rather than Walker's two to three per cent.

In Dreyer and Hanson's book, the formula for predicting weight from stem-length (in males) was:

$$W \text{ (in kg.)} = 0.38052 \times \sqrt[0.319]{\text{Stem-length (in cm.)}}$$

The work of previous students Dreyer dismissed with little further evidence than the curt statement that most of the existing tables dealing with the size of the normal human body were based on the theory of definite relations between age, height, and weight; while he believed that he had satisfactorily proved that such relationships do not exist when individuals varying widely in size are examined, and on the other hand, that definite relationships do exist between the weight of the body, the length of the trunk, and the circumference of the chest. Evidence for the validity of this statement he offered merely in the equally curt *ex cathedra* dictum that the data from which he and Hanson had calculated their tables were "derived from the analysis of a number of observations sufficient to insure a degree of accuracy that should prove entirely satisfactory." While it was not claimed that the constants employed for the various indices given in these tables were to be regarded as fixed and final, the claim was made that "any changes they may have to undergo in the future, as a result of the further accumulation of data, will be small and not likely to impair their present validity from the practical point of view." No test was published of the error of the new formula, much less comparison of this error with that resulting from the use of the methods previously proposed by others. Furthermore, the number of measurements which he actually reported, against which we can make such tests, comprised only sixteen subjects, *i.e.*, a very small group. His data were obtained from men and boys who were "carefully selected on account of their physical fitness," though he did attempt to cover a widely different range in weight and height. These tests we have made and will report in a separate paper.

Owing to this important omission, one feels inclined, despite careful examination of his earlier work on a surface formula, first in relation to blood volume and then later in relation to vital capacity and to weight, and despite his originality and the superlative percentages, to agree for the present with the principles at

the root of the comment made on his 1911 paper by Boycott 1911, which follows: "It will, however, be observed that the wild animals used were even less representative than the tame animals dealt with in their earlier memoir (1910) . . . the largest animal in no case being twice as heavy as the smallest. While, therefore, their formula represents their experimental data in an extremely satisfactory manner, a good deal better, for example, than the method used above (by Boycott), I am still of the opinion that it is liable to be misleading when applied to individuals differing widely in weight from those investigated by them, and that their data are not sufficiently comprehensive to establish the general proposition that the blood volume of mammals is a function of the surface."

Similar reservations were made by Kisskalt, 1912, 1914 and 1915; and may be inferred from examination of textbooks on pharmacology published after 1914, *i.e.*, subsequent to the articles by Moore and Dreyer. For instance, dosage according to surface, is not even mentioned in the manuals by Arny 1917, Wilcox, 1917, Cushny 1918, Bastedo 1920. The only textbook found, referring to surface as an index, is that by Sollmann, 1917, which states that "other things being equal, the effect of a given dose is inversely proportional to the weight of an individual (exclusive of the adipose tissue). It is rarely necessary to make allowance for the weight in adults (twenty to sixty years), but it may be used for calculating the doses for children. Body surface is regarded by some as a more accurate, although less convenient, index of the dose (Moore, 1909; Dreyer and Walker, 1914); but the subject is in dispute (Kisskalt, 1915)."

The practical application of stem-length, in connection with the circumference of the chest, to the judgment of the normality of a person's weight, will be treated shortly in this journal.

We are indebted for aid in tracing references, to Miss M. E. Campbell of the Boston Medical Library.

IMPRESSIONS CONCERNING THE ETIOLOGY OF RICKETS AMONG THE ITALIANS.

BY BESSIE TALBOT STRONGMAN, M.D., BOSTON,
AND

HENRY INGERSOLL BOWDITCH, M.D., BOSTON.

[From the Boston Floating Hospital.]

It was reported that rickets has become more prevalent recently among the Italian children of

Boston than heretofore. Statistics are wanting to substantiate this, and the statement would seem doubtful because of the recent tendency towards healthier children due to the Infant Welfare work. However, no one will dispute that there is a deplorable amount of rickets among the Italians, who, in their own country, are normally free from this disease. The handicaps of the rachitic are too well known to need comment. Prevention of the pelvic deformity in women would be of economic value to our nation. The problem seemed well worthy of investigation. The results of the short season's work would seem to indicate numerous contributing factors rather than any one definite cause. We are but submitting what we have found as impressions, with apologies for the incompleteness and lack of figures. The information has been gleaned from homes by personal observation and with the aid of interpreters.

If large families, crowded and dirty living quarters, lack of sunshine, or diet of low energy quotient, were either collectively or individually responsible for rickets, other races would presumably be equally afflicted. But the Hebrews and Poles are, for example, in spite of these very things, markedly free from rickets. There must be some racial way of life, in the case of the city-dwelling American-Italian, to account for the incidence. In our rural and suburban communities we find but little rachitic deformity among the Italians, as compared with that of the urban population. These people outside of the cities, doubtless get more green vegetables and potatoes and possibly more milk, and surely they cannot duplicate the living conditions of the tenements.

Generally speaking, we have found certain tendencies and habits fairly widespread among the Italians, although they vary somewhat according to the part of Italy from which the people came, and also with their social and economic status. Early marriages give a maximum child-bearing period. Little attention is given to prenatal care. The puerperium is notoriously of the ambulatory type. Nursing is unduly prolonged—first, as the only means of birth control available to the people of an Orthodox faith; and secondly, because of the economy and convenience and the desire to give the baby whatsoever it wants. There is but little discipline. The people truly love their children. With the prolongation of lactation,

pregnancy frequently occurs: this cannot fail to have its effect upon all three concerned. Unless the weaning is supervised by some social organization, it is usually abruptly to the adult diet, which is too highly seasoned and altogether unsuitable for children, besides the deficiencies which are to be discussed below.

Spaghetti, macaroni, and other similar products, and white bread are the main foods found on the tables; these are all of a highly milled wheat, lacking in vitamins. Today, all the macaroni on the market is of domestic manufacture as contrasted with pre-war times, when the greater part was imported (121,000,000 pounds from Italy in 1914). Macaroni (the term is used to include spaghetti, vermicelli, etc.) is being more widely used today than ever, because of the high cost of meat and potatoes. This American macaroni is from a flour which is entirely deprived of the vitamins. Analyses of macaroni would seem to show that formerly it more nearly approached whole wheat and the Grocers' Encyclopedia states that imported macaroni is approximately equivalent to middlings and therefore would contain bran. Assumedly, American macaroni and white bread are not suitable unless supplemented with an adequate mixed diet. Moreover, we have found that the macaroni is frequently undercooked—the Dietetic Bureau and other workers corroborate this statement. Habitually the macaroni products are served with oil; this delays the splitting up of the starch until after the pancreatic and biliary secretions have removed the fat film. The starch, which forms the main item of diet, is therefore, we find, too highly milled, undercooked, and unwisely savored.

The fats employed are olive oil or the American cotton seed product substitute—the latter in an increasing amount. These are entirely deficient in the fat soluble vitamins. The animal fats are used only incidentally in the meats, which are sparingly used, and are in such small quantities as to be negligible. Milk is unpopular among the Italians—we found less than one cup per child in many households—cheese is used sparingly, and butter is not found. However, the milk stations report an increasing demand for milk in the North End district. A deficiency of fat soluble vitamins must be serious. The efficiency of cod liver oil has been demonstrated by the recent work of Howland, as reported at the last meeting of the American Pediatric Society (abstracted in *J. A. M. A.*,

July 17, 1920) and also in the recent relief work in the near East. We are greatly indebted to Dr. Percy R. Howe, who showed some interesting experimental animals at the Forsythe Dental Infirmary, which he has fed on a diet free of fat soluble vitamins. His work has been conducted primarily for the changes in the teeth. Incidentally, he has demonstrated bone decalcification with this diet and recalcification when the animal fat is supplied. We recall that the teeth of many of these rachitic children are very imperfect. He was unable to procure viable young from females who were on a deficient diet during pregnancy, but did produce rachitic offspring from some who had been on this diet up to the time of pregnancy.

As we have seen the diet in the homes we find a deficiency in vegetables and protein. Dietitians who work among the Italians are agreed to this. Meat, eggs, fish, and fresh vegetables are too expensive to be used. The minimum estimated cost of maintenance diet in August, 1920, for a family of two adults and three children was \$12.50 to \$15.00 per week (Dietetic Bureau, Boston, Mass.). The entire weekly budget of necessary expenses was \$28 to \$38 for this family. Many of these people have families which are out of proportion to the incomes. Where economy in food is practised, there is not only a tendency to low calories, but a great reduction of protein, iron, vitamins, etc.

The Italian mothers are very busy with their large families; frequently they do piece work in their homes. They cannot prepare individual dishes for the children. A single kettle of food, usually macaroni with some sort of vehicle, serves for the day's fare. They put into the kettle what they have in the house, not following any given receipt, and without regard to food values. The children are not trained to eat what is before them at regular intervals, but come and go as they please, eating what they want. We think that the younger children in large families are apt to be more rachitic than the older, increased maternal fatigue and crowding of the home, perhaps, being factors.

The housing is unfortunate. The rents seem quite out of proportion to the benefits—fully as much per square foot as in many of the better localities where janitor service is supplied, where there is at least one complete bath for each family, and where repairs are kept up. That the windows are kept closed by these peo-

ple from the first frost on throughout the cold weather is, however, not the fault of the landlords. Most of the children of the pre-school age are confined to the homes during the winter. A veterinary knows that puppies will not thrive if no sunshine reaches them, and we all know that sunlight is an essential for plant growth. The houses are very crowded. This is due, in part, to the boarders—the surplus of Italian men in this country without families. The Police Department of a nearby city enforces a rule that not more than four persons shall be permitted to occupy any one room.

It seems hardly fair to ask the Italian housewife to give up her Italian cookery for the de-tested oat meal, etc. It is hard to urge these thrifty people, who are saving diligently for a farm or a little shop, to spend more on food, but the following will show that these fairly representative meals are poorly balanced, and show certain deficiencies. These are taken from receipts gotten out by the Dietetic Bureau—actually more macaroni would be used with the same quantity of other ingredients. The calories show that these would serve only a small family.

POUNDS.

	PROTEIN	FAT	CARBO- HYDRATE	ASH	CALORIES
1 lb. macaroni	.134	.009	.741	.013	1,665
1 lb. tomatoes	.012	.002	.040	.006	105
1 oz. oil		.063			242
2 oz. onions	.002	.0004	.012	.0008	28
2 oz. cheese	.034	.031	.0016	.0006	114
TOTALS	.182	.1054	.7946	.0104	2,154

POUNDS.

	PROTEIN	FAT	CARBO- HYDRATE	ASH	CALORIES
1 lb. dry bran	.225	.018	.596	.035	1,605
2 lbs. potatoes	.044	.002	.418	.026	970
1 oz. oil		.063			242
6 oz. onions	.006	.0012	.036	.0024	84
1 lb. macaroni	.134	.009	.741	.013	1,665
TOTALS	.409	.0932	1.791	.0704	4,366

POUNDS.

	PROTEIN	FAT	CARBO- HYDRATE	ASH	CALORIES
1 lb. rice	.080	.003	.790	.004	1,630
4 lbs. cabbage	.096	.018	.336	.06	870
½ lb. soup meat	.107	.040		.0045	370
TOTALS	.283	.061	1.126	.0685	2,870

NOTE.—If made with macaroni in place of rice, the values are practically the same.

We should learn to advise diets for the children which are known to Italian cooks and palatable to them. This would not be difficult for trained workers. The domestic science courses in the schools will be of inestimable value in

the next generation. Over the whole, one cannot but feel a subtle process of Americanization—possibly the feminist movement. We think that the Italians will adapt themselves to conditions as they exist here, that families will be limited by income and that eventually we will no longer see the rolling, rachitic gait; but we should do our utmost to tide them over until they have so adapted themselves.

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Book Review.

The Shibboleths of Tuberculosis. By MARCUS PATERSON, M.D. New York: E. P. Dutton & Co.

To anyone interested in the tuberculosis problem, this book is fascinating in the extreme. The title itself fills one with curiosity which is stimulated to a still higher pitch on reading over the titles of the fifty-nine short chapters. The following are typical examples: "That Sanatoria are no good," "That the Superintendent of a Sanatorium has a 'cushy' job," "That pine trees are necessary in the treatment of Tuberculosis," "That exertion causes Haemoptysis," "That a sea voyage is good treatment for Tuberculosis," "That good housing will eradicate Tuberculosis," etc., etc.

Throughout the entire book the very vivid personality of Dr. Paterson himself is strikingly in evidence, as is likewise his firm belief in the value of the opsonic index as taught by Sir Almroth Wright and in autoinoculation as carried on by Dr. Paterson himself.

There are several statements made by Dr. Paterson which will not bear analysis but which are none the less interesting reading. For instance, he devotes two or three chapters to prove that climate has no special value in the treatment of tuberculosis, and to support this argument quotes figures showing that the death rate for tuberculosis is higher in Colorado and California than it is in many more crowded parts of this country and of England. Dr. Paterson knows, and if he does not know, he certainly should know, that the cause for this increased death rate in the two above-mentioned states is to be found in the great influx of ad-

vanced and dying consumptives who are sent there in the vain hope of a cure. It is quite foolish of him, or indeed of anyone else, to maintain that climate has no value in the treatment of tuberculosis. Because, for instance, the incidence and death rate of tuberculosis in Egypt is high, doubtless due to the faulty hygiene and methods of living of the natives, does not prove in the slightest that the dry climate of Egypt is not good for certain cases of consumption.

He devotes a chapter to proving that haemoptysis is never caused by exertion. To those of us who during the past winter have been able, in our own minds at least, to explain satisfactorily numerous pulmonary hemorrhages by unwise exertion on the part of patients, such as the shoveling of snow or coal, his argument that exertion is no factor in the causing of such hemorrhages is not impressive. If he stated that in active ulcerating tuberculosis where the process is steadily advancing, and in so doing erodes a blood vessel, exertion or exercise is a factor of no moment, we would all agree with him, but he does not state this, although he doubtless believes it.

He is evidently a firm believer in blood inoculations into guinea pigs as a diagnostic measure. This has practically been given up in this country. As above stated, his infinite faith in the treatment of tuberculosis by autoinoculation is very evident, and he holds up to some ridicule a certain very prominent American physician, an authority on tuberculosis, who is an equally strong advocate of rest, and opposes autoinoculation in any form and graduated exercises as carried on by Paterson. The truth probably lies midway between the two extremes. He draws the distinction, which is a most important one, for those of us who live in New England to remember, that pure air does not necessarily mean cold air.

The book is full of epigrams and aphorisms. The following are good examples: "Changing a man's work is not treatment"; "It is not the diet that matters so much as the inducing the patient to partake of it"; "Fatness does not increase the specific resistance in tuberculosis"; "It is not the buildings of a sanatorium that matter, but the man in charge of them"; "Many homes for tuberculosis exist, but few sanatoria."

It is easy to go through this book and find many points with which to disagree. It would be difficult, however, to find a book which on the whole would be more refreshing and more stimulating than this one.