severity of the test conditions, and ease in interpreting the results. Economic considerations may, however, be of sufficient importance to offset the complications and the reduction in the severity of the test introduced by controlled switching.

RIVER CONTROL IN BRITAIN

AMONG the terms of reference of the Central Advisory Water Committee was a consideration of what enactments, if any, were required to co-ordinate the various river interests, and the desirability of constituting new river authorities with responsibility for some or all of the functions now exercised by existing bodies. There were found*, on examination of the subject, a great many bodies each exercising limited control generally of one or

* Ministry of Health. Third Report of the Central Advisory Water Committee: River Boards. (Cmd. 6465.) Pp. 77. (London: H.M. Stationery Office, 1943.) 1s. 3d. net.