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D I E T E T I C V A L U E O F N U T S.

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OUTLINE.

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DIETETIC VALUE OF NUTS.

Thought the use of nuts not only in this country but in foreign countries has attained considerable proporitions,if a careful study of their food qualities were made it would lead to their largely increas ed consumption.Nuts have a high nutrative value and with the cheap- ness by which they may be produced it is somewhat remarkable that they have received so little attention as food.This may be accounted for to some extent by the abundance and cheapness of cereal products which have thus far been in sufficient qualities to meet the general demand of such food. Cereals are almost certain crops.Because land is cheap and plentiful.We have not been forced to seek food from less reliable sources.

As the world becomes more densely populated crops,will have to be chosen that produce more food to the acre than do the grains.So it will not be long before nuts hold a high place in the diet.Nuts and fruits without doubt constituted the food of primative. man.

There is now a class of people called the Fruitarians whose diet is composed of fruits and nuts alone.They claim that they have better health and are happier then when their diet was composed largely of animal food.

It is found that the nutrative value of all foods irrespective o of their kind depends upon the presence of one or more of the four classes of nutriemts.They are called,protein(nitrogenous matter) fats carbohydrates and ash(mineral matter) Familiar examples of protein are the gluten of wheat,the lean of meat,the white of an egg,the curd of milk(caesin) The difference between these and the other food constitutants is that these contain nitrogen.As examples of fat we may take butter,the fat of meat,the oils of plants and seeds as olive oil,oil of corn.Carbohydrates consists of starch and sugar.Ash is a matter left over after burning.It consists chiefly of the phosphates

and chlorides of lime,potash and soda.

Foods have,we may say,in general,two distinct uses in the body one to build up and repair,the other to supply the energy needed to enable the body to do work and to maintain its temperature.

We know that the living tissue of the body with the exception of of the fatty tissue is built up entirely from protein and ash. Now protein can be used by the body as a source of energy but the fats and carbohydrates,under normal conditions are the chief source of energy.

Since the chief use of the protein is to build up and repair the animal body if it were protected so that none would be released only a small amount of protein would be needed per day.But as it is even with a large amount of fat and carbohdrates in the food much protein is used daily.The energy of the body is derived from the potential energy of its food,which can be conveniently measured by its fuel value.The unit is the calorie and it is the amount of heat neces sary to raise one kilogram of water 1° of the centegrade sacale. This is found to be very nearly the same as the amount of heat required to raise 4 lb. of water 1° F. The fuel value of foods can be very accurate ly determined by means of a calorimeter. For example;The fuel value of a pound of shelled almonds as given is 3,030.This means that if a pound of this substance were burned the heat given off would be capa ble of warming four times that number or 12,120 of water 1°F.

Atwater estimates that a man at medium work uses dauly about 3,500 calories of potential energy which must be supplied by the food The food required deperds upon the work done.The .28 of a poind of protein in the daily ration would furnish about 500 calories of energy. The remaining 3,000 must be supplied in the food in the form of fats,and carbohydrates.The food for a days ration for a man at

medium work should therefore supply about 28 lb. of protein and 3,500 calories of energy or at the rate of 125 calories for each .01 lb. of protein.

I have given this quite extended discussion because I think it will make it much easier to understand just why nuts are of much value in the diet and will help in the discussion of nuts as food.

We find that the carbohydrates which usually predominate in vegetable foods occur only in small amounts in nuts.

At the experiment stations they have found that a pound of good wheat flour contains about .13 lbs. protein .013 lbs. of fat and .72 lbs. of carbohydrates and has fuel value of 1,600 calories. The meat of nuts contains nearly fifty times as much fat less than 1/5 as much carbohydrates and has double the fuel value. A pound of unshelled nuts would furnish about half as much protein and about the same amount of potential energy as a pound of flour.

The potential energy of the nuts is largely from fats and that of flour from carbohydrates.

The nuts have 202 calroies for each .01 lb. of protein so we see that they would not make a well balanced food when taken alone. Their unsuitableness as food by themselves is also increased by the potential energy being stored up in a concentrated form of fat. However that is no reason why nuts should not be in dietaries. Very few foods have the needed nutriment in the proper proportions. Foods rich in fuel constituents will need to be put with those high in protein. The low per cent of carbohydrates of nuts seem to fit them for diabetics and other persons who find it necessary to avoid foods containing much starch or sugar.

The following chemical compositions of the different nuts was taken from the Bulletin published by the main experiment station

where extensive experiments with nuts were carried on.

Almonds are of two kinds, sweet and bitter. The best almond is the Jordon imported from Malaga. Fresh sweet almonds are nutrative but the outer skin should be removed by blanching. The essential oil of the almond is frequantly used for flavering. In obtaining it care must be taken as the oil has marked poisenous characters. Blanched almonds give the higher nerve or brain and nuscle food. They give no heat and there is very litte waste. The almond is largely used for diebetic bread. They are very wholesome and nutricious. Almonds should not be eaten in cases of gastric irribility, and they should always be soaked and pealed as skins may set up gastric irritation. Almonds contain a ferment called emulsin, much fat and 3-5% sugar in sweet almonds. The bitter almond contains hydrocyanic acid sugar and oil. This almond is used for falvoring cough mixtures. The almond is a valuable form of nuts containing large amount of nitrogenous matter. Owing to its lacking carbohydrates it is largely used in the manufacture of diebetic bread. The almond is a favorate dessert nut in this country. The greater part consumed is from France, Italy and Spain.

Comp. of Almond.

	Refuse.	Water.	Proteid.	Fat.	Total carbo.	Ash.
Cal. Almond.	64 8	1.7	7.3	19.3	6.2	.7
European Almond Nut only		6.0	23.5	53	14.4	3.1

The Brazilian nut is a native of Brazil, and is not so far successively grown in this country. The Brazil nut is palatable and and generally relished. It should not be eaten in great quanities as it contains an injurious oil.

Brazil Nut.

	Refuse.	Water.	Protein.	Fat.	Total carbo.	Ash.	Fuel val. per lb.
Edible Portion		5.3	17.6	66.8	7.0	3.9	3,329
As purchased	49.6	27	8.6	33.6	3.5	2.0	1,678

The filbert is a nut chiefly used as a desert nut.

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	Refuse.	Water.	Protein.	Fat.	Total carbo.	Ash.	Fuel valued per lb.
As purchased	52.1	1.8	7.5	31.3	6.2	1.1	1,644

The hickory nut as grown in this Country and finds a wide use.

Hickory Nut.

	Refuse.	Water.	Protein	Fat.	Total carbo.	Ash.	Fuel value per lb.
As purchased	62.2	1.4	5.8	25.5	4.3	.8	1,321

The Pecan nut has a flavor which makes it a very desirable nut. It is the American hickory nut. It is universely popular and is used extensively in cooking, in confectionary and for a dessert. The nut has a very thin shell.

Comp. of Pecan.

Pecan polished	water.	Protein.	Fat.	Total carbo	Ash.	Fuel value per lb.
Edible portion	3.0	11.0	71.2	13.3	1.5	3,633

The English walnut is a very popular and palatable nut. It is used in confectionary. The oil of this nut has a wide commercial value. It is much cheaper than olive oil for which it is used to adulterate and has a similar taste.

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Cal. soft shell	water.	Protein.	Fat.	Total carbo.	Ash.
Edible portion	2.5	16.6	67.4	12.1	1.4

The peanuts are a very nutricious form of food but are considered indigestible when raosted whole.The peanut is really not a nut but the fruit of legume.Its composition is almost identical with sweet almond a little richer in protein not so much oil.Peanut flour is made from the ground and bolted nuts and it is claimed that a pound of it contains as much nutritive material as three pounds of beef or two of peas.The peanut grits may be boiled like oatmeal or made into biscuit.It is also used in the preparation of oleomargarine. Peanuts are also used as a sort of imation of coffee.

Peanut oil is used for cooking purposes and also as an adulteration and substitute for olive oil.

Special attention should be given to the composition of the peanut.A pound of roatsed peanuts shelled carries 305 lbs. of protein with fuel value of 2955 calories.Peanuts have fuel value of 96 calorie for each .01 lb.s of protein.

Comp. of Peanut.

	Water.	Protein.	Fat.	Total carbo.	Ash.	Fuel val. per lb.
Edible Portion.	7.7	27.8	44.5	17.6	2.4	
Roasted	1.6	30.5	49.2	16.2	2.5	3,177

It has been found recently that the common beech nut is as valuable as some o the cereals,it contains considerable starch as well as oil

Beach Nut.

	water.	Protein.	Fat.	Total carbo.	Ash.	Fuel value per lb
Edible Portion	4.6	21.9	57.4	13.2	3.5	3,263

The Butternut is a nut very rich in fat.

	water.	Protein.	Fat	Total carbo.	Ash.	Fuel val. per lb.
Edible Portion	4.5	27.9	61.26	3.4	3.0	3,371

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Cocoanut.

The cocoanut is an important nut to man whether considered as a delicious and nutricious food ~~or~~ as supplying valuable oil and many other articles useful to man. In the tropics it forms a food and drink for the natives.

The edible portion is composed of fat and oil to extent of 70%,A quart is obtained from six to eight nuts. The butter and oil is considered food. When green and unripe the nuts are lined with a creamy substance which becomes hard white solid albumen which we eat. The cocoanut palm supplies the nut as meat,milk,wines vinegar sugar and syrup besides the mats,cords,sails firewood,houses,brats and fencing.It is a very useful tree.

Cocoanuts are very indigestible enven when dissecated and grated.It contains a proteolytic firment which converts meat into albumoses with considerable activity.

Comp. of Cocoanut.

	Water.	Protein.	Fat.	Total carbo.	Ash.	Fuel rate per lb.
Edible portion	14.1	5.7	50.6	27.9	1.7	2.986.

Chestnut.

In foreign countries the chestnut is used as a food,especially among the Eupopean peasantry who eat the steamed chestnuts with much relish.They are steamed and eaten with salt,and milk.They are very nutricious.About three fourths of the Chestnut kernel is made up of starch,sugar, dextrine,so it may be substituted for the cereals.

Chestnuts are considered by physicians as a wholesome healthy, nutricious and fatening form of food.

Chestnuts are often used as vegetables and are exceedingly popular.They are made into bread by the mountain pheasantry in Eurpoe.

	Refuse.	Water.	Protein.	Fat.	Total carbo.	ash.	fuel val. per lb.
As. purchased.	16.1	31.6	5.7	6.7	39.6	1.5	1115

Pistachio.

The kernel is greenish in color, has a mild pleasing characteristic flavor, suggestive of almonds. The nut is used largely for manufacture of confectionary, for color and flavor.

	Water.	Protein.	Fat.	Total carbo.	ash.	Fuel val. per lb.
Edible portion.	42.		54.0	16.3	8.2	3,235.

Nuts provide the proteid (the stength giving elements in much larger proportion than do flesh foods and the fats (in emulsions instead of the undigestible free oils of butter and other animal fats. Nuts contain salts in an abundance.

Nuts with the exception of the Chestnut are free from starch. In the green nut starch is also present as in fruit, but in ripening the starch had disappeared leaving in its place an extremely digestible and wholesome fat.

Nuts are full of organic fat and are delicious as well as wholesome. They are not as expensive as meat, for a few will satisfy a taste that is not abnormal, and will give more nourishment than twice the same amount of meat.

The unsuitableness of nuts for food by themselves is increased by the potential energy being stored up in a concentrated form of fat. This is no reason why they should not form a large place in dietaries. Foods rich in fuel constituents need to be combined with other foods of relative high protein contents. The low percentage of

carbohydrates in nuts would seem to fit them as one of the sources of food for diabetic and other persons who find it needful to avoid. foods containing much starch or sugar.

Nuts-being a condensed form-of food should be eaten with food coarser and all but peanuts,those rich in protein. Nuts contain a special kind of salt especially adapted ofr lubricating or sotening the muscles of the arteries.Some physicians claim that elderly people would be benefited by a more extensive nut diet. The only evil to be overcome is that nut meats should be thoroughly masticated so that no hard pieces may enter the digestive organs. Nuts are almost the most nutrative foods which we have.

Nuts form substitute for meat to a considerable extent.Walnuts if eaten liberally between meals may assist in overcoming constipation through the bulk of insoluable residue they leave. The nutrative value of nuts is extremely high and when suitably prepared form a substitute for meat to some extent.Thirty large walnuts would contain as much fat as 2 3/4 lb. of moderately lean beef but 2 3/5 oz. of beef is equal in protein to them'

As nuts are a concentrated form of food,caution should be followed in their use.Walnuts and almonds possess a higher nutrative value than even the grains.As compared with the fruits they rank higher in food value being the true seed and not made up of fleshy coverings as apple,pear,peach,and etc., They have less water and a higher nutrative value generally.Weight for weight,when in a rational dietary system,other forms of food lack protein,or albumoids and fat.Walnuts and almonds will supply in a concentrated shape these needs.

Nuts stimulate the appetite and afford variety in the diet. In cases of dyspepia nuts may be eaten in some cases to stimulate the digestive juices.

Fruit and nuts from a well balanced diet and form a very good noon day meal.

Walnuts eaten liberally between meals may assist in overcoming constipation.

Digestibility.

The albumen of nuts is acted upon by the gastric juice.The fats by the pancreatic which acts readily on this form of fat.

In experiments conducted by gout experts point to the fact and conclude that sound well seasoned nuts eaten at the proper time are highly nitricious and not indigestible.

Nuts are usually eaten after a hearty meal when the stomach is already full.They should be eaten at the beginning and not at the close of a meal.If they were not munched at between and after meals the idea they they are indigestible would disappear.

The preparation of some nuts is a quite difficult task while with others the removal of the shell is quite easy as the peanut.

Shestnuts and peanuts furnish palatable and nutriciuos soups. Peanuts and walnuts if passed through the nut chopperor reduced a free state make a butter like pate used in sandwiches,salads, croquets and stuffing for roast fowl are an agreeably use of nuts.

Peanut butter is an important article of food now.It is delicious and nutricious and forms a substitute for butter.

Dissicated Cocoanut is an important article of Commerce.