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February 20, 2012
Inaugural Joyce Lindower Wolitzer ’76 and Steven Wolitzer Nutrition Seminar

Research
Books, articles
Teach
Public service
Lecture
Media interviews
Q & A
Newspaper column
Blog foodpolitics.com
Twitter @marionnestle

Food Issues, 2012
Science → Agriculture → Nutrition → Public Health → Policy
- Food insecurity
- Obesity
- Food marketing
- Food advocacy

Food insecurity
Obesity
Food marketing
Food advocacy
U.S. Diet Industry
~$60 billion/year

**Calories**

- **Misused:** Instrument of government dominance and control
- **Anticultural:** reduce food to a number
- **Irrelevant:** obesity is caused by carbohydrates via insulin
- **Miscounted:** higher in cooked foods than raw

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**calories**

*(noun)*

Tiny creatures that live in your closet and sew your clothes a little bit tighter every night.

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**Calorie (Cal) = kilocalorie (kcal)**

**Official definition**

Heat energy needed to raise temperature of 1 kg of water by 1 °C from 14.5 °C to 15.5 °C at 1 unit of atmospheric pressure.

**Translation**

The ~ amount of heat needed to raise the temperature of a quart of water by 1 °C.

100 Calories: amount of heat needed to bring a quart of water to a boil.

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**Units of heat measurement equivalent to approximately 1.1480 joules.**

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“Growing creatures have most innate heat, and it is for this reason that they need most food, deprived of which their body pines away.”

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--Hippocrates, ~400 BC
Weight maintenance

Weight gain

Food intake

Energy expenditure

Weight loss

~ Individual variation

Sanctorius of Padua
1561 – 1636

Weighed
- Food
- Drink
- Urine
- Feces
- Body

Every day, for ~ 30 years

Lavoisier 1743 - 1794

Wilbur A. Atwater
1844 - 1907

“The Father of Modern Nutritional Science”

Calorimeter: Direct and Respiration (oxygen consumption)

Atwater, et al., Monographs
Late 1880s - Early 1990s

Measured Calories
- Foods
- Alcohol
- Consumed
- Digestive losses
- Excretion losses
- Used at rest
- Used in activities
- Required

Atwater Values

The following table summarizes the various factors for nutrients in mixed diet.

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Heat of combustion, heat of available, and fuel values of nutrients in mixed diet.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cal.</td>
</tr>
<tr>
<td>Fructose</td>
<td>5.0</td>
</tr>
<tr>
<td>Fructose</td>
<td>6.0</td>
</tr>
<tr>
<td>Fructose</td>
<td>6.5</td>
</tr>
<tr>
<td>Fructose</td>
<td>7.0</td>
</tr>
<tr>
<td>Fructose</td>
<td>7.5</td>
</tr>
<tr>
<td>Fructose</td>
<td>8.0</td>
</tr>
<tr>
<td>Fructose</td>
<td>8.5</td>
</tr>
<tr>
<td>Fructose</td>
<td>9.0</td>
</tr>
<tr>
<td>Fructose</td>
<td>9.5</td>
</tr>
<tr>
<td>Fructose</td>
<td>10.0</td>
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<td>11.0</td>
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<tr>
<td>Fructose</td>
<td>11.5</td>
</tr>
<tr>
<td>Fructose</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Of course these figures are not to be regarded as final, and alterations may be made for as data accumulate. Meanwhile we think that they are sufficiently accurate for ordinary use.
Bomb Calorimeter: Measured v. Calculated

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Measured</th>
<th>Calculated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>2.75</td>
<td>2.25</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>3.50</td>
<td>3.15</td>
</tr>
<tr>
<td>Fat</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Alcohol</td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 6. Measured and calculated values for different nutrients.

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Discrepancy Between Reported and Actual Energy Intake and Expenditure

**Intake** vs. **Expenditure**

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Average Requirements, Calories/Day

<table>
<thead>
<tr>
<th>Measured</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubly labeled water</td>
<td>3,050</td>
<td>2,400</td>
</tr>
<tr>
<td>Estimated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHANES, 1984</td>
<td>2,600</td>
<td>1,900</td>
</tr>
<tr>
<td>Beltville, 1984</td>
<td>2,760</td>
<td>1,850</td>
</tr>
<tr>
<td>FDA standard</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>NHANES, average</td>
<td>2,070</td>
<td></td>
</tr>
<tr>
<td>Pre-1990 USDA surveys</td>
<td>2,350</td>
<td></td>
</tr>
<tr>
<td>USDA food supply, less waste</td>
<td>2,670</td>
<td></td>
</tr>
<tr>
<td>USDA food supply, uncorrected</td>
<td>3,900</td>
<td></td>
</tr>
</tbody>
</table>

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Body Weight

Genetics

Metabolic regulation

Food Environment

February 9, 2010
Eat Less
Move More
Eat Fruits and Vegetables
Don't Eat Too Much Junk Food
Enjoy!

Obesity Fear Frenzy Grips Food Industry

Why Coke's Creative Chief Esther Lee Isn't Alone in Fearing FTC, Critics

"Our Achilles heel is the discussion about obesity...It's gone from a small, manageable U.S. issue to a huge global issue. It dilutes our marketing and works against it. It's a huge, huge issue."

---Advertising Age, April 23, 2007

Activity

Inactivity

Available calories per person per day, 1909-2000

Calories per person per day

<table>
<thead>
<tr>
<th></th>
<th>1980s</th>
<th>Now</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food supply</td>
<td>3,200</td>
<td>3,900</td>
<td>+ 700</td>
</tr>
<tr>
<td>Dietary intake</td>
<td>1,900</td>
<td>2,100</td>
<td>+ 200</td>
</tr>
</tbody>
</table>
Deregulation: Agriculture
Mountains of Corn and a Sea of Farm Subsidies

NYT 11-9-05

Companies must sell more to grow

100 CALORIE PORTIONS OF A FEW FAMILAR FOODS

1930

Introduction of larger portions

Lisa Young, 2011
Compensate for 150 Cal soda

Walk
- 60 min, 2 mph
- 45 min, 3 mph
- 19 min, 5 mph

Marathon: ~3,000 Cal/2.5 hours

Ubiquity

Ithaca, 2012

Staples

Bed Bath & Beyond

Kinney Drugs

Low prices

Compare:
Salad = $5.19

Olin Library

Mann Library

Johnson Museum

Cornell, 2012
The Cost of Healthy Eating

Cost per calorie is higher for F & V

The Biasing Health Halos of Fast-Food Restaurant Health Claims: Lower Calorie Estimates and Higher Side-Dish Consumption Intentions

Top Sources of Calories

2012 Dietary Guidelines
Media advertising, 2010: > $14 Billion

Coping Strategies: Calorie Environment

- Get Organized
- Eat Less
- Eat Better
- Move More
- Get Political