

large proportion of the money spent on food to have been expended on other things.

What applies to this family applies equally to many of the other families in which dietary studies were carried out, and over and over again we find it stated that more food was purchased than was necessary for efficient nourishment. To each dietary study is appended criticisms of and suggestions for changes and improvement in the diet pursued, and these constitute a valuable addition to the report and form, indeed, an eloquent argument that our school curriculum should provide for the education of children in the elementary principles of diet in relation, not only to the economy of the body, but also to that of the family purse.

The selection of food stuffs on rational or scientific principles does not, perhaps, sound appetising, but the numerous investigations on the nutritive value attaching to substances which have been carried out in America and elsewhere cannot be overlooked, and it is, perhaps, not unreasonable to believe that current notions on diet may become modified in the future, more especially in those cases where on economical grounds reform is so urgently needed. These studies are, therefore, of social as well as scientific importance, and acquire particular significance for the poor at times when taxes shall tell heavily upon their resources.

In conclusion, brief reference may be made to the elaborate experiments which have been carried out on the different degrees of waste entailed in the different methods adopted for the cooking of food of various kinds.

Amongst the names associated with investigations on the loss of nutrients in the cooking of meat, we find that of Thudicum in this country, Vogel and König in Germany, whilst in America the most recent contributions to this subject have been made by Grindley, in conjunction with Messrs. McCormack and Porter. As regards the loss in weight which takes place, various investigators agree in stating it to be from one-fifth to one-third, whether the meat be boiled or roasted. Where beef, for example, is cooked in water, from 3 to 20 per cent. of the total solids is found in the resulting broth, the degree of loss in constituents appearing, to a certain extent, to depend upon the size of the piece of meat employed, the smaller the dimension it is reduced to the greater being the loss; whilst the duration of time of cooking must also be taken into consideration, the more prolonged it is the greater, again, being the loss entailed. The practical lesson to be learnt from the investigations which have so far been made appears to be that the most economical method of cooking meat is to broil it in a frying-pan, for in this manner the least loss of nutrients occurs.

In the case of vegetables, the losses entailed by cooking appear to be even greater than those recorded for meat. Thus as regards carrots, in boiling them nearly one-half of the mineral matters present are lost, together with about 40 per cent. of the total nitrogen and about 26 per cent. of the sugar present.

These percentages of loss or waste may be considerably reduced if the carrot is boiled whole instead of being first cut, as is customary, into small pieces. In this manner the loss in sugar, for example, instead of being 26 per cent., is reduced to very nearly half that amount, and similar economies may be effected in regard to the other constituents of the carrot.

In boiling cabbages the loss is very considerable, from 35 to 40 per cent. of the total nitrogenous matter present being left in the water, which, as everyone knows, is consigned to the kitchen sink as rapidly as possible. The Scotch recipe for making broth, which involves the addition of uncooked cabbage to the stock-pot, besides being justly renowned for the excellent results it produces, has also, therefore, distinct advantages from an economic point of view. As regards potatoes, we cannot do better than follow the custom of cooking them which prevails in the Emerald Isle. The Irish method of boiling potatoes in their skins is not only the most palatable, but also the most economical way of using them, for when potatoes are peeled and then boiled there is a very considerable loss, not only of organic nutrients, but also of the mineral salts present.

The above brief review may help to emphasise the economic importance quite apart from the scientific interest attaching to such investigations, for by indicating, not only the best means of utilising the existing sources of food supply, but also for extending their range, such researches may conceivably contribute not a little to the prosperity of a country as a whole, whilst they can undoubtedly promote the well being and to a certain extent, therefore, the happiness of the individual.

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MAGNETIC OBSERVATIONS IN BADEN.

AN account of a minute magnetic survey of a small district in Baden, adjacent to the Rhine, where there is considerable local magnetic disturbance, has been received from the author. Observations of horizontal force were made at nearly 400 stations, and observations of declination and inclination were made at about 140 of them. The object seems to have been to observe at a large number of stations with moderate accuracy in a short time. In fact, most of the data recorded in the tables on pp. 6-26 seem to have been obtained in the two months August and September of 1898. Horizontal force was observed only to the nearest 0.001 C.G.S., and declination and inclination usually only to the nearest 0.1. Within the narrow region dealt with—some 150 square kilometres—declination was observed to vary between 3°.7 W. and 20°.8 W., inclination between 56°.6 and 72°.0, and horizontal force between 0.173 and 0.227 C.G.S. In a district so disturbed, it would have been of doubtful advantage to have employed superior instruments, giving a higher order of accuracy than that actually aimed at. The results are embodied in four charts, which give respectively the lines of equal horizontal force, the isoclinals, the isogonals, and particulars of the horizontal and vertical components of the disturbing force system. The chief conclusions appear on p. 39. The most interesting of them is that the basaltic rocks—using *basaltic* in a general sense—which form the chief hills in the district, behave mostly like vertical magnets with their north poles uppermost. Their magnetisation is thus *opposite* to what it would be if induced under the action of the earth's own field. The phenomena thus differ in a remarkable way from those observed by Rücker and Thorpe in the United Kingdom. A second somewhat interesting deduction from the observations is that there is an extension of underground basaltic masses beneath part of the level country adjacent to the Rhine near Breisach, where local disturbances would not have been anticipated from the superficial appearance of the country. The author also gives the results obtained from taking a line integral of the horizontal magnetic force round the whole district and round four subdivisions. With the exception of one of the smaller subdivisions, the departure of the line integrals from zero is very small. This may be regarded as evidence of the accuracy of the observations, if we assume that the magnetic forces are derivable from a potential, which can hardly fail to be the case so far as concerns the field answering to the local disturbances. C. C.

THE ORIGIN OF THE THOROUGHBRED HORSE.²

THE author said that he had shown (*Academy*, January, 1891, p. 91) that not only, as had been long observed, did the Homeric Greeks drive the horse before they rode him, but that the same was true of all ancient peoples—Egyptians, Canaanites, Assyrians, Aryans of Rig-Veda, Umbrians, Celts—and that the explanation of this was given by Herodotus (v. 9), who, in speaking of the Sigynnæ, the only tribe north of the Danube, whose name he knew, said that they had small horses, with large flat noses and very long hair, which, though not able to carry a man, were excellent under chariots: "wherefore they used chariots." Dio Cassius likewise says that the Britons used chariots in war, because their horses were "small though active." The description of the horses of the Sigynnæ tallies exactly with the abundant remains of the primitive horse of Europe, eaten in great quantities and delineated on antlers by the men of the Stone Age. He was a small animal about 10 hands high with a big head. Even after domestication he remained very small, as witness bits of bronze and horn found in Swiss lake dwellings, the shoes found at Silchester, and in camps on the Roman Wall, &c. Authorities are agreed that from this primitive horse has been developed the cart horses of the continent and these islands, whilst our blood horses have come from an eastern stock of slight build and smart appearance. Our problem is to ascertain the original habitat of this superior horse. He has not come from upper Asia, as the Mongolian pony is taken as the type of the coarse, thickest horse from which sprang the cart horse. The Mongolian pony probably

¹ "Erdmagnetische Untersuchungen im Kaiserstuhl." Von Dr. G. Meyer. Mit 4 Karten. (Separatdruck aus den Berichten der Naturforschenden Gesellschaft zu Freiburg i. B. Bd. xii., 1902.)

² Abstract of paper read before the Cambridge Philosophical Society on November 24, by Prof. Ridgeway.