

BULLETIN No. 24

The Great Fallacy

—OF—

WHITE BREAD

—BY—

DOCTOR AURÉLE NADEAU

WITH A PREFACE

PROFESSOR ARTHUR ROUSSEAU



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We sacrifice to appearance, and deprive the poor laborer of a more nutritive bread, which he could buy cheaper, by following the practice of the roller method of grinding and the excessive bolting of flour.

Professor Arm. GAUTIER.

(“L'alimentation”).

—:0:—

France wants to return to her integral bread. She is dying of the almost half century fraud that condemned her by surprise to white bread. She wants no more of it : Death to white bread !

Prof. Maurice LETULLE.

(Preface of “Pain naturel” of Monteuvis).

—:0:—

I sincerely pity those individuals who during their whole lifetime persist blindly in eating white bread, for they fall little by little, without noticing it, into a physical and intellectual debility that will forcibly and fatally be reflected on their progeny.

Prof. TARNIER.

(Preface of the book “Le pain” of Galippe et Barré).

—:0:—

Poor France, it is during the critical period of the high cost of living, when the highest ambition is to work for the welfare of the people, that in the name of an obsolete theory, laboratory savants and millers sacrifice to the vogue of white bread the health and vigor of thy children at the same time as, every year, 400 millions of thy national riches ; it is at such a period that in the name of progress they deprive you of the food that made the energy and the qualities of your race.

Dr. MONTEUVIS.

(“Pain naturel”).

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1) *Aurele*
2) *Ministère de l'Agriculture et des Colonies*

Dr AURELE NADEAU

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The Great Fallacy
of WHITE BREAD

Optima medicina cibus opportune datus
Alimentary hygiene is the supreme law of health.

(BENTIUS)

Beaulieu P. 98



Translated by : J.-B. TURBIDE

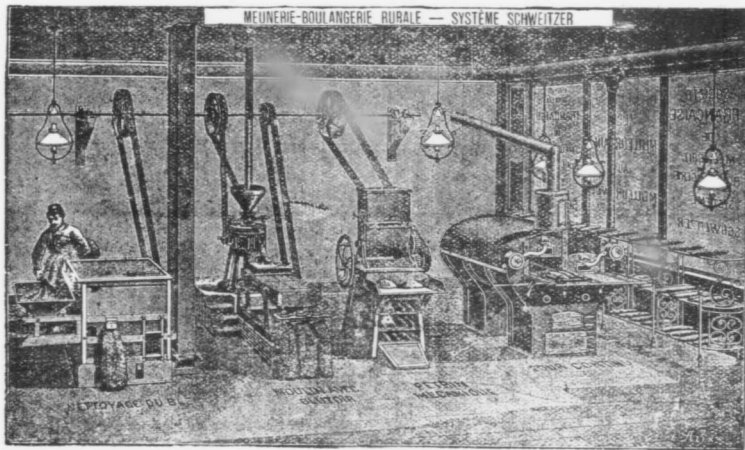
Department of Agriculture, Bulletin No. 24

1916.

Complete Equipment of Flat Grinding Mill-Bakeries

HYGIENE—CLEANLINESS—HEALTH—ECONOMY—SIMPLICITY

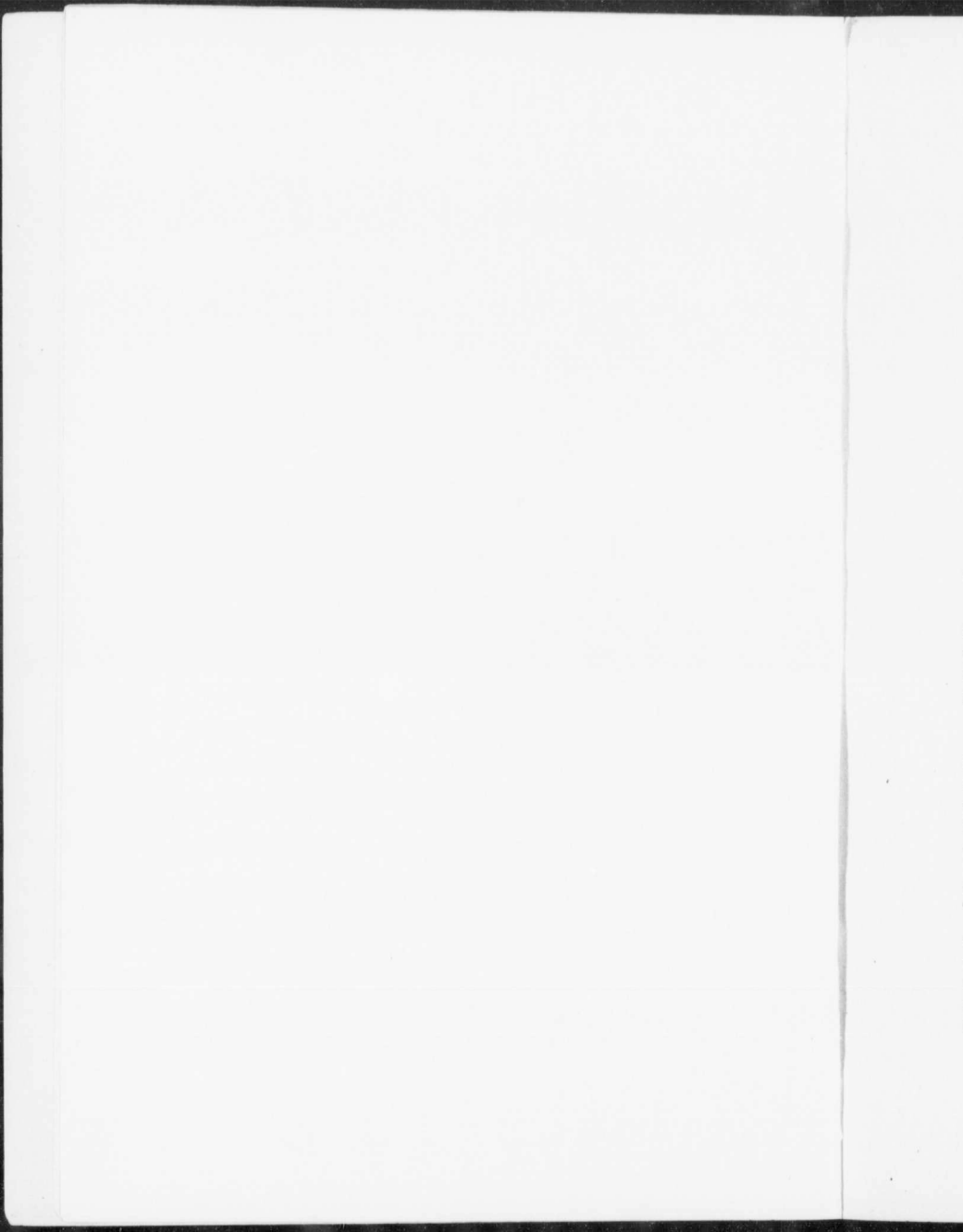
The Rural Flat Grinding Mill-Bakery produces the best bread at the lowest price with wheat grown on the spot.



The equipment comprises from left to right: cleaning apparatus for wheat, an agricultural mill and its sieve-bolter, a kneading machine, a portable oven.

Cleaner, mill and kneader may be operated by a five horse gasoline motor.

Equipment of a Rural Flat Grinding Mill Bakery, SCHWEITZER system, for the production of 1100 lbs of bread per day.



PREFACE

This pamphlet, which is worth a whole book, opportunely raises the capital question : What bread should we eat ?

The bread problem concerns the well-being of man to such an extent that it is difficult to understand how it has not been solved long ago. In truth, our carelessness and apathy have made us take it for granted as being solved, when we had not as yet put down its terms ; and we have in fact, if not in principle, forsaken good for bad bread.

Good bread was known and appreciated in the most ancient times. It is only since a half century that the knowledge of it has been obscured in the mirage of industrial progress. Modern industry — wholly applied to increasing rather than improving production — has substituted for the olden time millstones in the preparation of flour, roller machines, which through excessive grinding and bolting, change or eliminate certain of the most precious elements of grain. The product thus obtained, while deplorably impoverished, all at once recommended itself to public favor, by its fineness and whiteness.

There was from then on a flour in vogue which was the only one deemed to be good : the white flour ; there was a nice bread : the white bread, which was put in opposition to brown bread, soon given over to the grosser appetites by the arbiters of fashion. And it was thus for the sake of appearing elegant and genteel, more than the preference of the consumers, which caused the triumph of white bread in nearly every household.

The childish notion that the beauty of bread was in its whiteness became in some sort universally accepted. As if to the shapeless mass bread is under, the colors white, light or dark could, of themselves, give any gleam of beauty!

No, beautiful bread can only be good bread. The beauty of bread is in its look of well risen dough, cooked to a turn; it is in its sweet smell; it is in those indefinable qualities to which are attached the memory of the savoury delights and the beneficent comforts it has already given us.

The beauty of bread is but the reflection of its intrinsic qualities. It is beautiful, if it is appetizing. In a time and in a world where we voluntarily sacrifice the substance to the form, it can never be repeated too often that its whiteness will not even give it the superiority in appearance.

But it is the taste, and not the look which should guide us in the choice of our food. How is it that in the irrational infatuation of the public, fascinated by the color of white bread, the delicious flavor of whole wheat bread did not protect it from the abandonment into which it fell so soon. Nothing explains this paradoxical fact if it be not that man is a capricious being, whose preferences like whose acts often disconcert reason.

The insipid taste of white bread cannot compare with the full and delicate flavor, rich in all the elements of wheat, that whole wheat bread presents. They recognize it in our days, those who have once tasted this incomparable food, and do not cease to look for it afterwards in the more and more rare places where it may be found. But, as extraordinary as this is, the greater number of our contemporaries do not even know the taste of whole wheat bread; and, to reinstate it in the place of honor it justly occupied as a food of former times, we shall, revealing its properties unknown to several generations, again cause that marvellous sapidity to be appreciated which is but the sensible sign of the richness and variety of its constituent elements.

By its complex composition, whole wheat bread is the most appropriate food for the divers needs of our organism.

White bread, divested of a part of the prosphorated fat, mineral salts and gluten of the wheat, deprived moreover of its ferments and of its diastases is of no more value than a starchy dough. If it has preserved the form of bread, it has lost the substance.

It matters little that scientific calculations — which although establishing the degradation of wheat in white flour — attribute to white bread, for a given weight, a higher number of calories than to whole wheat bread. Food value is not so much derived from the concentration of nutritive elements of any

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kind as from their quality, their diversity and their just proportions between each other.

Man does not live only from the production of heat and muscular movements. He has manifold functions each of which, from the most modest up to the intellectual operations, claim some special principles, and for which whole wheat bread with which his flesh is impregnated has fully provided for during thousands of years.

Experience as well as chemical analysis show that it would be illusory to demand this prodigious development of energy from white bread.

Since it is the staple food, the decrease in the strength, endurance, and ardor for work of our people has been noticed everywhere, among whom prevail, with unheard of frequency, diseases which betray the evil of our dietary regimen.

Dyspepsia, rachitis, growth troubles, diseases of nutrition, consumptive affections, spread with white bread among the laboring classes, whom simple and healthy customs defended however against such ravages. Neurasthenia itself, which was the portion of overworked city people, now darkens the atmosphere of our countrysides.

Through being in a position, by the practice of medicine, of appreciating the disastrous consequences of the fallacy of white bread, the author of this work decided to combat it without mercy; strong in the support of an enlightened Minister, concerned about the interests of public health and who deploras in addition, from an economic point of view, the disappearance of our old mills whose yield of good flour exceeded by twenty five per cent the degraded product of modern flourmills.

He offers the public a work intermixed with an abundant sheaf of rigorous scientific information. Everybody will read with profit these short pages strongly documented, in turn filled with a spirit of raillery, indignation or emotion, according as they have to celebrate the wonders of nature or flagellate shameless fraud and stupid prejudice.

Many, I hope, on reading this, will become active adepts in the sacred cause of good bread. Our national resources and energies are really menaced. Against the formidable forces of the fraud which is ruining us, an unequal battle is being waged. Let us add our effort to that of those good servants of their country who will not rest until they have given to the Canadian home a daily bread which will be what it formerly was: its comfort and its joy. . .

ARTHUR ROUSSEAU.



INTRODUCTION

I am preparing something on the error of white bread, I recently said to an educated friend of mine . . .

—What ? . . . The error of white bread, what can you say against it ? . . . Is it not everybody's bread ?

As this apostrophe clearly shows the mentality of almost the whole people of this country, I thought fit to engrave it on the frontispiece of this work.

This subject, of weighty importance, for the vitality of the individual and of the race, is a question totally ignored by us. Good bread versus nice bread, that is the problem not one of us has tried to solve.

When any one is told that good bread, real bread does not necessarily mean nice bread, in so far as nice and white are synonymous, he is dumbfounded. If we add that it is precisely the niceness of the white bread which constitutes its poverty and causes our misfortune ; that this whiteness is obtained by sacrificing all the most nutritious and precious wheat constituents, our interlocutor is strongly contraried and appears to be frustrated of many fine illusions. Then and there the innovator is classed as a man "with ideas of his own".

White bread has to-day permeated our customs to the exclusion of all other. Propagated here with the increase of ease and wealth, it symbolizes, according to our ideas, progress and comfort, whilst brown bread recalls the periods of misery and hardship of the early days of this country.

The most wide-awake and discerning, among old people especially, have a rather vague idea that white bread is not very nourishing, that it is not the faultless food, that it contains "ingredients", etc. This last fault is certainly not the least as we shall endeavor to demonstrate.

This pamphlet although placed at the disposal of intelligent people of all classes, is especially intended for educated people, for the leading classes who mould public opinion and head all good movements.

However when it seemed necessary to strew "the path of digressions" with somewhat doctrinal dissertations, we have put them aside for insertion in the appendix at the end of this book.

In this way the text will be clearer and we shall have encouraged those who are horrified by the sole shadow of a technical word.

To the fortunate mortals (1) who can and wish to have an exact idea of the nature of things, we recommend to turn to this appendix each time a note in the text refers to it.

For many people who live 'fast', we would have wished this work shorter, but when the article which is the basis of our diet and should represent the half of the food of man is at stake, when it is known that for almost a half century, prejudice and the unfair manoeuvres of industry have striven to denature it, everyone will willingly agree that the question merits all our attention.

It is not our intention to solicit the indulgence of our readers for the numerous repetitions disseminated in this pamphlet. Napoleon, who used so many exact words, said that "repetition was the most important of all the figures of rhetoric". It is not consequently out of place in a work the main purpose of which is to educate.

I am grateful to the Honourable Minister of Agriculture of the Province of Quebec to have given me the opportunity to work for the diffusion of the ideas of that French medical science that has never been in the pay of schemers, the tool of business combinations, but has always inspired itself from the purest sources of philanthropy and never deviated from the principles of the most legendary probity.

THE AUTHOR.

(1) "Felix qui potuit rerum cognoscere causas."

SUMMARY OF THE QUESTION

The bread we preconize in this study is that called by French hygienists "pain naturel" or whole-wheat bread. It is the bread made of millstone flour bolted to about 85 p. c. or flour retaining 85 p. c. of the weight of the unground wheat. Or still, it is the bread made with whole-wheat flour, that is flour containing the entire kernel of wheat less the coarser bran.

It is absolutely the bread of the good French milling of our ancestors who brought to the mill two bushels, 120 pounds of wheat and returned home with 100 pounds of flour, with which they made a savoury and nutritious bread. Unhappily, the poorer classes of this country could not then afford the luxury of making bread with wheat flour alone, and the great mass of the people ate a dark bread made with a mixture of wheat and barley, buckwheat, rye or other flour, the whole badly bolted and constituting a coarse bread : this was the dark bread, which the partisans of white bread set up as a bugbear every time a return to whole-wheat bread is spoken of. This dark bread which gave gastrorrhea to our ancestors is not the one we wish to rehabilitate here. Let us rest assured !

With the development of Western Canada and the impoverishment of our soil, whose yield of wheat decreased more and more, we imported white flour which made a fine appearing but very impoverished bread and it is to show all its defects that following in the footsteps of French physicians, we have undertaken this study.

In Europe, for a long time past, physicians and economists have risen against roller milling and white bread. There, they were prompt to realize the miseries they caused and fight the prejudices which favored them.

This question of a return to whole-wheat bread is creating a stir everywhere, but nowhere more than in France. Wherever it has become necessary to promote humanitarian and benevolent ideas, it is in that noble country that we find the pioneers of the movement. There also one places at the service of one's convictions "all the warmth of enthusiasm and the depth of faith". (J.-L. Faure).

Whole-wheat bread, for the last quarter of a century especially, was, in France, the subject of important publications, academical reports and parliamentary commissions.

Among the physicians-apostles, promoters of the bread, we must cite Doctors Lenglet and Monteuis, and the illustrious and honored Professor Letulle, of Paris.

Doctor Lenglet, the great instigator of so many great movements, is the president of the association called "Ligue de l'aliment pur" and of the famous "Syndicat des Médecins de la Seine", an association which has waged a successful war against the adulteration of food products of every kind.

Doctor Monteuis has perhaps been the most zealous and active apostle, and adding the example to the precept, wishing to control all researches, he became a miller-baker at his famous Nice Sanatorium. His works were a source of inspiration to us in preparing this book in which will also be found a summary of the conclusions of Professor Letulle.

Canadian doctors who studied in Paris on or about 1905, have kept a precious recollection of the amiable and distinguished clinician. They know with what vigor he condemned white bread in his lectures at the Boucicault Hospital. We had the pleasure of meeting him again in 1913, when he had just sustained a famous polemic on whole-wheat bread, and he spoke of the subject with more vim and vehemence than ever.

Twenty years ago, at the instigation of Professor

Tarnier, "Le Petit Journal" (1), of Paris, started a propaganda in favor of whole-wheat bread which was quite a revelation and disclosed all the defective qualities of white bread as a food to the remotest corners of France and her colonies.

This campaign was revived in London, in 1913, in a brilliant manner by the "Standard Bread League". This time it created such a furore that brown bread appeared on the tables of the King and the nobility.

These two great upheavels of opinion had a common fate : an enormous commotion but no permanent results. In both cases they were stifled by the great conspiracy of interested evil-doers : roller millers and bakers (2).

In fact, as soon as public opinion was moved and that real bread was loudly asked for, the exploiting syndicates were up in arms not to face the tempest but to avert it. Showy posters were put up by the bakers on all sides, telling the public they would be served as desired. A kind of bran bread made with inferior, spoilt and adulterated flour, an aerated bread, indigestible to the highest degree, was baked by them. The most intrepid enthusiasts could not stand very long this KK bread, as it is called to-day, due to industrial roguery.

The press, well paid, ended the reaction and put to flight hygienists and philanthropists.

This disloyal manoeuvre was used wherever and whenever physicians condemned white bread. Even here, in this country, fellow-physicians who prescribed whole-wheat bread to their patients without controlling all the details have seen them return most annoyed. The bakers had given them bran bread instead.

(1) This name of *Petit Journal* does not render justice to this great organ of French thought, whose daily circulation exceeds one million copies.

(2) We shall see later on where the shoe pinches those people.

It is most important to lay bare this trickery and warn the public against this fraud which has so well served the interest of intriguers. Big millers are already at work to cause confusion by greatly advertising a kind of Graham flour, which is nothing but a residue of roller milling containing all the coarser bran and almost no starch.

Happily for humanity, the apostles of normal diet, in France especially, bear a charmed life. The question revived with energy shortly before the war has re-echoed within the walls of Bourbon Palace where legislation tending to counteract the pernicious influence of roller millers was under preparation.

Progress will be facilitated in future, for the Schweitzer (1) steel flat grinding mill which appears more practical, and has just caused almost a revolution in the domain of proper milling, is becoming better known and more appreciated.

Finally the great war has brought home to us many forgotten realities, and the waste of a good article representing for several countries, the finest of their national assets, not half of which is utilized in the making of white bread, and the remainder, the most precious, is lost for the subsistence, the well-being and the vigor of the consumer, is becoming better understood than ever.

And since, in Russia, in Germany, and even in Austria, the home of roller milling, the people are returning quickly and steadily to a more logical and judicious bolting.

(3) See appendix, chap. I.

II

IMPORTANCE OF THE SUBJECT AND CONSEQUENCES OF THE HERESY OF WHITE BREAD

When we hear members of the Academy of Medecine of Paris, men with a world wide reputation, preaching that the substitution of roller ground white bread for the whole-wheat bread of former times, was one of the great causes of the decadence of civilized races, we will understand that the subject deserves consideration.

It is true that this problem is redoutable and complex. At a period that has known so many vices, follies, manias and obliquities, which has seen alcoholism flourish, the monster of overeating, the ferocious meat regimen, the abuse of every stimulant, overworking of every kind, it is difficult to establish among the multiple forms that our abnormal existence covers, which is the one that leads the most to the lowering of vitality and the ruin of vigor and character.

Without wishing to absolutely prejudge reports of cause and effect between our actual miseries and that factor of inferiority which white bread represents, if we consider the dates, we cannot fail to be struck by the singular coincidence that exists between the beginning of our decadence and the appearance of Hungarian milling, between the manifest accentuation of our decadency of every kind, and the more and more complete abandonment of whole-wheat bread.

What is incontestable, is that wheat is without a rival as a complete food, containing nutritive matter not to be elsewhere found so marvellously combined and proportioned, and that the noblest of cereals merits to serve as the basis of our diet, as it can satisfy the half of the

alimentary needs of the King of creation.

What is not less certain, is that by eliminating from 20 to 30 p. c. of the most precious substances from our flour for to keep only the white there is in it, we have foolishly sacrificed the reality for appearance, we have, with inconceivable levity of mind, lessened and depreciated the alimentary patrimony of humanity. And in supposing that the rich may replace the nutritive principles so well adapted to all our needs, which are to so great a point of perfection for easy assimilation in wheat, it remains no less acknowledged that whole-wheat bread is the only source whence the poor may draw all these riches, and have them within their reach, on their table, three times a day.

We have a proof — among others — of the poorness of the white flour of commerce in the fact that well-advised and experienced breeders of cattle — before we learned to make use of them with profit for so many preparations in vogue — paid twice as much for the refuse or waste of roller milling as for the refuse of flat or millstone grinding. So that cattle fed for fattening are more favored than we. This is so true that Gérard, a laboratory savant in the service of the roller system of grinding, has declared "that we would recover in meat what we lost in bread".

These learned men, when they want to, never utter half-nonsense.

However this may be, physicians, practitioners and hygiests agree in recognizing that the vigor of the Western races has notably and singularly declined through the degradation of the wheat which serves as our famine bread, that a great number of diseases of growth are traceable to this dephosphated flour, that it is responsible for precocious caducity, for the lowering of the average of life which has fallen to 39 in America, and for all those diseases of nutrition that are filling the statistics in such an alarming manner. In a recent article which made a sensation and was commented upon everywhere — The great waste of life among those past 40 — Dr Corvin, of New-York,

has brought to light the ravages caused in America after 40 years of age by diseases of nutrition which he attributes above all to over-eating and the poverty of our diet in mineral salts.

Physicians note every day that it is the poorness of bread which leads to the abuse of meats, that the laborer whose bread is poor in gluten will look for compensation in the other albuminoids which he will make abuse of, as he will be inclined to look for in artificial and murderous stimulants the sweet content, the sensation of well being, the "satisfaction of feeling something in his inside" (1) that he formerly found in his tonic, comforting and regenerating bread.

Degraded bread by driving to over-eating through hunger-fits (2) and sensations of void following its ingestion, produces all the digestive troubles for which excess eating is the starting point.

Tuberculosis, rachitis, neurasthenia conditions, etc., all those diseases which are held by the leading string of "deminceralization" which forms their basis, have increased frightfully — in spite of the progress of hygiene — since we have substituted for the bread rich in vitalized mineral salts "the dead wheat bread" (3) which is almost totally devoid of them.

So far back as fifty years ago, the famous chemist Liebig gave the alarm to his contemporaries: "If ever, said he, white bread be tolerated as the basis of food, we will become a neuropathic and alcoholic people."

(1) This saying is an old Canadian one.

(2) Days of fasting and Lent were never so much complained of as under the regimen of white bread. If we give ourselves the trouble of making a trial of whole wheat bread every Friday it will open our eyes. Another experience: If we make use of meat for the half of our ordinary ration and finish our meal with real bread we will soon be converted.

(3) A French peasant saying.

And how explain the growing impotency of present day young mothers in supplying the needs of infants? After making a great expenditure of phosphates for the edification of the human skeleton, they must then, more particularly, secrete milk which is a highly phosphated food. All and so much of that when we live on demineralized bread, hardly touch vegetables and fruit, for to turn round to eating foods so poorly provided from a mineral standpoint. Thence follow deficiencies, defects and the so frequent failure of maternal nursing.

Thence also the scourge of infantile mortality that we will not succeed in stopping by half measures, but only, as Prof. René Fortier and others (1) have proclaimed, when we venture to commence at the beginning which is maternal nursing. And the latter will only be a success when we know how to insist as we should on the wholesome diet of the young mother.

Thence likewise relapses in recovery. Notwithstanding all the care of cleanliness prescribed by modern hygiene, morbidity remains excessive among our women. We must also attribute a great number of the diseases of woman, during the active period of her life, to diet so little conformable to the needs of convalescence. Our grandmothers, who ate whole-wheat bread and gloried in their fine big gardens, did not speak of their impotency in the face of the most imperious duties and did not need to stuff themselves with drugstore remedies to be restored (2).

Constipation is another scourge that owes its existence to white bread. So as not to be accused of giving too much importance to subjects that I have already

(1) Dr. R. Fortier, interview with the *Soleil*, 3rd, Aug. 1916. Dr. Emile Nadeau, *Bulletin Médical de Québec*, April, 1916.

(2) The Province of Quebec is the only country in the world where tuberculosis makes more victims of women than men. (Official Report of the Royal Commission of Tuberculosis).

treated (1), I will content myself with citing a few words of a Belgian medical celebrity : "Without any doubt", says Dr Paul Nyssens, "the exclusive use of the starch of grain under the form of white bread is the cause of the nine tenths of the cases of that so widespread and pernicious affection known as constipation."

So as not to appear to make of white bread the scapegoat of all the sins of Israel, we must make an end of these details which would not fail, besides, to exceed the scope of this treatise.

Let us not omit to mention, however, — since it interests us most particularly — that if we found in bread starch utilizable because it would not be deprived of its soluble ferments by milling, the entire gluten of real wheat bread, the mineral salts, the phosphorated fats, we could afford the luxury of diminishing our excesses of meats and pancakes (2) to the great benefit of our digestive tube and of our economic interests.

Finally—subject which others may treat with more authority—to give us an idea of the economic waste in addition to the ruination of stomachs, it is estimated that in France (3), without the milling of white flour, a yearly economy of fifty eight million dollars would be made, if flour, instead of representing 58 to 62 p. c. of the wheat, equalled a figure varying from 78 to 85, as was so highly recommended by specialists and experts of the renown of Gautier, Letulle, Lenglet, Bonnard-Lurçat, Daudé-Bancil and all those powerful co-operative associations that have undertaken ardent campaigns for regeneration by the way of pure and natural food.

(1) See my book "Constipation", *Eclaircur*, Beauceville.

(2) Let us say to the glory of the remainder of humanity that it is only in Brittany and in the French Canadian centres of America that an exclusive meal is made of this food which is a gastronomic monstrosity.

With millstone flour, bolted to 85 p. c., "beautiful pancakes" are not made, thank God !

(3) Where the "farm bread" is still in vogue in country places.

For to be convinced of this, by stopping to look at only one of the sides of the subject, we have but to recall that in the ordinary ration of whole-wheat bread — bolted to about 85 p. c. — there is enough of gluten and soluble albuminoids to represent the half of what albumen is necessary for an adult of average height, whose working ration is 1 gramme (15 grains) of albumen per kilogramme (2 lbs) of the weight of the body.

And gluten is a less heavy albumen, more assimilable, more economic and not at all like the albumen of meats, associated to the purreic compounds and the organic poisons which are such serious factors of that intestinal putrefaction that leads to so many disasters.



III

STRUCTURE OF A GRAIN OF WHEAT

Before taking up the cardinal point of grinding, it is well to know somewhat in detail what a grain of wheat is.

When split in two along the furrow and we examine the parts, by means of a lens, we find from the outside to the inside :

I.—An outer fibrous thick envelope representing 15 p. c. in weight and which, when ground, constitutes coarse bran.

II.—An inner membrane, more meaty, also called episperm, between the three layers of which are the fatty substances, mineral matter and ferments. With the Hungarian method of milling this tissue of riches goes into the shorts (white shorts).

III.—The endosperm which represents 80 p. c. of the wheat. It is composed of starch and of gluten. The central part is especially rich in starch, while the peripheric layer is richer in gluten and so full of mineral matter and ferments that it has been called "the vital layer". From the latter roller milling makes its brown flour, which is kept out of white bread or mixed with the episperm to constitute red shorts.

IV.—In the lower part of the grain, if we follow the cut hereabove mentioned, is found the germ which represents 1.5 p. c., a rich and highly vitalized part. We will see how lightly and cavalierly this latter centre of nutrition is treated by the Hungarian process.

Subsequent explanations will show us more exactly the destination of the different parts of wheat in the struggle with the ultra complicated and murderous manoeuvres of roller milling.

IV

CHEMICAL COMPOSITION OF WHEAT (1)

It is absolutely important to know the value of the constitutive elements of wheat if we wish to appreciate what flat or millstone grinding preserves for us and what the other makes us lose.

The following is an average from an analysis made in France (2) with samples of wheat from both hemispheres. On 100 parts we find :

Floury or starchy matter	60
Albuminoids	16
Fat	2
Mineral matter	2
Cellulose	2
Water	18

100

The above figures may vary according to the variety of wheat, nature of the soil (3) and climate. Thus for a same country, Canada, Mr Schmitt, of Ottawa, shows the contents in gluten to vary from 8 p. c. to 16 p. c. Likewise, wheat from the plain of Alfoeld, Hungary, the richest in the world in gluten, shows a fluctuation in albuminoids between 14 and 20 p. c.

A glance at the preceding will suffice to edify us on the wonders of wheat, that preeminently complete food,

(1) See appendix, chap. II.

(2) Dr. E. Monin, *Hygiène de l'estomac*.

(3) More or less rich in humus and superphosphates.

master-piece of creation in the vegetable domain. It contains all the alimentary groups : starch, albumen, fat, mineral salts. And such in proportions admirably adapted to our needs and duplicated in no other food. In addition to these riches, this variety, these incomparable combinations, the great Pharmacist of Nature—to extend the boundaries of His liberality—has deigned to add two other complements or prerogatives, namely : wheat bears its own digestive element (soluble ferments) and its eliminative substance (cellulose).

Was there ever such a wonder !

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And the more man has become enlightened, the more he has progressed in sciences that should enable him to appreciate this gift beyond compare, the more he has striven to denature, debase and adulterate it.

Let us examine minutely our treasures of the wheat jewel case by saying a word on each of its constituents.

Floury or starchy matters are dynamogenous foods, that is generators and suppliers of vital energy and force. They are, with sugar and fat, the fuel of the human machine like coal in the locomotive. A part of the heat generated maintains the temperature of the body which permits all the phenomena of life ; the other is transformed into mechanical energy which permits the working of our muscles. Animal heat and work are such important functions that the floury matters are, of all foods, those we need the most, in spite of the fact that they only enter for 1 p. c. into the constitution of our tissues. Sixty per cent of the wheat being floury matter this food has thus an adequate value for us.

Albuminoids.—Sixteen per cent of wheat represents albumen, which is to be found in the human body in the proportion of 18 p. c. They are reconstitutive and reparative foods, destined to restore our tissues according as they

are worn out in the necessary exercise of the body functions.

Gluten and the other soluble albuminoids of wheat (1) are analogous to the casein of milk, the albumen of the white of egg, the fibrin of meat and the legumin of dry legumes (beans, peas, haricots). As we have already said a word about it, wheat can supply half of the albumin we require. It is the most economic source and the most within our reach, and the impoverishment in gluten of the flours of commerce is one of the chief objections made to roller grinding and its too perfected bolting machines.

The fat contained in the wheat kernel is "aleurone", a constituent similar to that which makes up the richness of cacao (from which chocolate is made) and of a like nature to the phosphorized substance (2) which gives to the yolk of a raw egg its incomparable value. Fat represents about 15 p. c. of the human body. In wheat it is only 2 p. c. Other foods contain a larger percentage of fat but, as a general rule, vegetal fat is more assimilable than animal fat (3). Thus wheat poor in fat, can supply the body with relatively more fuel than other foods much richer in this constituent.

Fat is a most excellent fuel when absorbed by our tissues. In equal quantity, it generates twice as much heat as any other food constituent. This is why the Laplanders, Esquimaux and other Northern people drink cod and seal oil as we drink water.

Mineral matter constitutes 6 p. c. of the human body. The blood, bones, brain, teeth, spinal marrow and all our tissues in general contain phosphates and other mineral matter. These must be renewed as they are decomposed

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- (1) It is the "living vegetal flesh" mentioned by authors.
 - (2) Lecithins associated with nucleins.
 - (3) Fat is all the more assimilable when it has the lowest point of fusion below the temperature of the human body.

by vital oxidations. Consequently mineral salts are restorers and builders. The vegetable kingdom almost exclusively supplies the body with these precious substances. There only they are found with that character of vitalization which permits their assimilation in our system. We are completely out of the way when we search for them in pharmaceutical preparations which are only weak substitutes.

People who subsist mostly on flesh, as we do, are most subject to decaying teeth, bone diseases and accidents of growth. This diet acidifies the blood and consequently demineralizes or rather prevents the settling of mineral salts in our tissues. Legumes, by alkalizing the fluids would lessen the evil and also supply the so much needed mineral matter. And in a country like ours, bare of vegetation for six months of the year, rich bread remains the article most easily obtainable for satisfying these needs.

We must not forget that our modern over-exertions singularly facilitate the loss of mineral matter, followed by nervous disorders as soon as our mineral source of supply fails. It is then a just war that hygiene is waging against the white flour of commerce almost devoid of phosphates.

The excessive lack of phosphates in white bread which increases in direct proportion to the luxurious whiteness of fancy loaves, would be sufficient cause to condemn white bread for all time and to banish it from the tables of all those who care for the equilibrium of their nervous system and the perfect formation of their children.

Mineral salts also play a large part in our economy, a part too often forgotten by us. They promote and facilitate osmosis to the highest degree, that is the nutritive exchanges between the different tissues of our organism. And as the digestive act is the highest and most perfect expression of osmotic phenomena, we may conclude therefrom all the importance of mineralized foods. And attention should be especially drawn to this in a country like

ours in which dyspepsia has long been the "craze" of so many.

Soluble ferments (1).—The preceding analysis makes no mention of them, for they are not valued by weight. But wheat has the privilege of bearing its own ferments, which dissolve the gluten and transform the starch into dextrine and glucose to permit their absorption. They are diastases analogous to animal diastases (pepsin, ptyalin, trypsin, etc.) which in the saliva and the other digestive glands effect the fermentation that presides over digestion.

Science has already isolated over ten varieties of such ferments.

Millstone grinding retains them in flour while roller milling eliminates them, and for cause, as we will see further on. It follows that, deprived of the vegetable ferments by the grinding, and of the salival ferments by those who do not masticate (2), white bread is without all the advantages that could assure its digestion and assimilation. From this, the slight benefit that the most of people derive from such food may be valued, the need of accompanying it with so many other articles of diet is explained, and we can understand why so much other cooking is required for each and every meal when bread represents so little from a viewpoint of utilized constituents.

Housekeepers of former times had more respite and what a number of evening meals—outside of the heavy working periods—were made with butter, milk, garden-truck and really profitable and substantial bread.

Roller milling eliminates the ferments, for like gluten, the fat substances and cellulose, they alter the immaculate whiteness of the flour preferred through ignorance and prejudice and which suits the miller so well as we will see.

(1) "Fermentation means everything: ferments contain, definitively, the secret of life." — Claude BERNARD.

(2) The tastelessness and insipidity of white bread incites but little to mastication.

Cellulose.—Finally, to render altogether incomparable the aliment of wheat which participates in all the alimentary groups and bears its own digestive matter, good Mother Nature has granted it another privilege. After gorging the stomach, it has not forgotten the intestine and in cellulose has supplied it with the normal exonerator of the grand sewer. If cellulose has no nutritive value, it has, nevertheless, an alimentary value, as it is stimulating, exciting and a factor of evacuation.

Millstone grinding and bolting to about 85 p. c. retains in flour all the cellulose of the inner envelope and a small part of the outer tegument of the wheat.

To local stimulation and to deconstipation cellulose adds the mechanical property of dividing the body of the bread, rendering it less compact and more permeable to the digestive juices which assure its fermentation and digestion.



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VARIETIES OF BREAD

We shall take up more minutely, in another chapter, the two great processes of flour milling. However, to make what follows plainer, it is important to now say a few words on the subject.

First, we have the old French milling or millstone process. It is very simple and preserves the wheat kernel in its whole integrity and vitality without disassociating its constituents. The product of this process is a "powder of all the flour less coarse bran".

The other is the Hungarian process of roller milling, very complicated, denaturalizing the wheat and facilitating excessive bolting and adulterations. It gives us the white flour of commerce, a flour containing starch only and impoverished of nearly all other nutritious substances.

Whether the product of this process be made into Graham bread from unbolted flour, brown bread from very slightly bolted flour, or white bread from too highly bolted flour, we are always on the wrong track, because this product is obtained from a wrong method of milling, the complicated and murderous roller process, which deprives the wheat of its character of vitalization.

White bread may also be made with millstone flour highly bolted, but this is a great mistake, for in such case if the grinding be recommendable, the bolting, which sacrifices to appearance, by robbing the wheat of its alibile principles, is to be condemned.

Bran bread.—This bread found on the tables of most of our hotels is made from the residue of the wheat after the miller has taken out the starch to make white flour. Be-

ing given the utmost importance of starch in the heating of the human body, it follows that a bread almost destitute of that constituent cannot be properly designated under such name, especially when it is a roller milling product. However it is an article of diet not without some value and often prescribed by city physicians to constipated individuals on account of its constituents rich in cellulose, and to those troubled with nervous diseases for the high quantity of phosphates contained in the cellulose. It is an agreeable remedy far better than pills for constipated individuals, and much preferable to bromide, veronal, asafoetida for those affected with nervous diseases.

Bran bread should never be confused with the bread described below (1).

Unbolted wheat bread. — This is not quite our bread. It is a bread much decried by some and highly vaunted by others.

“It is not worthy
Of this honour of this indignity.”

It is bread made of the bran and the whole flour : it is “the whole grain to the kneading box” of Mr Favrichon, a French druggist who popularized it in France, first for those troubled with constipation and later as every day bread.

It is not the coarse and indigestible bread described by its defamers : it is not either without causing sourness to acid stomachs, and generally to all decadent stomachs disused to cellulose. It is an excellent food for the Savoyard and the Greek who eat abundantly of cucumbers and melons as we eat apples and devour both skin and pulp. It also delights and invigorates the Arabs of Egypt accustomed to chew with their fine teeth, the stalk of sugar cane of which they ingurgitate both the fibre and juice.

(1) There is Graham Flour on the market which contains much starch. It is made of the starch of rice or inferior cereals mixed with residue of the rolling mill process.

It does not necessarily follow from this that it would be bad to become accustomed to it and make of unbolted wheat bread our every day bread. Its richness in mineral salts alone stamps it as an ideal food for our over-worked present day people. In fact, whilst 1,000 parts of wheat give 17 parts in mineral salts, 8 of which are phosphoric acid, 1,000 parts of flour bolted to 85 p. c. only give 5.5 parts of salts, 2.50 of which are phosphoric acid. That great quantity of phosphates (1) has remained in the bran.

Nervous people possessed of a good stomach should particularly note this ! !

Gastric tolerance in respect to unbolted wheat bread has recently been increased by re-grinding the bran two or three times and mixing it afterwards with the flour.

The day when millers will replace so-called Graham flour by unbolted wheat flour in the making of the bread commonly called "bran bread", they will have made an advantageous substitution especially if the wheat is ground with millstones and the bran more finely tritured by a second grinding (2).

One can become gradually and prudently accustomed to the unbolted wheat bread by commencing to eat home-made sweet biscuits made with unbolted-flour, or also porridges, to come to the unbolted wheat bread from time to time and then more often. It is with a view of creating tolerance that, in France, a start is made by grinding the wheat at home with Turkish coffee-mills and the Schweitzer instrument called "crusher".

The same rule will apply to those wishing to eat whole-wheat bread, after having eaten white bread during their whole life. By being careful of too sudden changes the intestine is not offended and has sufficient time to become

(1) A. Gauthier, *Alimentation*, p. 289.

(2) At St. Joseph, an intelligent baker makes, under the guise of bran bread, unbolted wheat bread. Those to whom it will cause pituite must not conclude therefrom anything against our bread. Tolerant stomachs will enjoy it.

accustomed to a food which might irritate or contracture it. A sedentary man cannot be expected to take up all of a sudden, long and arduous tasks, and similarly, our intestine more or less in a state of paresis through inaction must only be submitted to progressive labor.

Kneipp bread.—This bread is made of all the meal and bran of the cereals wheat and rye, in the proportion of two parts of wheat and one part of rye. Rye possesses the very remarkable property of keeping bread fresh longer, and gives it a slightly sweet flavor not entirely unpleasant.

The genial curé of Woerishofen, who was a famous physician without the title, — as Pasteur and Priessnitz — recommended millstones for the grinding of his flour.

The use of this bread was very common in the presbyteries of this Province 25 years ago, in connection with the Kneipp water cure. It is greatly superior to white bread.

How many have persevered ?

Whole-wheat bread.—This is our bread, the remedy against the plague of white bread. It is made with all the flour less the coarser bran of the exterior envelope of the wheat kernel. It is called, in France, "ration bread" by the military, and "farm bread" by civilians. Here we call it "home wheat bread" or according to Mr Georges Bouchard: "good habitant bread". Made with millstone flour bolted to about 85 p. c. (100 lbs of flour for 2 bustels of wheat). It is also called in France 85 p. c. bread, as bran generally represents 15 p. c. of the wheat in weight.

We shall not dwell now on its merits. This subject will be taken up in another chapter with the defects of white bread.

White bread.—It is made with millstone flour too highly bolted, as happens in this country, — it is too bad to spoil a thing so well begun — or with the roller product. Hungarian milling first makes lifeless flour and the elimination of most of the principles of wheat, except starch, makes

a very poor bread. This elimination is proportionate to the whiteness of the flour.

To the Hungarian process which, with its rollers, its cylinders, its spouts, slaughters, disaggregates and degrades the living food to make dead flour, is to be preferred the good old millstone process, much simpler, which leaves the wheat almost in its natural state and preserves both its structural energy and its physical constitution (1).

Roller milling by its infinite variety of passages, transmutations and disaggregations produces a trituration of the wheat giving "clear flour", a flour of fine appearance but a poor and lifeless substance which is made into the white bread the customer prefers or rather has been taught to prefer. Let us see what this modish article is worth as a food value.

What is left of all the nutritive wealth of wheat described in a preceding chapter after it has passed through the rollers and flour-bolters ?

We have a spotless white flour containing :

I.—Much starch, but a "disorganized" starch, a lifeless white power, which being deprived of its ferments is only partly digested (2).

II.—The half, sometimes the third and often less of the gluten so fittingly called "living vegetal flesh".

III.—Almost no mineral salts.

IV.—Still less fat.

V.—Almost no digestive ferments.

VI.—No cellulose.

Without mentioning all the other defects enumerated at the end of the chapter on "Milling", nor the adulterants

(1) The millstone only "shells" the wheat, as we say.

(2) See further the experience of Maistrion.

added to increase its whiteness and prevent the fermentation of the little that remains of fermentable matter in the nature of traces with the starch.

White bread is what is wanted, and the whiter the better to please prejudice, and flour that keeps, to facilitate warehouse accumulation, high prices, speculation. That is to say that everything that permits of coloring and everything susceptible of fermentation must by all means "per fas et nefas", be removed: gluten, aleurones (1), ferments, cellulose, in fact the best of everything.

To be exact let us say that what remains makes a bread which exactly merits the name given to it in France: "the starch cake".

We have seen, at the beginning of this work, that the illustrious German chemist Liebig had, over a half century ago, raised a cry of alarm justified by events.

Before him, Parmentier (2), with his genial intuition, had also foretold this unfortunate diet crisis. He had even foreseen the theory of vital energy.

At the beginning of the vogue of white bread the physiologist Magendie had made his celebrated experience which exposed the poverty of the new bread. He ventured on feeding dogs with water and white bread derived from flour bolted to 62. They all died between the fortieth to the fiftieth day. Other dogs fed with farm bread (the whole flour less the bran) lived indefinitely with the appearance of healthy animals. His experience has been repeated several times since.

Dr Maistrion, operating on a human being, has had invariable and conclusive results. After a trial meal of white bread he found a stomachic residue of 58 p. c. of the

(1) The fatty bodies of aleurones are in the state of saffron colored tiny drops. — *Shocking!*

(2) Parmentier, discoverer of the potato, the saviour of all peoples who eat no other vegetables. Only for him the Irish and French Canadians would be two extinct races through scurvy.

crumb not disintegrated bathed in a liquid without peptones but abundant in lactic acid (1).

In a similar meal made of normal bread, the residue was only 5 p. c. without trace of lactic acid and with an abundant quantity of peptones.

This double experience deserves a halt to be made at it. The result is explained especially by the absence of the ferments or diastases of the wheat. Science, we have seen, has isolated several varieties of them that Aimé Girard, the laboratory savant and high priest of the Hungarian system of milling in France, seems to wish to confound under the generic term of "cerealín". The better to overthrow it with a single blow like Nero — if it be permissible to compare small malefactors with the great — he wishes it had but one head. Now, this cerealín, he long ago accused of liquifying the gluten and of favoring its rancidness. And Maistrion has proved that it is precisely this auspicious liquefaction in peptones that assures the digestion of the gluten (2) and it happens that if God had not created what Gérard calls cerealín "it would have to be invented", that is incorporated artificially in bread, now that science better informed understands its value and has seized its providential opportuneness.

But a similar operation is better performed, by a master hand, Providence, and it dispenses those who have the habit of real bread from the annoyances of amylaceous dyspepsia, which is treated with doses of pharmacists' maltines, when it would be so easy to keep in our bread "the maltines of God" so well "formulated" in that treasure of the Creator, wheat.

The chemists Muntz, Balland, Gauthier, members of the Institute, have multiplied analyses in latter times and all conclude as to the impoverished character of white bread.

(1) Acid of false fermentations.

(2) The gluten and other albuminoids, to be digested, must be transformed in the digestive tube into peptones, just as the starch must be converted into dextrine then into glucose. See appendix, chap. VIII.

It would be fastidious to reproduce here those analyses that the experience of practising physicians, hygienists and all observers moreover confirm. The clinic has never better supported the theory.

We must however cite a last experience. In France, in big rural works, the workmen have the choice between white bread and farm bread, and those who choose the latter are remarkably more qualified for rough work, bear up better under the daily labor, work more at ease, have more endurance, and as Dr Monteuuis who relates the trait adds, they are singularly less inclined to repair to an inn for refreshment : they have the food that comforts, the bread of the strong.

It is not necessary besides to set forth so many proofs to sustain truths that the defenders of the roller system do not deny.

The matter is as clear as day. They want white flour that keeps, and starch fills all their desiderata when it is isolated. Now starch represents 60 p. c. of the wheat, and their average white bread is 62 p. c. : there is thus not much to take from all the rest. And when the title of fancy bread oscillates around 50 p. c. they do not even take all that is beautiful ! ? . . .

After that it is difficult to argue. Many subterfuges are made use of like the chemist in the pay of the Hungarian system of milling, to whom the experience of Magendie (1) was recalled and who replied with fine cynicism : "This has long ago been true, but the profits of the millers' do not increase any the less !"

They know so well that we content ourselves with the beautiful which is worth nothing for to give the good to the cattle, that Aimé Gérard (2) did not fear to utter the

(1) That is the proof of the diet which caused dogs to die !

(2) His name often crops up. He is the chief of the laboratory savants in the service of the family compact of white mill-bakery.

stupidity cited in the first chapter : "We will recover in meat what we lose in wheat."

What a superb little bit of consolation !

It is as if we said we were living in the time of Nebuchadnezzar over again, because in imitation of the deceased Chaldean monarch, we eat grass in the meadow... by... proxy !

Happy moment that when the Iroquois of our civilization will learn that in picking the skin and bones of pork, that it is their whole-wheat bread they are eating.

O ineffableness of laboratory discoveries !

The upholders of the millers who venture to argue will express opinions such as the following :

"The gluten and oily corpuscle (aleurones) of wheat give rise to rancidnesses that are real putrid fermentations." As if we had never kept rich flour knowing how to take the necessary precautions ! As if we could not grind and bake immediately, like the mill-bakeries !

Or again : "The phosphoric acid of wheat acidifies the blood." This however is easy to correct, if it be true, by eating something else that will alkalinize such blood. Because milk constipates we do not deprive ourselves of this superb food, but we correct the constipating effect by laxative foods.

It has even been pretended that human economy has not so great a need of phosphates as the hygienists contend. To this we will not deign to reply, and if the reader think it improbable that so untenable a thing can be found from the pen of a savant, even at bay, I will ask him to refer to the opinion of Roulie, quoted by Godlewski, "Alimentation salubre et économique", page 82.

The trial meal of Dr Maistrion shows how little profit we derive from the white bread made of roller ground flour.

The starch cake is nothing better than a vehicle for to cause the passage of something else, a vaseline that is

of worth only in so much as an active medicine is incorporated in it. When the poor laborer gives one hundred dollars to the merchant for this article, what sum has he really the benefit of ?

For to bite at this hollow meat, to arrive at this wretched result we make the best of our land contribute, utilize its richest fertilizers, employ the sunniest days for sowing and reaping, mobilize immense capital to edify the milling industry. All this for the benefit of a triple economic, gastronomic and alimentary heresy : a drain on our purse, an outrage to our palate and a lure for our stomachs.

It was not worth while to shake heaven and earth for to obtain starch by the aid of such an expensive cereal as wheat, when by dint of exhausting and degrading it, we reduce it to being only an insipid and anodyne substance that we could find in the inferior cereals, rice, potatoes and artichokes.

It was not worth while turning our backs to all the treasures of that horn of plenty for to limit ourselves to a single nutritive principle. And again if it were not debased !

To pay such a tribute to luxury when our health and our life is concerned ! To please the eye to make us ravenously hungry ! To pay ourselves with appearances when we are poor and that the stomach cries famine ! And when a food of the first necessity is in question to keep all that is nice to the eye for to put aside all that is good !

To subordinate everything to whiteness ! This negative superiority, this property capable at the most of attracting the sparrows that come to pick up the remains from our tables, it is to it that we have sacrificed the prosperous growth of our children, the vigor of our mothers of families, the endurance of the laborer, the equilibrium of our nervous centres.

Such was the monumental stupidity committed in the name of progress, by the most educated portion of humani-

ty, during the course of one of the most enlightened periods of the history of the world. It would suffice to confound our pride as civilized peoples if so many other subjects did not tend to it. . . . With what brutal insistence are we not reminded of the biblical conception of our feet of clay ! ? . . .

So as not to fall too much into the declamatory style, we will finish abruptly this chapter, already long, by a comparative table of the physical properties of the two breads.



WHITE BREAD

Its color is a catch eye but the stomach has no eye to appreciate Mr O'Gilvie ; it appreciates only what sustains it, and everything that is beautiful is not necessarily good. In the kind, it is the contrary that is the truth.

White bread has no bouquet, no aroma.

White bread is tasteless, insipid, and this is especially true of bakers' bread so inferior, in this respect, to home-made bread. We tolerate it when we know no better as a vehicle and by means of spreading sapid things over it or swallowing it with sweetened tea.

BROWN BREAD

Its color is dark or grey because all the precious things in wheat, except the starch, contain colorings.

Chocolate is highly colored, and no harm is seen in it !

Brown bread has a very catchy perfume, reminding of the country ; and, since the triple experience of Brillat-Savarin, we know how much the odor participates in the sapidity and contributes to perfect gustation. And the latter is one of the agreeable roads that lead to digestibility. "Gustable stimulants" (Gautier) should be appreciated at a time when "digesting" is troubling so many minds.

Whole-wheat bread is savory. The French people say it tastes of fresh filberts. It is rather a "composite" of all the savours of almonds together. If we have not a steel palate we may extract all its flavors by chewing it well, especially if we do not drink when eating.

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WHITE BREAD

It generally raises well, and is easy to bake, thanks to the vitriol which sustains the elasticity of the little gluten that is left in the flour of commerce.

White bread dries quickly, and that is why the baker urges the consumption of fresh bread.

White bread becomes a ball of mastic on entering the mouth. It must have the same tendencies in the course of the gastro-intestinal passage. Its impermeability is a cause of flatulent dyspepsia and is prejudicial to absorption (See test of Maistrion).

BROWN BREAD

Bread made from millstone ground flour judiciously bolted has the same advantages, if we know the art of baking it (See chapter "Bakers", page 44.)

Brown bread notably keeps fresh much longer.

Brown bread, even if it be fresh, may be chewed without becoming sticky. It remains crumbly, which permits it to be attacked particle by particle by the digestive juices.



VI

HOW TO UNDERSTAND THE PROBLEM OF FOOD VALUES

The human organism likened to a calorie generator and the stomach to a vulgar chemical reaction retort are two conceptions equally wrong and incomplete which have served their time. Food compared to fuel in the engine is only one way to look at the subject. There is another.

According as the progress of biological chemistry has enabled us to better fathom this complex problem, we ended by "discovering energy where none was to be seen and life where inertia only was supposed to exist" (Lenglet).

To-day it is realized that food, the vegetal especially, represents a double force, namely :

I.—A material or chemical force which it draws from the soil, represented in the raw material and valued proportionately to the quality and quantity of nutrients it contains ;

II.—A vital force which it draws from the sun (1) the great dispenser of heat, light and electricity that stores or accumulates them in plants. It is this long unsuspected source of energy and force which constitutes live food.

There is between live food and inorganic or dead food or food denaturalized by industry and cooking all the difference discovered lately between vitalized phosphates which

(1) Dr. Carton's "Theory of Solar energy".

have participated in the life of plants and the artificial phosphates of the pharmacists, between the value of natural mineral waters and the artificial product of the chemical laboratory (1).

Plants draw from the sun what Monteuuis calls "first hand energy" and this constitutes for them a factor of superiority from the viewpoint of vital energy.

Animals that subsist on these plants obtain this energy "at second hand" and transform it under the form of enzymes in the milk, vitamins in the egg and zymases in the meat.

Thence, the superiority of raw milk over boiled milk, whose enzymes are destroyed by heat, of the raw egg over the cooked egg, the nucleins and lecithins of which become inert and but little assimilable after the destruction of the vitamins.

Thence also, the success of raw meats, thrice (Richet) more digestible and assimilable than even the underdone meats and the fiasco of peptonized dry meats (Lassablière), the long sojourn of which in the evaporator, under very high temperatures, destroys the oxydases or zymases.

Thence equally, the superiority of simmering over quick fire cooking, and of the slow, mild and prolonged cooking which we preconize later on for the rich bread against the curt and often evil-intentioned manoeuvres of the bakers denounced in another chapter.

This vital energy is intimately allied to the vitamins or metallic albuminates several species of which have already been isolated and which are powerful factors of assimilation. It animates them, sets them to work, and — precious adjuvant — permits material force to give its maximum returns.

(1) The comparison is correct, for here as in the plant, it is the metallic ferments in the colloidal state that endow natural mineral water with its ionic state, which gives it that long unexplained virtue of radio-activity.

These data of a new science (1) are destined sooner or later to greatly reform our alimentary regime. The day when we shall understand that the complex manoeuvres of industry, that all the trouble we take in condensing and concentrating food only degrades it, that all the artifices to flatter the taste, all the dressing and seasoning of the culinary art, only result in depriving food of its best nutrients and its principal factors of assimilation, then shall we take the means to modify seriously the problem of the high cost of living which we have striven to render more and more complex.

It is also due to the fact that most of our foods are deprived of their assimilable and richest constituents that we fall to over-eating. And the enormity of the digestive act resulting therefrom, annihilates a great quantity of energy which would be better utilized otherwise. It is digestive over-exertion to the detriment of the other organs. It is encumbrance added to other causes of defective assimilation.

These new theories are not shallow hypotheses or imaginings. They bring to the full light of day things which up to now were in complete darkness. They make us better understand the sturdiness of people who remain healthy and live long, the result of their faithful adherence to the primitive customs and simple diet of former times.

They explain to me these observations of a German alpinist which I formerly read without particular interest. He was one of those travellers who make a specialty of mountain climbing. In a trip to the Balkans, he had stuffed his travelling bag with corned meat, condensed milk, somatoses, maltine, sauerkraut with which he conscientiously gorged himself. His guide, a Bulgarian, was satisfied for his single daily meal with a handful of nuts, a

(1) See appendix, chap. IV.

crust of dark bread and a cup of "yohourth" (1). And the German, although a professional mountain climber, which means a hardened and trained individual was amazed to discover that he possessed neither the endurance nor the breath and steel legs of this rustic who moreover carried all the heavy loads.

The cause of this is that the man of culture, the learned athlete with calorimetric conceptions, only partially benefited from the dead food of his factories, while the man of nature whose instincts had not been befogged by false theories assimilated the whole of the nutritive substances of his simple and frugal diet.

These examples which could be multiplied will serve to enlighten our way, but we must not, by too long digressions, wander from the wheat-food, the subject of this work.

Biological science also teaches us that a food, to preserve all its live nutritive value, must neither be degraded nor denaturalized, it must preserve its physical structure, so important that vital force and structural energy are often confounded, which proves that force is intimately associated with the structure and texture of plants. It is thus in the nearest possible state to nature that food must be consumed. It is precisely this which constitutes the excellence of uncooked foods, of the wheat ground by the simple millstone process, and the poverty of purees, compotes, and wheat massacred by the ultra complicated roller process, the great industrial waste and destruction of the food we are eager to take up.

(1) The Yohourth, Oriental sour milk, is in great vogue in Paris, since several years. Its dietetic use is prescribed to replace the harmful microbes of the over-infected intestine by the beneficent microbes of lactic ferments. Pure selected ferments like biolactyl, lactol, and lacto-bacillin and here Parke & Davis's "Bacillus Bulgaricus" are used. In winter, when milk badly sours spontaneously, the disciples of Metchnikoff may, with the aid of such products, make Oriental sour milk.

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VII

GRINDING

Since the whole question hinges on grinding, since it is from thence that the beautiful poor bread and the less beautiful and rich bread come, it is of importance to be settled on the good and the bad processes. It will then be easy to draw conclusions.

The technical details about an industry altogether foreign to my profession would no doubt lack authority. This is why I thought it preferable here to hand the pen to the great apostle in France of whole-wheat bread who, to better become acquainted with the question, went so far in the search of truth as to become a miller-baker at his sanatorium in Nice, at a period when it was not improvised so easily as we will see in the last chapter.

"There exist, says Dr Monteuuis, two methods, I will say opposite, of making flour, and it is essential to know both one and the other. It is they, in effect, that make the difference between the two kinds of bread which, nowadays, are contending for public favor.

"The first is the millstone process or French method of milling; it yields the whole-wheat bread or millstone bread, which the eminent professor Letulle and the medical corps declare themselves to be more and more partizans of.

"The second is the roller process or Hungarian system, which produces the white bread.

"The exposition only of these two methods of grinding can explain the extreme importance that the partizans of whole-wheat bread attach at the present time to the reform of diet and justify the energy they employ in their campaign against roller mill grinding.

“The process of flat grinding consists simply in crushing the grain between two stones or metal disks and removing the coarse bran.

“The roller process is not at all a simple crushing of the wheat with separation of the ligneous envelopes that form the shell. It is an interminable series of grinding, crushing, converting, etc.

“There is nothing like precision.

“The first passage splits the grain and takes out the germ, the most nourishing part, namely one and a half p. c. of the total mass (1).

“The second bursts the grain under the pressure of the rollers, and the central part, the heart of the wheat, is removed; this takes place more or less abundantly, at the will of the millers, according to the degree of compression put on and the desire of obtaining a more or less white flour.

“These operations are repeated a certain number of times by commencing each time on what remains of the grain; it is thus that the miller first obtains extra white or finest flour, then second, third. It is only from the last passage that the flour becomes less white.

“So much for the “white” flour.

“It is the fifth and sixth passages that give the “brown” flours.

“The fifth passage is composed especially of fine bran formed by the thinnest envelope of the shell of the wheat and a very rich flour which remains attached to it, it represents 10 to 15 p. c. of the total weight of the wheat.

“The sixth passage is chiefly made by the ligneous part, the envelopes of the shell, a little brown flour, and represents about 15 p. c. of the total weight.

“It is the product of these two latter passages which, united, are called residues and more often issues.

(1) It goes into the red shorts which are put aside.

"I am not speaking of converting, but the crushing operations have not for object the making of much flour, but to produce as little as possible of it and obtain the maximum of shorts so as to make very white flour. These shorts are to be converted on rollers called converters and, besides six passages of crushing, there are generally six passages of converting plus two or three passages of disintegrators. It is not six, but twelve and even fourteen or fifteen operations that contribute in removing from wheat all its natural structure, its organization and its life.

"This description suffices for to make us understand the whole bread question, as it is entirely there.

"With the millstone process the flour remains really crushed wheat, the product preserves its natural state and consequently its maximum of organization and life, it has all its solar energy for it keeps all its essential parts.

"With the roller process it is no longer a sole product preserving its primitive qualities and its energy of a living food, it is the dissemination of the different parts of the grain and a scale of products where the food becomes more and more degraded, loses its nature and its character.

"Those admirable proportions that exist between the four glutes of wheat forming a gluten that has no equal, those that exist between its different elements, those proportions that make for it being wheat, that constitute its organization and its life, when the wheat has passed through the roller process, there remains nothing of it.

"It is the "destruction", let us say the word, the "massacre" of that marvellous cereal wheat, under the pretext of satisfying our exigencies, of feeding ourselves with bread that pleases the eye by its whiteness and the taste by its lightness of well risen cake.

"This, without any exaggeration, is the work of the roller system."

On supposing that we refuse to adopt the theory of vital energy, or again that we will not admit that it is allied to the physical organization of the grain of wheat

that the so complicated roller desintegrates, there would remain the following undeniable objective faults to the roller system of milling :

I.—The removal of the germ, an operation so quickly carried out for the worse during the first phases of grinding, as we have just seen.

II.—The dissociation of the four glutes whose fortunate amalgamation, in the desired proportions, makes of the gluten of wheat an incomparable gluten, of a special elasticity, precious for baking.

III.—The setting aside of the episperm or inner membrane of the grain of wheat which, aside from the germ, is the most vitalized part.

IV.—The suppression of the peripheric grey layer of the endosperm which has the great fault of not being white, but that has been called the living layer, it being so rich in ferments and mineral matter. With the episperm the grey layer goes into shorts which are called white or red : red, when a good part of the periphery of the endosperm adheres to the filamentous debris of the episperm ; white, when it is carried off with the bran.

Finally, let us here recall to mind the impoverishment of white flour shown in the chapter of white bread.



VIII

THE PROPAGATORS OF EVIL

An objection frequently made is that if Hungarian milling was such a great evil, people would have noticed it long before this.

First, let us speak not only for our country, and let us remember that the other side of our nose is far from being the end of the world. In many domains, we are still in infancy. If at all times we have bitten this insipidity without wincing, it was not so in Europe, where protests were heard though stifled by those interested, it is true, but the existence and merits of which could not be denied.

And even in this Province, long before the war which has revived wheat-growing, several physicians among their patients and in their homes, have protested by teaching and example against white bread. I know several, at Quebec and in Beauce county, who have nearly always prescribed bread made with flat ground flour.

Even the public, "the source of all common sense", if *Courier* is to be believed, have often had the intuition of the evil, and among old people especially, converts are found who attribute to the abandonment of the good bread of former times, the ever increasing morbidity that grieves those who wish to open their eyes.

Because a heresy spreads, it is no less an evil. It is error generally that travels the fastest throughout the world.

And a folly by becoming general does not decrease ; only it ends by being no longer noticed. If the French people were told that the country folks of the Province of

Québec, for 25 years past, have not known farm bread, that the farmers are by far those who consume the least dairy products, cereals, fruits and legumes, that they are possessed of intestines that work artificially as in the time of the Mignons of the Regency, they would not believe their ears. And still we are not surprised at our unnatural diet. What strikes us, is to hear it said that we are not perfect and that other nations do not share our peculiarities.

When error is backed by strong financial interests its initial velocity increases in geometrical proportion.

The common explanation of all wars can be applied to the war waged in Europe against whole-wheat bread : it lies in the immense profits which the beneficiaires hide under high-sounding words. In respect to bread, it is speculation supported by the calorie theory of the men of the laboratory.

We shall study the cause of the unholy alliance of millers, bakers and the men of the laboratory in their pay.

The Millers

When a crime has been committed we must first look for the party who benefited most by it. Let us see what Pactolus roller milling was for the milling interests.

First, the old millstone, so simple, as are many great things, was not susceptible of that infinity of improvements and of that amplitude of dimensions of machinery which permit rapid milling, and we live in a "rushing century". The number of millstones could be increased, their size very little, but they always revolved in the same old way. With the rollers, progress, complications and equipment of all kinds have multiplied several times the quantity of flour milled within a given time. This is already something.

But the main point is the easy keeping of flour, an indisputable advantage for speculation and for exportation.

Flat-ground flour, like all the finest things on earth, "has often the worst destiny" and last but the "space of a morning".

First there is nothing like ferments to cause fermentation. A well apparent truth !

And the gluten is a highly perishable nutriment.

Aleurones or oily corpuscles are susceptible of becoming rancid in time, although it is not so positive as they would have us believe.

Consequently, gluten, aleurones and ferments are struck out in one turn of the roller, then half a turn of the flour-bolters and the stuff is bagged.

And it suits admirably as these constituents would colour the flour which prejudice wants white and white at any cost.

Then also, the water contents of flat ground flour is perceptibly greater and it is a well-known fact that water is essential to fermentation.

Flour that keeps, that "knows how to bear itself in the world", that is the handy article suitable for all kinds of manipulation. It is accumulated in stores and large warehouses and alum, talcum, boric acid, salicylic acid, gypsum and other anodyne ingredients are added to it, charged to choke "ab ovo" all perishable substances which may have escaped the flour bolters (1).

Prices rise and nobody minds as at the time of the great flour conspiracy under Louis XV : "it will certainly

(1) These chemical substances having the same color as the flour of commerce, the blending is easy. With rich flour one would risk making a "marbled" powder. Whiteness thus facilitates adulterations.

Does the enormous increase in price of drugs explain — like the paper crisis — the recent raise in price of flour ? Alum has risen in price from 1/2 cent to 49. If it sizes paper well, it must constipate those who eat it in flour.

outlast us !!” The only harm done is that the poor are famished and drained of both their money and the fruit of their labor. But since when is the industrialist known to have a heart? He has always considered it as a perfectly useless piece of furniture.

We must also take for granted that colossal plants of the size of our great flour-mills are not built just to please the eye of the consumer. Let us glance over the different returns.

First, by making white flour, the miller produces a nice article, something modish and stylish which commands high prices thanks to our equally nice mentality.

Then with the issues which he himself utilizes in that part of the mill called the cereal corner or which he sells to other gleaners to make breakfast foods such as Force, Wheat Flakes, Grape-Nuts and the litany of industrial wastes which encumber the market and command respectable prices when special attention is paid to the packing and catchy advertising.

With the gluten, the yellow tint of which spoils the spotless flour, choice alimentary pastes, such as XXX macaronis, are made.

Pharmacists also fight for the “glorious residues” to make Renaux flour, Jacquemaire’s Bledine, and in America foods like Nestle’s, Mellin’s and tutti quanti. Indisputable virtues derived from the richest spoils of wheat, namely: the ovary and the digestive layer (episperm), put aside by the roller, are claimed for these high priced specialties.

In Europe, by means of improved processes, the aleurones or oily corpuscles of the wheat are isolated and sold for their weight in gold to restore the worn out stomachs of aristocrats. They are the same aleurones which the men of the laboratory, accomplices of the millers, have so much depreciated under the pretext that they were nothing but rancid oil even in the first stage when coming from the

millstone. The true cause of their hostility is the saffron colour of the aleurones that so unluckily spoils the immaculate whiteness of the starch cake. But if these aleurones do wonders for feeble children and convalescents, they could equally invigorate the workmen, if they were retained in the flour.

We have already seen that stock-breeders pay high prices for the bran from roller mills and care but little, and with cause, for the bran from flat milling. This is true even after the shorts and other issues have been extracted.

Let us not forget either what profit so-called Graham flour and other "black specialties" may yield, either as bran bread, or to discountenance all movements tending to a return to whole-wheat bread, by disgusting the consumer (1).

Such is the origin and cause of the often scandalous fortune of the magnates of the roller-mills and flour-trusts.

...Alas ! why should there be so many trouble-makers ! ? !

After all that, we are surprised at the bitter war waged by unfair millers against the partizans of the bread of nature, war which will be renewed here, if necessary. It is not always by growing fat that one loses appetite, and the fat calves are not those who protest the least against weaning.

While the roller-millers have so many sources of revenue, the flat-stone miller has but two : rich flour and poor bran, the first passed out of fashion and the other commanding but a low price on the markets. But he can supply honest goods to the consumer, to whom good bread is the sinew of the struggle for life.

(1) We must keep in mind the trick of millers and bakers to annihilate the effects of the campaigns of the *Petit Journal* and *Standard Bread League*, 1st chapter.

If the rich, who adhere to their starch cake, can buy milk, eggs and meats to replace the gluten (1), butter and cream to take the place of fat and "Renau flour" and "Bledine" (residues of the wheat episperms and embryo) to supply themselves with phosphates and ferments, the poor who should find in integral wheat their subsistence and muscular strength, are deprived, without recourse, of their most essential rights. Unable to make up the deficit of degraded bread by other costly foods, they insensibly fall to carnivorousness, sugarism, alcoholism, pauperism,—and all these vile things in ism,—which cause each generation of toilers to signalize themselves by a gradual sinking towards some new decadency (2).

The poor who should have more rights to life because they earn their living by the sweat of their brows, properly understood hygiene comes to their aid by retaining in their bread all that it should have of substantial and nourishing. It shall permit them to find, in a lump, those treasures of life which are reailed to the idle rich sickly from inaction or excesses.

The State should not permit the wheat to be a "business" in the hands of schemers, and should punish all those who lay an unholy and sacrilegious hand on the "staff of life". If the wheel of hygienic progress cannot turn without crushing some one, let the speculator perish but may the great mass of the people be saved !!

The Bakers

Everywhere a movement for a return to normal bread was made, the bakers were accomplices in all the conspiracies engendered by the roller milling system. These two

(1) We have seen that the gluten of the real bread is sufficient, of itself, to supply the half of our needs (working ration) in albuminoids.

(2) The decrease in height of the workers of each generation in the great industrial centres of England, has for a long time struck observers.

corporations always understood one another like thieves at a fair. The one upholds the other, completes and strives to perfect their frauds.

There are two good reasons for this : the baker himself also does some manipulating and believes in the easier baking with white flour.

Every baker dreams of becoming a flour merchant as every carpenter has the malady of becoming the owner of a saw-mill. When the kneading box has given him some capital, he buys "flour" in large quantity, either to profit by the low prices and increase the output of the bakery, or to carry on local trade by selling to those far from villages or who keep on making home made bread. It is evident that he should prefer the article that keeps, the flour that has nothing to lose through being poor. Where there is nothing, fermentation, like the King, loses its rights. A flour that would ferment through being rich, would give him, by such fact, as much annoyance as the vermin in his sheds.

But the main reason that makes of the baker the naturally and confederate of the miller is that he believes baking with roller mill flour easier.

Even if it were true, we should not become resigned in compromising public health to make leisure for the baker's assistants.

All my confreres, those residing in cities especially, who have spoken of whole-wheat bread to their bakers have received the following rebuff :

" That flour does not raise. All those who tried it soon gave it up."

Nevertheless, our grandmothers made with that same flour a light bread that "melted in the mouth". It was because they had the intuition that our present day professional kneaders lack. Without exposing ourselves to being taxed with severity, we may say that the bakery in our midst is not the place where "the cult of incompetency" flourishes the least.

The most of us remember those desk physicians who have a couple of imperishable and immutable formulas for each disease. Whenever an affection is clearly out of the ordinary, the adaptation of the formula is halting and they do not know how to improvise a treatment.

The reason some bakers cannot get whole-wheat bread to raise is because they go about it in a blind manner. They cannot break away from their formula and do not have the intuition of different methods for a different flour.

To reconcile those of goodwill among them, it will suffice to point out three conditions that assure the superb raising of bread :

I.—To employ from one and a half to twice as much yeast or barm, twice if the cake of yeast we usually use is not very fresh. It already costs something it is true (1).

II.—To knead longer, twice as long. Now, for the slavish kneader by hand it is tiresome, and it is precisely the adversaries of the innovation of whole-wheat bread who are the most enraged against the kneading machine. However, the day is not far distant when kneading by hand, condemned by hygiene, will also be by law.

III.—Whole-wheat bread must be cooked longer and slower. But then the dough loses its moisture, the bread no longer has the weight and the foolish consumer who wants "to have his money's worth", protests. The miller has initiated the baker into quite another trick : to place in the oven when the oven is burning hot, to form a crust so as to prevent the evaporation of the water (2). In this way the consumer gets 40 p. c. of water instead of the normal which is 22.

While the baking of flour bolted to 85 is a thing which

(1) In France, in the North especially, barm is made, at every baking. It is more hygienic and the bread is remarkably less sour.

(2) It also makes a more *golden* crust, another means of amusing those fascinated by everything that glitters.

is done with constant success (1) and deserves every care, we voluntarily admit that the baking of white bread is an easier thing still. In fact, there is nothing for making mastic like white flour and water. It is fine white flour that the paperhangers will always employ to make their paste, have no doubt of it ! The "ball of mastic" of white bread that we chew has become classic under the pen of all the authors who have treated the subject. It is this cohesion of starch that enables the dough to retain, to better imprison the carbonic gas of the bread in fermentation and to form those small voids that gives it its porous, spongy aspect, that makes "its eyes" as we say here. Now it is evident that a flour that contains something else besides starch is less compact, divided as it is by the mineral salts, cellulose, etc. This condition so precious for the penetration of the digestive juices most certainly is harmful to the raising of the dough. Thence the anger of the kneader.

"But, you will say, you choose the wheat for bread because its gluten is especially elastic and is better adapted to baking. If white flour is so poor in gluten, how comes it that its dough raises so well ?"

Rest assured, the miller has provided for this ! The "family compact" is not so easily paralyzed.

When the flour is too poor in gluten, bean flour which is very rich in this substance is added to it and is thus sold at a high price. And if such addition lessens the immaculate whiteness so dear to the client, gypsum is added which, moreover, has the advantage of increasing its weight.

To obviate the feeble tenor in gluten or its want of elasticity through the oldness of flour, sulphate of copper is mixed with it (2), the great rejuvenator that sustains

(1) Several Beauce bakers prove it every day.

(2) This is the most constant adulteration. This sulphate of copper is simply blue vitriol, saving your respect. Honni soit qui mal y pense !

the elasticity of the gluten with such perfection that a worthy substitute for it has not yet been found. This precious chemical substance, the eternal salvation of the interloping milling system, offers still another advantage : it confers on flour the property of absorbing more water when being kneaded. Yet another point not of a displeasing nature to the baker !

Finally, the baker must not be reproached with being up to date. He is a gentleman "who knows how to do business", that is that before and above all, he has in mind to "satisfy his patrons", as the cheese-makers say.

Those who have not the bump of mercantilism hardly perceive the breath of idealism that adorns this proposition. To please the tastes and caprices of the consumer by exploiting him, by falsifying his education or by misleading him by the disloyal tactics of "black specialties", is something in nowise very heroic.

But there are bakers and bakers, as there are fagots and fagots. Among the magnates of the bakery corporation are rarely to be found other than knights of industry accomplices of dishonest milling interests. On the other hand brave people are to be met within our countrysides who know many things, have the intuition even of the scientific side of their trade and for to do better willingly work harder.

Physicians will find in them worthy assistants who will contribute to effect a return to "habitant bread", which return we hope will be slow and gradual in the hope that it will thus be more durable (1).

The laboratory Theorists

The Hungarian system of milling and its white bread would never have known their insolent success ; they

(1) Everyone knows the great superiority of home-made bread over bakers' bread, from the point of view of flavor. This is especially true for rich natural flour.

would never have stifled popular good sense and observation ; they would never have made the workman forget the comfort he found in the bread made from millstone ground flour, without this hybrid alliance of the millers and certain laboratory savants which imposed on them by its scientific seal of great allure,

In the countries beyond the Rhine, where the cylinder came to us from, all kinds of trash is passed with the support of the intellectuals : this was shown to us not so long ago !

Among these "agglomerations of inexhaustible servilities", science, like a docile slave, is readily harnessed to the cars of the exploiters of the industry. In all times, the strong interests have there looked for the mantle of science, especially of official science, and the latter knows how to quickly improvise formidable theories soon raised to the height of dogmas.

The Vienna School had a whole arsenal of them for to display Hungarian milling, as the German hygienists find a thousand pretexts of doctrinal allure to dissemble the national scourge of the brewery.

Rubner's theory of calories, sauce in vogue to season alimentary errors, was quite a find for the milling interests. With a slight complement of elasticity it very well served the purposes of the manufacturers of cylinders, the millers, the flour merchants who came to correct the rusticities of French grinding, and spread throughout the world that new toy flour of wheat, white as snow, quintessence of superlatively rich food, the last word in progress as also the highest expression of German rubbish (1).

Unfortunately, at this period, even in France, snobbism was diverting people's minds towards "Made in Germany",

(1) Fine appearance, stylish article, high price for a poor product, enormous yield of issues, no coupons : the whole rubbish is there.

and it was good form to adopt the opinion of, bear the impress, accept as unobjectionable truths all the ukases of the Teutonic scientific mandarin.

Following the Germans, the laboratory savants of the rest of Europe thus decreed that the newcomer was of the proper stamp, and, at equal weight, white bread developed many more calories than even unbolted wheat bread. And as then human economy was only looked upon as a mere caloric oven, white bread received an enthusiastic welcome.

The matter was heard, judged.

Nevertheless, this conception — everyone admits it now — only clears up one side of the question, and sins through exclusivism. For to perceive in the vast food question only the production of heat, without taking into account all the complexities of the vital functions, is, in effect, to singularly narrow our field of vision.

They started from an exact principle, that of Berthelot, according to which "every substance that burns gives constantly the same emission of heat". This is true as regards the calorimeter. But from this to believe that things happen exactly so in the human organism, is giving to the principle an extension, an application and an adaptation which the facts and experience in nowise justify. But the Germans are naturally inclined to run away with these hasty and risky conclusions : the Koch tuberculin bluff was an international example of it !

That whatever burns always produces in the calorimeter the same number of calories is admitted ; but what enters into the stomach emits calories according to a great many conditions that vary with the subjects, and in the same subject. Let us take for example what is now going on in the detention camps in Germany. When the Allies complain of the bad food given to prisoners, the official savants of the enemy reply that the dynamogenic value of their ration equals 2,800 calories per day (normal figure for our needs). But the disgust, the forced deglutition, the nausea inspired by badly prepared food, the laborious digestion that follows, the intestinal superinfection, consequence of

the more or less damaged food, all this may singularly modify the emission of calories, and should tarnish the spectacles of the wise prison guards. No heed is paid to this ; they remain imperturbable and when famine will pinch them in their turn, like that character of Molière, they will know how to die according to principles rather than live in the contempt of calories.

The same thing happens with white bread. Its want of aroma and flavor, the ball of mastic it forms on entering the mouth, the milling which makes an artificial food of it, the absence of soluble ferments, all that should influence the emission of calories, trouble the theorists' figures, and make for that the quantity of hydrates of carbon ingested does not yield the adequate amount of calories. What counts, is not what we eat, but that which we profit by ; it is not the quantity of calories a food is susceptible of, but what it really produces ; not the force that it may contain, but that which it really emits ; not its potential, virtual, latent, hypothetic value, but its actual and real value. This is what is of consequence to the hygienist as well as to the consumer ; that is, that we must know how to distinguish between the nutritive power and the alimentary value. The latter is very poorly appreciated when account is taken only of the calorimetric yield, at the most useful for book classifications. The food must not only heat the human machine to such a degree, but also be what a food should be, that is at the same time a reparative, stimulant and mineralizer.

The bread we are commending is all that to a high degree.

The laboratory men and their disciples have never wished to look at but one side of the question. When physicians and hygienists, more conscious of practical realities, explained to them that this white bread was but a generator of hunger-fits and flatulency, exposing its partaker to look for compensation in artificial stimulants (1), they were answered calories.

(1) See appendix, chap V.

And as we have just seen by the reply to the complaint of the Allies, the chemists have remained the same, have "forgotten nothing and learned nothing".

When in the light of the new ideas of biologic science, the adherents of Rubner are told that Hungarian milling degrades the wheat, makes of it a food deprived of vital force, as artificial as their somatoses ; when they are told that in removing from the flour the germ, episperm and the living layer of the endosperm, they remove at the one time vitamins, rare minerals, vital ferments that solar energy has accumulated therein, and whose influence on assimilation is incontestable, the high priests of calories always and ever reply calories.

And the rest of the world still submit, more or less, to the ascendancy of the dogma, if we are to believe the report of the delegates of the International Committee of Geneva who made an inquiry into the fate of the prisoners in Germany.

And what ! had'nt they their 2,800 calories ?

Then all was for the better in the best of possible worlds (1) !

(1) See further explanations in appendix, chap. III.



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IX

CONCLUSIONS

Since the roller mill operator is "that outcast" the cause of all evils, must we conclude therefrom that the powers that be should prohibit the erection of roller-mills, the number of which is increasing yearly in our Province.

In theory it would be a wise move, in practice, no. If the State must take all means to direct the earnest consumer in the right paths, by neglecting nothing which may educate him, it cannot attribute to itself the right of prohibiting people to eat cake instead of bread, if it amuses them, and to be exploited if it is their fancy. There are sheep that greatly enjoy being shorn. Most people are sheep-like and routineer and cannot be remoulded in one day especially when liberty is at stake. Therefore, freedom to all to eat bread, cake and biscuits.

A great number of individuals do not wish to learn what good bread is, others are not capable of appreciating it. Let us educate those who care for their well-being, and the rest like the good sheep of Panurge will perhaps follow later on when it will have become the fashion.

Gastronomic reforms, like other reforms, are generally slow, both with the people and the individual.

Those of my fellow-physicians that are young and unaccustomed to preach in the dark without losing heart, tell me they have great difficulty in propagating a healthy diet

and especially a return to whole-wheat bread. This should surprise no one. It is always the case with good works and great movements even when advocated by absolutely disinterested parties. Our planet would be unrevog-nizable if it was suddenly peopled by individuals wise enough to take up all good ideas.

Truth bears violence and as a great vulgarizer said : " Every idea, every principle that disturbs the habits and shocks prejudices and interests is the object of general mistrust and new things, although excellent, meet a strong resistance coming from the indolence and cowardice of the greater number and the systematic hostility of others.

But since it is our duty to preach, let us do it. There will always remain something of it. Progress will not be rapid but a move will be made. Let us work in hopes, sooner or later others shall reap the fruits of our work. It matters but little that our ideas triumph to-day or to-morrow. The Province of Quebec is eternal, immortal as the philanthropy that inspires the sower of good doctrines. Let us be comforted at the thought that it is a grand privilege to contribute to the well-being and prosperity of our fellow-citizens. History shall rank among the most deserving servants of this country, those who labor to assure bread, real bread to all its children.

As regards dietary reforms, a strong class of refractories shall always be encountered : those with uncultivated and uncivilized palates. Their senses are as rudimentary as their faculties (1), their gustative sensations evolve in a very limited space and their culinary repertory, always restricted cannot suffer additions to be made to the menu. Two categories are found amongst us : the good people who have no other gods, but meat, pancakes and molasses, and the little bourgeois who think every thing common in this world except beefsteak, roastbeef and dessert. Those who never eat lettuce, turnips, celery,

(1) Tell me what you eat and I will tell you what you are.—BRIL-LAT-SAVARIN.

radishes, fish and even milk (1), who have never been able to get used to them, cannot be expected to find in wheat bread an almond taste. The starch cake watered with sweet tea suffices for their rusticity.

Those who eat nothing that is not salted, peppered and spiced to excess cannot be asked to relish the natural flavor which nature has stored in food. It is perfectly useless to request them to become acquainted with new dishes, however savoury they may be. They refuse to partake of anything which does not resemble the "stew" mother used to make.

This is far from particularly applying to poor people only. The number of perfectible beings of modest origin who, on going into the world have learnt to eat what is eaten by well-brought up individuals, as others have learnt to walk, simply by seeing it done, is no less than the number of people richly brought up who have never taken from civilization but what is harmful.

While awaiting the civilization of palates, the forerunner of the appeasement of many stomachs, let us not fail to say here that we must not sin by an excess of zeal. Here, as in everything, it is important to avoid brusque changes and to give time to the intestine to adapt itself to the new diet. Let us come to whole-wheat bread slowly, gradually, with intercalary periods of white bread which shall render possible favourable and advantageous comparisons (2).

To further the question of whole-wheat bread, legislation has been spoken of. But "what can laws do against customs"? ancient wisdom has said. What can they do against the roller mill brigands, whose tricks and adulterations are so perfected that their trade, as those of horse

(1) The three-quarters of the farmers' children since the erection of cheese factories never drink a drop of milk. This is a national disgrace.

(2) Squeamish stomachs should commence with bread made of millstone flour, then with white shorts added, then the red. Let us remember that squeamishness nearly always goes hand in hand with insufficient mastication.

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traders and whiskey sellers has become almost necessarily immoral. In a twinkling they would avoid the laws. If the degree of bolting be fixed, as was done in Switzerland and Italy, or the contents of gluten and mineral salts established as was proposed in England, where, when and how will all this be controlled? If colored bread is wanted when white bread will have a universal reputation of being poor bread, the millers will lose no time to save appearances and instead of "strong bakers" create "dark specialties", as was done after the campaigns of the "Petit Journal" (1).

And supposing that they could be compelled to give us pure wheat flour with a fixed percentage of bolting and gluten we would still have — proofs have been furnished — "dead wheat tainted with the redhibitory initial vice of the milling that degrades food" (Monteuuis).

But roller mill operators are not the only ones to blame. Our flat-mill operators who under the pretext of misunderstood progress have installed too finely meshed flour-bolters, must be equally denounced.

What is first wanted is to educate the public. When the consumer shall be enlightened, when he shall know that good wheat flour cannot be white, he shall be on his guard against those who advocate good-looking bread and speedily convinced enough to insist that no one tries to delude him by false appearances.

Then our small roller-mill operators shall be forced to add flat stones to their mills and increase their number from year to year. Perhaps shall they succeed in displacing completely the primitive installation (2).

(1) For the wise consumer who objects to white flour, the roller miller makes use of colourings like a blanket to cover inferior flour. With white flour, bran, rye flour, buckwheat flour and a little "talent" he makes alluring mixtures. And when the bread is detestable, the customer returns to white bread.

(2) They should retain however from the Hungarian roller system the rasp cylinders which are unsurpassed for the cleaning of wheat. The qualities of the enemy must be admitted and we must even profit by them.

The unexpected customer may come sooner than expected. Who knows? If they are wise enough to adapt themselves to the new circumstances, if they start on time, they may make a fortune with the flat stone and an honest business.

However, while awaiting their conversion — the thing has happened in Beauce — the rural flour-mills will possess certain advantages. The small millers — “virtue like vice has its degrees” — will take a certain time to learn roguery on a large scale and follow the example of the industrial magnates. Their flour will be superior to the flour of commerce in this, that the customer already forewarned against adulterations, will be able to supervise his milling and thus have the chance to evade flour made of inferior cereals, vitriol, gypsum, talcum or a mixture of ground rice, beans, etc. (1).

And instead of being given separately the fine flour and the shorts, which are later mixed together at will, he should—to do the least harm—insist on being remitted the entire mixture of all the issues of the flour-bolters, after the coarse bran has been removed. In this way the house-keeper would not be tempted to make bread de luxe by robbing the flour of so many rich substances.

To return to the new-hobby clients that the roller millers were not expecting, they are already to be seen at many places, and if their number is not yet imposing, their quality leaves nothing to be desired — “non numerandi sed ponderandi”.

To the physician belongs the right of holding first place here and, in effect, several, both in the city and country, are resolute partizans of whole-wheat bread. Some have been the inspirers of the recent campaign in favor of the return to the growing of wheat. A great number of practitioners, even in the city, eat whole-wheat bread in their

(1) The grains of wheat being of different diameter and shape, these fraudulent additions are detectable by the microscope. The latter has already made inestimable discoveries in dismasking the unfathomable roguery of the milling aristocrats. The eye of man has never seen . . . His imagination would never believe. . .

homes and prescribe it for their clients. They find that nothing settles the question of amylaceous dyspepsia better — intolerance for the farinaceous substances — than the substitution of a bread containing its own normal ferments. And there has been many a fine day since they have ceased to be astonished at it (1).

In a great number of presbyteries, brown bread is also enjoyed. It commenced to be eaten though a spirit of trial, then people were entrapped by the flavor, the sweet taste of this inviting article and by the sensation of well-being due to its easy digestion and high nutritive qualities. Why it was not thought of sooner is asked.

I saw, last winter, brown bread on the table of one of our not the least gifted Ministers.

One of our best French-Canadian publicists, long ago converted, wrote to me some time ago :

“ We now only eat bread bolted to 85. It is unfortunate all the same to have passed the best part of one's life crunching almost nothing. If we had that under our teeth in college ! I am no longer constipated, and as you had foreseen, doctors and especially dentists' bills have perceptibly decreased. When we want cake we have recourse to shop flour, but we are no longer of the turn of mind to believe that such can be used for making bread.”

It would be difficult to better sum up the question.

There is an intelligent and competent baker in my village who, at my instigation, since several years, supplies whole-wheat bread, and he has learned how to cause it to “raise” as well as his white bread. He cannot satisfy all demands, and his reputation has long ago overstepped the limits of his parish. Several commercial travellers “sensible people who know what to eat”, take advantage on passing this way of bringing home “good country bread” that their family eat with relish. And they become ardent propagators of real bread, they find themselves so well from not

(1) See appendix, chap. VIII.

having an "empty food" in that which should be the substratum of the diet of the growing child as well as the laborer (1).

To aid the good cause we are assured of the valuable assistance of the Department of Agriculture of our Province. He who presides over its destinies has not failed long ago to seize the full importance of the bread question.

Besides the grants to the millstone mills to revive those mills of the French period spread almost everywhere along our water courses, prizes will be given at the exhibitions to farmers who produce the finest wheat, to bakers and housekeepers who will resuscitate with all its enjoyment "good habitant bread".

The Department also proposes to extend and propagate the growing of wheat that its initiative has brought back to the fore since the war especially. Formerly, our farmers ceased to grow wheat because they could get flour readily and relatively cheap since the construction of the Canadian Pacific Railway, and because the wheat then rusted and gave a lesser and lesser yield. These two defects came from the same cause : the want of that azote in our soil which the cereal wheat is so rich in. As the $\frac{4}{5}$ of the atmospheric air is azote, we may obtain it cheaply by sowing root crops which by absorbing the azote of the air restore it to the earth through the roots.

To-day, through the urging of our agricultural lecturers who preach rotation, seed is sown in handfuls and hoed crops are cultivated on a large scale. This means that except under unusual atmospheric conditions, the rust of former times will not occur again and wheat will produce in a very remunerative manner.

And if our crop is insufficient the first years, we will

(1) A Maskinongé baker, Mr. Jérémie Trudel, makes whole-wheat bread as delicious as that of the best housekeeper.

Millstone flour bolted to 85 is supplied him by the best millstone miller known up to now, Mr. Arthur Bélanger, of the same parish.

only have to purchase wheat (1) and have it ground in our old mills. By asking the miller for 100 pounds of flour against two bushels — 120 lbs — of wheat we will have flour at 83 p. c. which is about the standard required by all those who have treated the question with authority.

This flour will not only be used for our bread, but for browning in our stews, for the making of home-made biscuits that will replace the traditional "crackers", for white sauces and also for the making of good boiled wheaten food for infants, as was made at a time when babies were not constipated like nowadays in the proportion of 95 p. c. to the great despair of the mothers (2).

The general merchant will not complain of all that, far from it. The flour business is for him the drawback of the trade, if it were only but for the reason of the extreme variation in market prices that invite so much discomfiture. It is, moreover, an unpleasant business, that needs laborious handling, large sheds, the investment of large capital, and all for a very slight profit. In Beauce, since the raise in the price of flour caused by the war, it is the merchants themselves who incite the farmers to purchase wheat instead of flour, and both find this a matter for congratulation. The cattle only might complain of it, being granted that the richer the flour is, the poorer the bran. But the Hungarian system of milling has already long enough fattened the hog to our detriment, it is time

(1) We can only gain by procuring the grain of wheat as well as whole coffee. Just as easy as it is to falsify flour and ground coffee, just so difficult is it to imitate, even poorly, the grain of wheat and the Arabian bean. These are not negligible precautions in our unscrupulous times.

Everytime the neighboring miller is not provided with a cleaner, cleaned wheat may be purchased. The price is higher, for besides the operation of cleaning, the removing of the dust only that gets into the furrow of the wheat makes it lose $1\frac{1}{2}$ p. c. of its weight.

It will also be well to buy "hard" wheat. It is richer in gluten and mineral salts, and notwithstanding its notable points of superiority, commands a less price, because it produces flour of a yellower color, which is "shocking" for those who want white bread at any cost, and for their ordinary purveyors.

(2) See appendix, chap. VII.

that we awoke to the reality and that the interests of our stomachs come first. And when we desire rich bran for our cattle, there are now three transcontinentals to bring us the rich residues of the roller mill from the West.

By producing our wheat for consumption, we will have, besides the benefit of a real bread in exchange for one that had but the name, the advantage of making a great saving. It would be the large amount of money kept here: so much the more taken out of the earth, and so much the less to disburse. Every well-informed farmer should endeavor to live more and more by his farm, at least in so far as his food necessities are concerned.

The economic side of the question is worth while when we give it thought. Upon inquiry made among the merchants of Beauce, we find that, every year, from 10 to 24 bags of flour are consumed by small families, and from 26 to 48 among large families. The difference between the two figures of each category is occasioned by the more or less great eaters of pancakes and molasses, two articles that are "the death of flour" as they say among our people. Now, at the price of \$2.50 — average price in times of peace — small families use an average of 17 bags: \$42.50; and large families an average of 37 bags, namely \$92.50.

If we multiply the average between 42 and 92, namely 67, by the figure of 370,938 families (1) of the Province of Quebec, we will have the respectable sum of twenty four million eight hundred and fifty three thousand four hundred and forty six dollars that we might save by providing for our need of wheat without having recourse to importation.

This is the ransom that our ignorance and spirit of routine made us pay, before the war, to Ontario and the Western Provinces, to the detriment of the health and vigor of our race.

If our Government — Providence — which has to make

(1) These figures have been given to me directly by Mr. G. E. Marquis, our distinguished compiler of provincial statistics.

up in every domain for the lack of initiative and public spirit — persists in its good resolutions, there may be made, when the war is over, a great step towards the settling of the bread question.

When the French industries will be reorganized we will ask the Compagnie Meulière de La Ferté-sous-Jouarre —stone disk (millstone) mills—and the Maison Schweitzer — steel disk mills—to send us engineers to instal mill-bakeries in our agricultural schools, the most important domestic science schools, colleges, boarding-schools, communities, etc.

There are mill-bakery equipments at all prices and of all sizes.

An installation, for example, that might be used for a boarding-school, comprising :

1. A wheat cleaner,
2. A millstone grinder,
3. A sieve-bolter,
4. A mechanical kneader,
5. A portable oven,

would produce 225 pounds of bread per day and cost 2,000 francs, that is \$400.00.

The whole operated by a 3 horse-power — electric sector or gasoline motor — could be contained in a very small building, and would at once save us from the horrors of the more complicated bakeries that are installed in damp or dusty cellars or under-ground places.

The frontispiece engraving will tell more about it than any description. It represents an installation capable of supplying about 1,100 pounds of bread per day.

We may imagine the advantageous consequences of similar purchases, among others, for the delectation and the health of the children of our colleges. It is during growing time, when the appetite is voracious, that we become easily accustomed to new tastes. It is then also that we are in the most need of richly mineralized bread.

These young people, the flower of to-morrow, would later on be fervent adepts of real bread.

And in the institutions where accountancy is not an empty word, it would be seen, by the economy in meat, that these apparatuses rapidly pay for themselves.

It will be understood that to be able to choose one's wheat, have it ground according as needed (1), bolted to taste, kneaded a long time, decently cooked, have the control of everything, here are many advantages.

These mill-bakeries are now very numerous in Belgium and France. Cooperative societies manage a great number of them.

And if the idea succeeds in our large institutions, what will prevent it from spreading to the towns and villages? Bakers in France were known who had long plotted with the unfair mill system, becoming miller-bakers with the installation of mill-stones exclusively, to their greater benefit as well as that of the consumers. There is nothing to prevent the spreading of the mill-bakery to the most backward places in the country, avoiding the cost of transportation of the wheat thus made use of on the spot. Even where there are still no roads, in all colonist paths where the everlasting and indispensable "mirror stove" might get through, will also pass the portable oven, the motor and all the parts of that felicitous alliance of the mill-bakery which tends to revolutionize the bread industry.

It is also from new soil that the best wheat should

(1) Thus are we able to at once solve the problem of the difficult conservation of rich flour. All the same it is averred that wheat flour improves in the month following its grinding, if it be kept in a good dry flour-house. The grinding would then have to be done a month in advance.

The miller-baker by profession might derive additional revenue from his establishment by making corn, rye and especially buckwheat flour that the lovers of "toothsome dishes" find so hard to get. What is to be got in the groceries is too much bolted. "Shelled buckwheat in two pounds boxes would create a furore in all Canadian centres.

Notice to "schemers" !!

be got. Who can tell if some day our curés of the new colonization parishes shall not become miller-bakers for their colonists, like the celebrated Dr. Monteuuis, of Nice, just as so many children of the people who are priests became woodcutters when necessary.

What a dream for the idealist of to-morrow would be this new personage in the history of the Church, noble dispenser of the two real breads of life : the eternal and the temporal as the Creator has willed it . . .

Hint to our grandnephews, artists in search of fresco subjects ! . . .



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APPENDIX

THE SCHWEITZER MILL

We will first of all mention that this Mr. Schweitzer is not a German, but a brave Alsatian. Energetic and tenacious like all his compatriots, he started in the midst of general skepticism and his company worked 20 years without dividend. He held out and to-day his idea and mill have brought him a fine fortune and an enviable name in the world of science and sane industry. This mill is, it seems, simple, solid, durable, easier to instal than the millstone mill.

Easy to transport, it may also be made anywhere the inventor wishes, while there does not exist in America quarries with millstones which formerly had to be imported from France or Turkey.

The most of the partizans of the millstone flour have nowadays rallied to the steel disk mill. People come even from Hungary, place of origin of the roller mill, to obtain a Schweitzer mill.

On the same principle, the same inventor made crushers for the grinding of wheat at domicile. Costing but little, they are spreading greatly in France, especially in physicians' families who have adopted entire grain of wheat bread. Small bolting machines easy to manage have been also added to it for those who want flour bolted for whole-wheat bread.

However, we must not be unjust regarding the millstone mill. If it requires frequent repairing, that we call here "patching", the operation is not so delicate and difficult as the proprietors of the roller system wish to make believe.

The millstone mill has still the preference of all the hygienists. The great milling company of La Ferté-sous-Jouarre, in France, supplies Russia and all the Balkan peoples with millstones, and its business is continually increasing. It will send us its engineers after the war.

II

TERMINOLOGY AND FOOD CLASSIFICATION

I am taking it upon myself to put the reader on guard against the discouragement that might assail him at the aspect of the complicated technical and more or less forbidding terms.

Here, as in other works on the food question, the difficulty is more apparent than real and consists solely in the multiplicity of synonymes.

It will suffice to know that starchy substances, amylaceous substances, feculae, farinae, hydrates of carbon, hydrocarbonate substances, ternary substances, are different terms to designate the same thing : farinaceous substances.

Likewise, albuminoids, azotes, proteins, quaternary substances, are four denominations that represent the one and same nutritive element : albuminoids.

It is the same for fibre, cellulose, bran, that practically are equivalents.

There are distinctions however, and the kind must not be confounded with the varieties. For example, all the farinose substances are hydrates of carbon, but all hydrates of carbon are not farinose substances as we will see by the little following table, wherein food classification is concentrated in the hollow of the hand.

These Chinese puzzles of scientific pride being known and retained, the reader will be grateful to us on finding himself manoeuvring with ease in all questions of the food order which were heretofore enigmas to him.

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Classification of Foods "in a nut shell"

(Alimentary groups and principal representatives)

I Hydrates of carbon

{	FARINA-	{	Cereals—Potatoes—
	CEOUS		Rice — Alimentary
	SUBSTAN-		pastes — Nuts.
	CES		

{	SUGARS	{	Sugar of fruit
			Honey
			Ordinary sugar.

{	FATS	{	Cream — Butter —
			Fat parts of meat —
			Cacao — Nuts —
			Vegetable oils.

MILK (by its casein)

EGGS (by the white of egg)

CHEESE (by its casein)

MEAT (by its fibrin)

CEREALS (by their gluten)

LEGUMES (peas, beans, haricots)
by their vegetable albumen.

Legumes

Fruits — Cereals

III Mineral Salts

THE REAL BREAD !

Milk — Fish

Marrow — Brains.

(1) The butternuts and hazelnuts we prize so little here are highly thought of by the vegetarians in the United States and rightly so. In addition to 9 p. c. of starchy substances and sugar they contain 20 p. c. of albumen (as much as meat) and 65 p. c. of fat (twice as much as cream).

CALORIES

A calorie, the conventional unit of energy — for didactic purposes — is the amount of heat required to raise the temperature of one kilogram (2 lbs) of distilled water, one degree centigrade. When a kilogram of fat, in burning in the calorimeter, raises the temperature of a kilogram of water eight (8) degrees, we say it generates 8 calories.

To illustrate the exaggerations caused by this theory, I will cite a page of the history of medicine from the pen of the great medical writer Helme :

" With that witless spirit, a characteristic of every good German, Rubner hastens to conclude that not only what is true of the calorimeter is true of the animal organism, but also that the energetic waste of man being known, or to be more correct estimated, his needs of nutritive repair may be fixed in calories — a commodious and "objective" means of establishing proper alimentary rations for the various classes of workmen, quality, sapidity, etc., of food not being considered.

" Notwithstanding, the system of Rubner had an immense vogue ; even physiologists accepted it and in all dietary treatises nothing but calories were spoken of. It mattered but little that such a substance be inassimilable or hurtful, so long as it was calculated to generate a certain number of calories ; thus it was that saccharose (sugar) has been considered as being alone sufficient to nourish man and alcohol vaunted as an excellent article of food. Medicine and hygiene also suffered from the disastrous influence of these theoretic conceptions. God alone, a physician wrote, will be able to tell on the day of judgment how many poor victims of tuberculosis, fever, arteriosclerosis, dyspepsia, enteritis, neurasthenia and over-work can be attributed to this theory."

I take pleasure here in extracting figures from the calorimetric tables of authors, the comparison of which cannot fail to edify adepts of the caloric doctrine who in practice have remained carnivorous.

These figures show that 2 pounds of rice, lentils or beans will give an average of 3,500 calories, while the same quantity of beef will only produce 1,395 ; 2 lbs of salmon, 2,086 calories, and the same quantity of bacon 1,380 ; 2 lbs of river eel 2,567, and 2 lbs of eggs (16 eggs), 1,625 ; 2 lbs of oatmeal 3,921 and an equal weight of mutton, fairly fat, 1,238 . . .

Reflexions ! ! . . .



NEW THEORIES ON DIET

Those ideas of recent science that are coming to light more and more are not yet classic, that is, they have not yet the label of the official high priests, immutable guardians of a very variable orthodoxy, since according to Pasteur himself "science changes every 25 years".

The sponsors of this ultra-modern theory of vital energy are men in the forefront such as Pascual, Monteuis, Helme, Carton, Monin. While the bearers of fine names in the world of learning, they have not the authority, "the moral magistracy" that the high investitures of the Academies confer. Questionable innovators to day, they will be illustrious precursors to-morrow.

Dr. Roger Hyvert recently said: "The greatest medical discoveries, I mean those that are eternal, have not always seen the light in the highest spheres of our profession."

There is no greater example in support of this than Pasteur who revolutionized medicine and surgery, and who, at first, was "nothing, not even a physician".

To give additional light on this new subject, I will cite a few pages from Drs. Carton and Monteuis. This is what the former says in one of his exposés on vital force:

"There is physiological food and antiphysiological food. The one is living, in combination with the protoplasm of the vegetable cells, associated with ferments and with vitalized nutritive salts. The work of absorption of this food is carried on by a harmonious contact, by an exchange of energy between the living vegetable cells and our living digestive cells. The antiphysiological diet, on the contrary, is a dead food, that has lost the vegetable protoplasmic association, the contact of the vitalized mineral salts and of the oxidizing ferments that rendered it physiological. It is then only a drug, a dangerous chemical substance, because "nowhere has nature presented it to us under such form". The work of assimilation of a dead energy goes on by an injurious contact that establishes a deviation of the cellular digestive acts, an antiphysiological irritation that overworks the viscera and, by its repetition, ends by altering them."

OPINION OF MONTEUUIS

The essential notion which has not yet entered into our way of conceiving and appreciating the value of food, the one that is capital in the bread question, is that solar energy, that incomparable force contained in vegetables, is closely allied to organism and life, that it persists in them in the measure in which the one and the other remains, that it loses itself according as both are degraded. It is for to keep solar energy in vegetables, its natural suppliers, that organism and life must be spared as much as possible.

Organism in the vegetable, is its structure, its form, the proportions that exist between its different elements, that make for example that wheat is a cereal without an equal.

Life, is that indefinable energy that is the highest manifestation of the forces that the sun infuses into vegetables, it is that energy of which the highest intensity is to be found in the germ and the soluble ferments, in what Béchamp called the microzymas and Pasteur the ferments appropriate to every being.

If I insist on these apparently theoretical considerations it is because they are eminently practical. They explain to us, in effect, that the more a food preserves its natural or primitive state, the more it preserves intact its reserves of solar energy, that is, organism and life, the more it is a supplier of solar energy.

If we apply this idea to wheat, we see that this living food is one of our best suppliers of solar energy, that none is, more than it, a provider of transformed solar energy. On the condition only of its structure not being destroyed, it may keep it for centuries. The grains of wheat discovered in the pyramids of Egypt which after being kept for hundreds of years in those Royal tombs, sprouted and grew, are an imposing proof of this.

Natural diet aims to preserve as intact as possible and utilize in our fundamental food that vital value of wheat, that incomparable source of energy for which the theory of calories and white bread have no regard.

When we carry this simple but grand idea of solar energy to practical ground and think an instant over all the degradations that, under the pretext of progress, the various theories have made the national food subject to during a century past, the mind becomes confounded and divided between two very different emotions. The first is a sentiment of fear before the spectacle and extent of the disaster and ruin accumulated by so called scientific diet ; the second is the unexpected extent of an idea which, before our time, was the

almost constant law of humanity and caused it to have, without effort, a food at once natural, fortifying and economic.

The letter kills, the spirit and especially practice and example vivify.

Upon reading the fundamental rules of natural cooking, the affrighted housewife may, at first, think that nothing less than the upsetting of our national customs is deemed necessary to raise the vital force of food to the rank it should hold in our daily diet. The truth is that it may have the place it has a right to without bringing about any revolution in diet. Under the influence of common sense that will be our best guide, from the light and precision that the new idea of food gives us, the evolution it involves is simple and easy.

This is how I conceive it :

Bread which, itself alone, represents more than the half of the food of Frenchmen, will be the basis of it ; it will be a home and social economy at the same time as the remedy for a veritable national scourge.

Our way of better understanding the preparation of food will lead us quite naturally to no longer cause the vegetables to whiten, but to cook them by steaming, so that they will no longer lose their mineral salts and be debased as little as possible. Potatoes braised and baked will come back into favor.

The housekeeper will renounce the routine mode of grillades, roasts, fries, purées, compotes, which will become the exception instead of the rule. Everyone will admit the change when they understand that food gains more by being braised, cooked in its own juice, by not being systematically deprived, in the preparation of cooking, of the superiority of its structural energy.

Under these conditions, the housekeeper, by the logic of things, in preparing her menus, will think of reverting to raw instead of cooked salads, to fruit in its natural state instead of preserved ; she will have a preference for raw foods, will more rarely make use of those purées of vegetables which so often overload or poison through an excess of albumen, and do not answer any need.

Everything will be more simple, more economic, more natural, therefore more practical, hygienic and agreeable.

There will be no evolution, but only a complete orderly arrangement that will bring about the control and the perfecting not only of the culinary preparation of her food, but also and more than ever of the industrial preparation of her culinary products.

This control will be more than ever necessary and exacting to do away with those beyond the Rhine products and customs that give us so degraded or artificial foodstuffs, such as porridges, flours or entremets, that they no longer deserve the name of foods.

This is how the intelligent and practical application must be understood that will constitute simple, fortifying and economic cooking through natural diet and its new principles.



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ALCOHOLIC STIMULATION

Contrary to all our prejudices, alcohol does not of itself generate strength. At the most its excitation causes but an exaggerated waste of strength accumulated in the economy by other generators of energy. It is not an addition to our strength reserve but a cause of excessive loss, that leaves us in a weaker state. And the consumption of this dissipating toxic of our capital, if continued, cannot but result in the slow but ineluctable wearing out of the nervous system.



WHEATEN PAP

(French "bouillie de froment")

Our grandmothers, who claimed to be of the period of George III, praised the "boiled wheaten flour" of former times which, according to them, made such "robust" children. They never failed to upraid the young women who persisted in not wishing to give it anymore to their children.

Our grandmothers were right. But, since, the physicians have invented "digesting", and like nutmeg, it has been put everywhere. Wheaten pap has been condemned as an indigestible horror.

It was the beginning of the era of the cruel babies who "cause their mothers to languish", not because they are dyspeptic — so young and so soon ! ! . . . — but because they are constipated and, consequently, habitually sick.

Thence dates the syringes, the rubber tubes and the whole torturing apparatuses for the intestines of children, that serve to adorn the layettes of fashionable mothers (1).

This was the golden age of Castorias.

The most of those who proscribed wheaten pap hardly ever knew why. Others, with a superficial falsely adapted knowledge, pretended that ptyalin only appears in the saliva of the infant at six months of age, that before then the saliva has not the saccharifying power to assure the digestion of farinose substances.

And this is true. But it is precisely why the wheaten pap is proper during the first months of life. This untransformed starch acts as a mild laxative, exactly like the pellicle of peas and beans, the peel and fibre of fruit and vegetables act in contributing to the fecal mass, by supplying material for the working of the intestines. More than that, if the starch of the flour could

(1) The suppositories of glycerine that we send for to Eaton's are tending to become a scourge. They are a cause of rectitis, of dysentery through excessvie irritation. By weakening the reflexes, they exaggerate constipation.

be digested during the first months of life, then when milk amply suffices for all needs, it would have to be kept out as a factor of overfeeding.

—But at six months, the period fixed by cut and dried science for the apparition of the salivary ferments in the baby, do we prescribe wheaten pap any the more ?

About nine or ten months of age, when the maternal milk becomes more or less sufficient and other milk is thought of being supplemented, it would be precious to supply for the poorness of milk in hydrates of carbon. And the starch would then be digested both by the vegetable ferments of the wheat and the organic ferments of the secretions of the annex glands of the digestive tube.

But this story of wheaten pap is not learned enough. When we are a prosperous looking practitioner, old fashioned things do not satisfy us. The day when a pharmacist will take good flat ground flour, put it up in an attractive package and decorate it with a foreign name, it will be very different : it will become popular then !

During the first months of life, why this objection to what I will call a laxative food ? Are castor and olive oils more digestible entities ? Flour has the advantage of being less nauseous.

And, starch and cellulose apart, does gluten, the first cousin of the casein of milk, count for nothing, that itself might also be useful to the child ?

As to the mineral salts of flour, as assimilable to the child as to the adult, if there is a human being in need of same, it is the child. Do not forget that he grows in height 4 inches during the first year, 2 inches in the second, while during the rest of adolescence he will never exceed $1\frac{1}{2}$ inches per annum. He must make a considerable expenditure of mineral salts to build himself up at that gait.

I have known physicians who were scandalized with the honest wheaten pap of our grandmothers and who reared their children, from the tenderest age, on Mellin's or Nestle's food, the remains of rolling mills, degraded moreover by excessive cooking and overloaded with sugar and cacao.

I have known physician-pharmacists who had the same scruples regarding wheaten pap and who sold soothing syrups — common morphine syrups not digestive and not laxative — by the case, and even several cases per annum . . .

Only, and like everything else, we must not, through excess of zeal, mar the question.

During the first months, wheaten pap must only be given to the baby to maintain the intestinal functions in regularity, never forgetting that it is the mother's milk that should be the proper food, to the exclusion of anything else.

Towards the end of the first year, wheaten pap may be considered as a precious contribution to the diet of the child, and more should be given. Beware of excesses !

The mothers in our country have the unfortunate and sometimes fatal tendency to "stuff" children. The three quarters of infantile diseases among us are the consequences of this false step (1).

The wheaten pap could also be much enjoyed by adults. Replace, at least now and again, the traditional morning porridge by wheaten pap. Eat it cold, sweetened with good maple syrup from Beauce and the porridge will soon be dethroned.

(1) In a remarkable article of the last *Bulletin Médical* (August, 1916), Prof. R. Fortier points out that the child digests flours much sooner than has been thought up to now. I have thus always been orthodox !



AMYLACEOUS DYSPEPSIA

One of the main factors of the poor digestion of farinaceous foods is the insufficiency of insalivation. The food is not masticated, consequently not insalivated enough. With white bread especially, devoid of soluble ferments of wheat, the ptyalin of the saliva, that great organic ferment must be incorporated with it. Without this ptyalin, the digestion and assimilation of farinaceous foods is more or less a dead letter. With these foods, when the digestion of the mouth does not take place, for want of saliva, that of the stomach is doubtful and that of the intestine a failure.

There still remains the amylopsin or diastase of the pancreatic juice, which generally completes the work of the saliva, but alone it cannot fulfill the task nature has devolved on the three different ferments.

It is with liquid or semi-liquid foods that one is more inclined to swallow without insalivation. Soup, "bread and milk", "bread and syrup", "bread dipped in sauce", why insalivate all that when it slides so easily down the gullet?

But without insalivation they are eaten vainly. The organs are fatigued for nothing.

During lent, on all fast days, let one "slowly and leisurely" masticate farinaceous foods; he will not fail to find out they are nourishing and that meat is not so indispensable as at first believed.

Moreover the saliva has the property by its strong alkalinity of removing the excess acid of the gastric juice and it is precisely with acid stomachs that intolerance for these foods is more frequent.

To be convinced of the digestive power of saliva, let one chew a ball of the soft part of fresh bread. At the end of 5 to 10 minutes, he will be surprised to find it sweet; it is that the ptyalin of the saliva has saccharified it and it is in the shape of sugar that the starch of the bread enters into the blood.

To take drugs for digestion, and not to know how to eat, that is masticate and insalivate, is to commence at the wrong end.

Let us place vegetal ferments, which whole-wheat bread contains and organic ferments supplied by the saliva ahead of drugs and 99 times out of one hundred, this will settle the case of those who cannot digest farinaceous foods.

To comply with the elementary laws of nature, not to look for far-away and mysterious causes for all evils, to use a little of our instinct and reason, that will certainly save many doctors' and druggists' bills.



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Bilz.—Education physique.

Daudé-Bancel.—Pain riche et pain appauvri.

Nadeau.—Constipation guérie par le régime. Apply to the
Cie de "l'Eclaireur", Beauceville.

At the request of the Department of Agriculture, the author has prepared a summary of "The Great Fallacy of White Bread".

This new work will have two very practical additional chapters on :

I.—How to obtain whole-wheat flour and bread ;

II.—How to make bread.

Those who read french will find it to their advantage to obtain this work which will appear on or about the 15th of June.

It will also contain a list of all the millstone mills in the Province of Quebec.

ERRATA

Page of the title, read **translated by J.-B. Turbide**
instead of : **translated by : J.-B. Turbide.**

Page 19, 18th line, read **or this indignity** instead of **of
this indignity.**

Page 22, 21st line, read **powder** instead of **power.**

Page 82, bottom of page, second last line, read **contain**
instead of **countain.**

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Among the complete foods supplied by nature, none appear more perfect than wheat; but through inconceivable ignorance of his interests, civilized man contents himself with abstracting the whitest part from the grain, which contains only the starch, and makes it the basis of his diet, giving up all the best parts, that do not seem to please him, to the cattle, because they color a bread that he wants to have absolutely white.

Dr Paul NYSENS.

("Culture humaine").

Of all animals man has the least instinct in choosing the food that suits him.

Dr E. MONIN.

("Digestion et nutrition").

The legionaries of Caesar learned from our fathers the Gauls to make bread and consecrated the new food to Mercury.

Mercury both the god of bread and the god of robbers, is not this a matter for reflection for the flour magnates and the starvers of the public?

Dr A. MOLLIERE.

("Préjugés en diététiques").