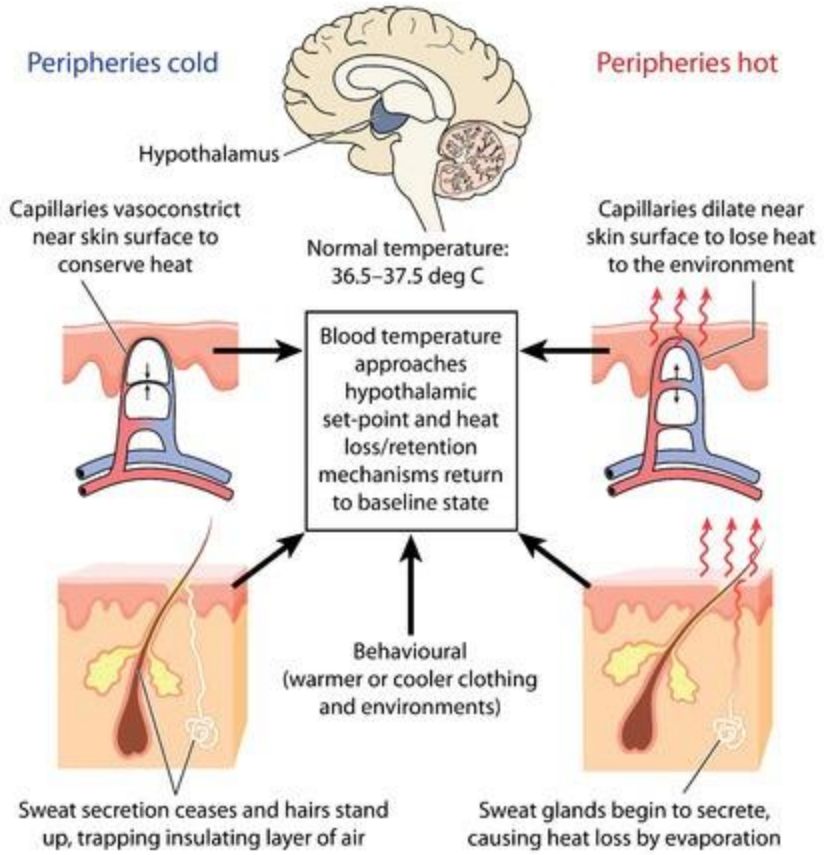
Temperature curves

Fever is an elevation of body temperature mediated by an increase of the hypothalamic heat regulatory set-point.



Control mechanisms of body temperature

- Hypothalamic thermoregulatory center controls body temperature by
  - Peripheral cold and warm neuronal receptors
  - Temperature of blood circulating in the hypothalamus

Control mechanisms of body temperature

- Heat generation
  - Increased cell metabolism
  - Muscle activity
  - Involuntary shivering
- Heat conservation
  - Vasoconstriction
- Heat loss
  - Obligate heat loss (evaporation, radiation, convection, conduction)
  - Vasodilation
  - Sweating

Human is "homoioterm" (has constant temperature)

- Normal core body temperature 37^{o} C within a narrow range of 1-1.5^{o} C.
- Axillary temperature may be 1^{o} C lower than core temperature - cutaneous vasoconstriction
- Oral temperature may be falsely lowered owing to rapid respirations.

Circadian rhythm of body temperature

- Early morning temperature is low
- Highest level occurs at 4.00-6.00 PM

Physiological factors may increase body temperature

- Physical activity (maximum 1.1^{o} C)
- Digestion
- Changes in environmental temperature
- After ovulation in women
- First three months of gestation
- Exicement

Pathogenesis of fever

- Various infectious, immunologic or toxin-related agents (exogenous pyrogens) induced the production of endogenous pyrogens by host inflammatory cells.
- These endogenous pyrogens are cytokines, such as interleukins (IL-1β, IL-1α, IL-6), tumor necrosis factors (TNF-α, TNF-β), and interferon-α (INF).

Pathogenesis of fever

- Endogenous pyrogenic cytokines directly stimulate to hypothalamus to produce prostoglandin E2, which then resets the temperature regulatory set point
- Endogenous pyrogens induce fever within 10-15 min. Whereas the febril response to exogenous pyrogens has a delayed onset requiring the synthesis and release of pyrogenic cytokines (60-90 min).

The table below gives the normal ranges of body temperature for adults and children according to a thermometer manufacturer:

Type of reading	0–2 years	3–10 years	11–65 years	Over 65 years
Oral	95.9–99.5°F (35.5–37.5°C)	95.9–99.5°F (35.5–37.5°C)	97.6–99.6°F (36.4–37.6°C)	96.4–98.5°F (35.8–36.9°C)
Rectal	97.9–100.4°F (36.6–38°C)	97.9–100.4°F (36.6–38°C)	98.6–100.6°F (37.0–38.1°C)	97.1–99.2°F (36.2–37.3°C)
Armpit	94.5–99.1°F (34.7–37.3°C)	96.6–98.0°F (35.9–36.7°C)	95.3–98.4°F (35.2–36.9°C)	96.0–97.4°F (35.6–36.3°C)
Ear	97.5–100.4°F (36.4–38°C)	97.0–100.0°F (36.1–37.8°C)	96.6–99.7°F (35.9–37.6°C)	96.4–99.5°F (35.8–37.5°C)

Temperature curves - graphic representation of the temperature fluctuations during the daily measurement.
Temperature curves give a clear picture of the nature of fever (see)have often significant diagnostic and prognostic value.

1. At constant fever (febris continua) body temperature is usually high, within 39C, held for a few days or weeks with fluctuations within 1 degree. Occurs in acute infectious diseases: typhoid fever, lobar pneumonia, and other (Fig. 1).

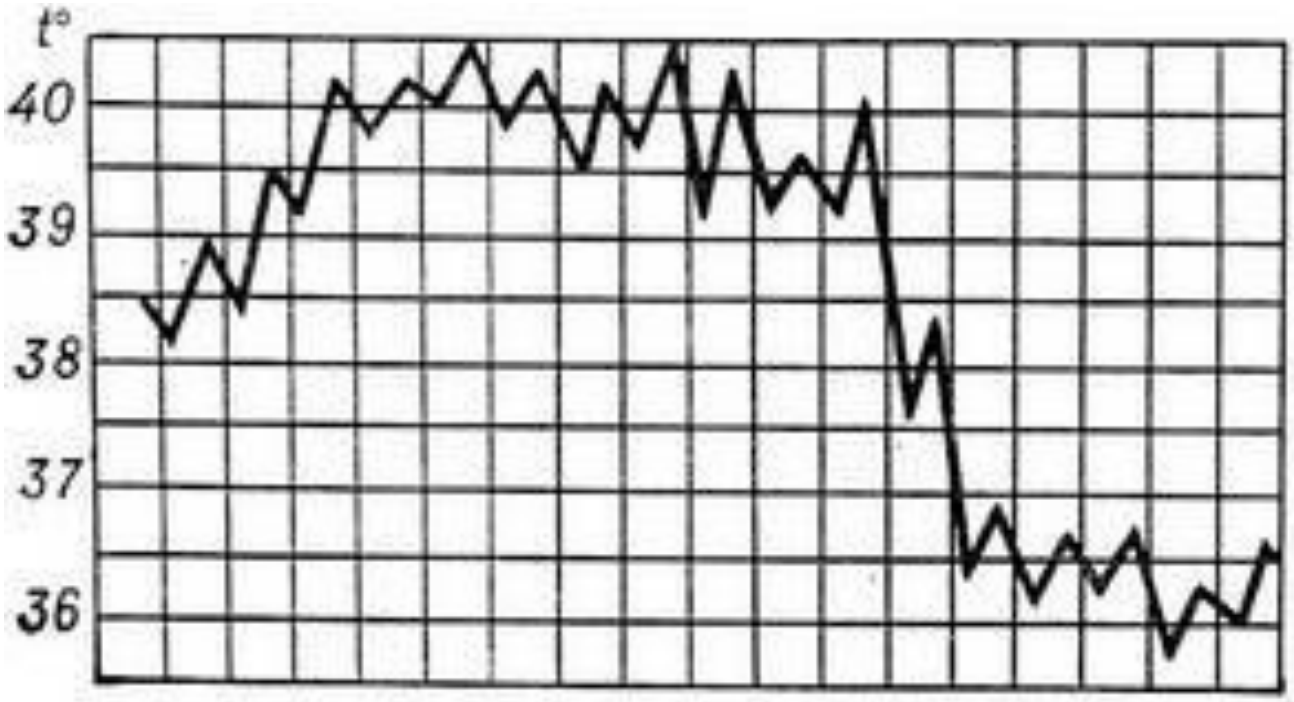


Рис. 1.

2. Laxative, or relapsing fever (febris remittens) is characterized by significant daily fluctuations in body temperature (up to 2 degrees or more), found at purulent diseases (Fig. 2).

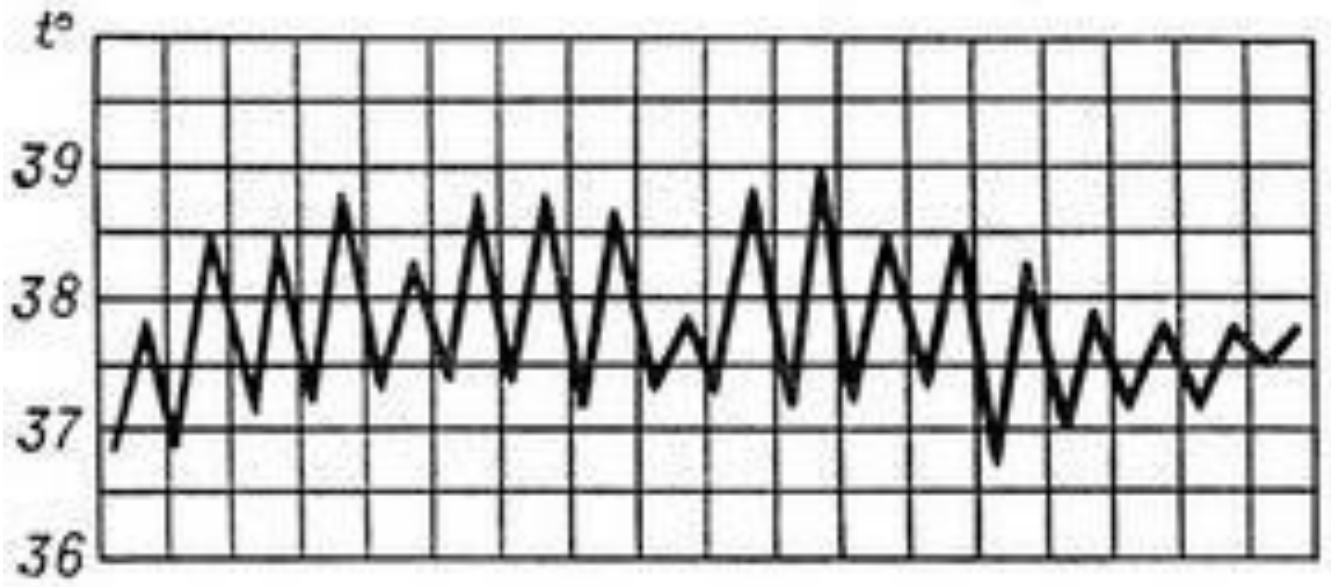


Рис. 2.

3. Intermittent, or intermittently, fever (febris intermittens) is characterized by sharp rise of body temperature up to 39-40 degrees and more and recession in the short term to normal and even subnormal numbers; in 1-2-3 day the same rise and fall again. Typical for malaria (Fig. 3).

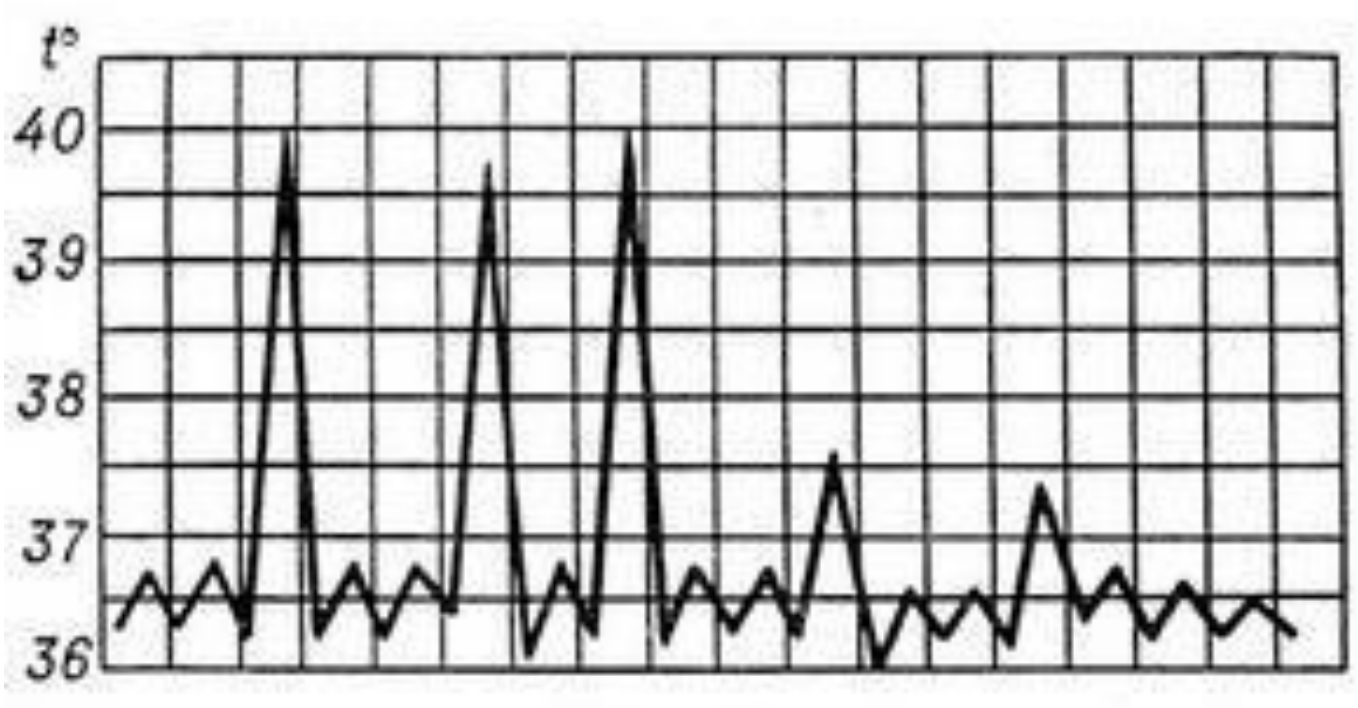


Рис. 3.

4. Hectic, or debilitating, fever (febris hectica) characterized by large daily fluctuations of temperature of the body (more than 3 degrees) and a sharp drop it to normal and subnormal numbers, and fluctuations of temperature greater than that with relapsing fever; observed in septic conditions and severe forms of TB (Fig. 4).

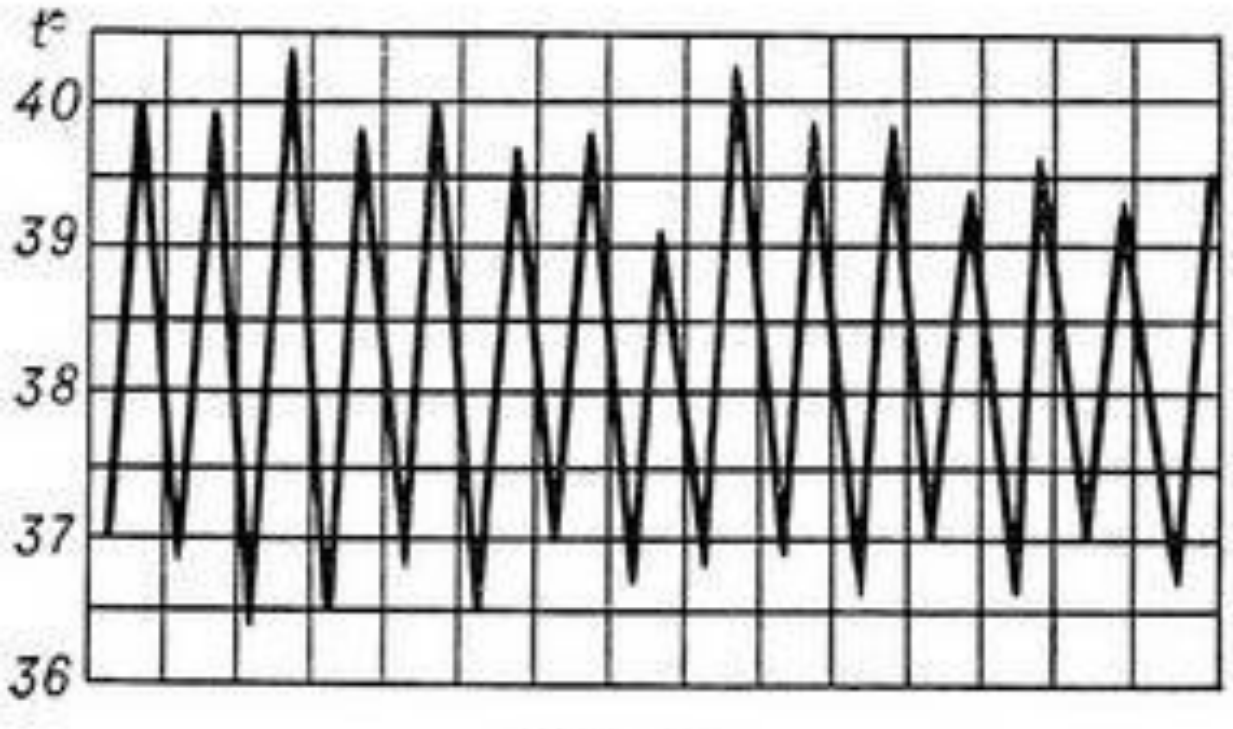


Рис. 4.

5. Recurrent fever (febris recurrens). The body temperature rises up to high numbers, rests on these values few days, then decreases to normal. Some time later the fever comes back again followed by remission (febrile seizures may occur, 4-5). This type of fever typical of some of spirochetosis (relapsing fever and other) (Fig. 5).

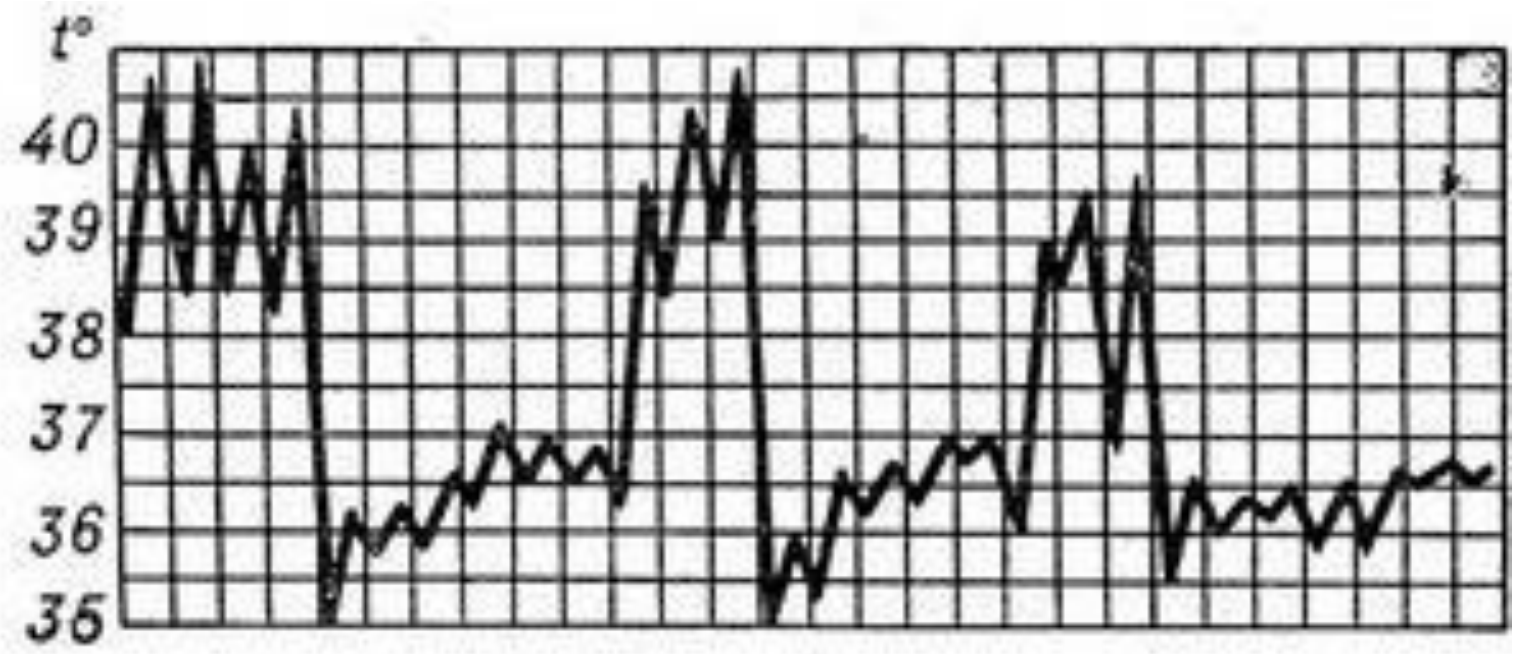


Рис. 5.

6. Undulating fever (febris undulans). Gradual day-to-day temperature increase with a similar reduction nature. There may be several waves of raising and lowering the temperature differs from recurrent fever gradual increase and losing temperature. Occurs when brucellosis and other diseases (Fig. 6).

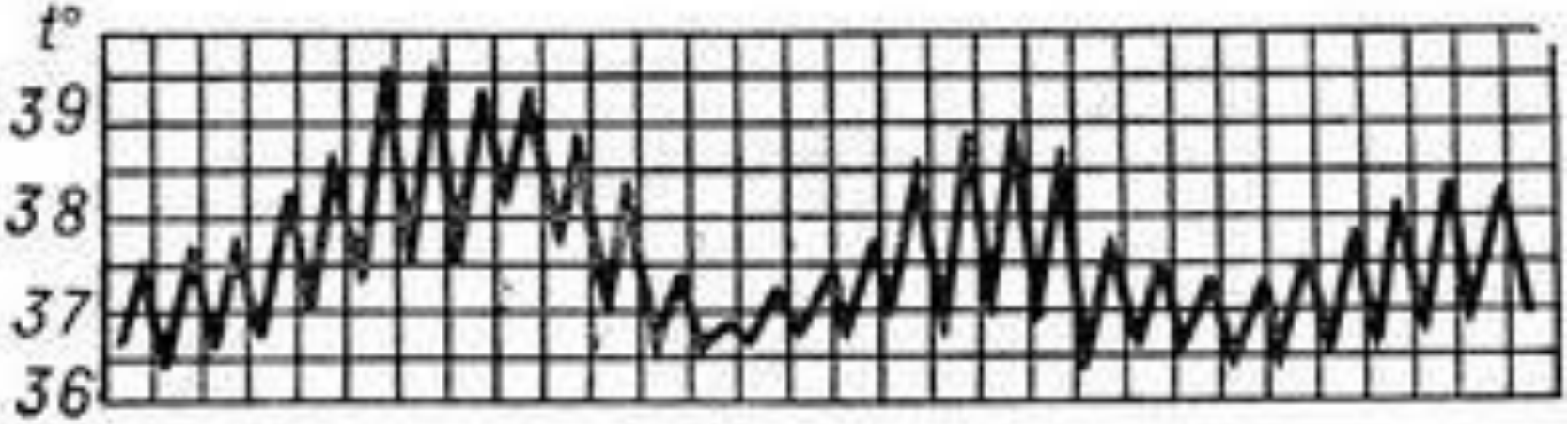
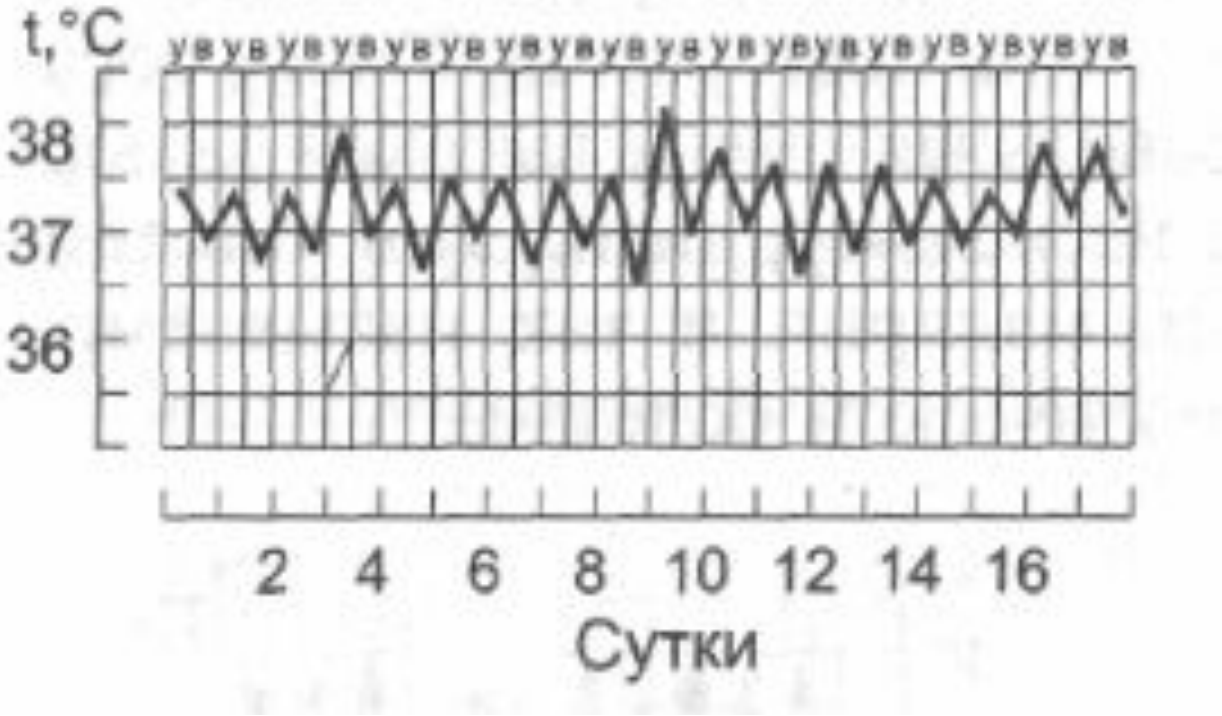


Рис. 6.

7. Twisted fever (febris in versa). Morning temperatures above the evening, meets with tuberculosis, protracted sepsis, prognostically unfavorable.
8. Irregular fever occurs most often. Daily fluctuations of body temperature varied, the duration is not determined. Observed at rheumatism, pneumonia, dysentery, influenza (Fig. 7).



8. Febris irregularis (irregular fever) is one of the most common types of fever. The temperature curve shows various irregular fluctuations without any regularity. Occurs in flu, other acute viral respiratory infections, bronchopneumonia, collagenosis, sepsis, acute intestinal infections, etc.

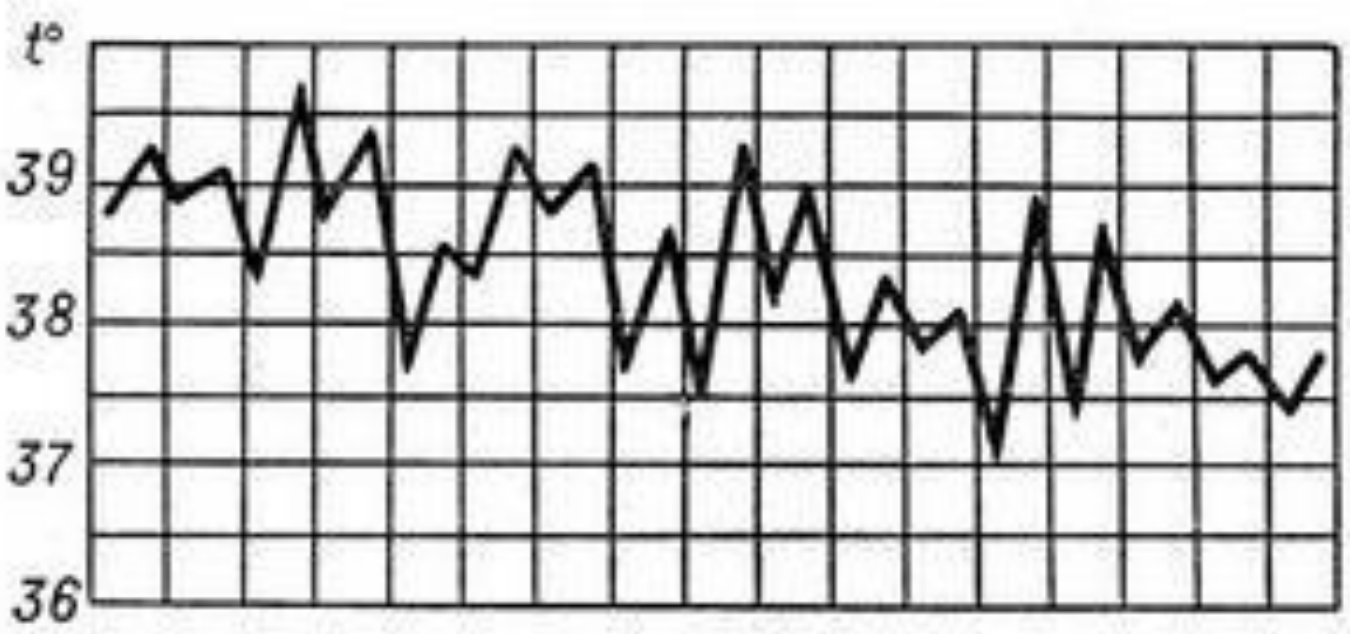


Рис. 7.

There are 3 periods of fever.

1. The initial period, or a stage of rise of temperature (stadium incrementi). Depending on the nature of the disease, this period may be very short and measured in hours, usually accompanied by fever (for example, malaria, lobar pneumonia), or stretch out on a long term of up to several days (for example, typhoid fever).

2. Stage height of fever (fastigium or acme). Lasts from several hours to several days.

3. Stage of temperature reduction. The rapid drop in temperature is called the crisis (malaria, lobar pneumonia, typhus; Fig. 8); gradual decrease called lysis (typhoid and others; Fig. 9).

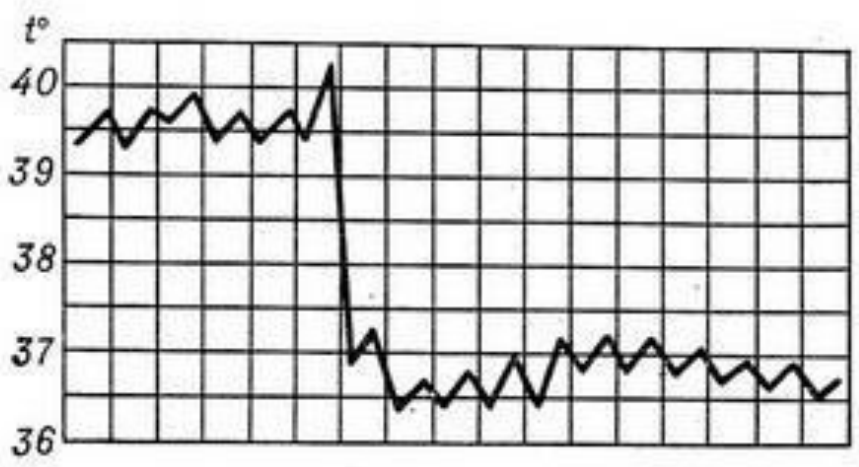


Рис. 8.

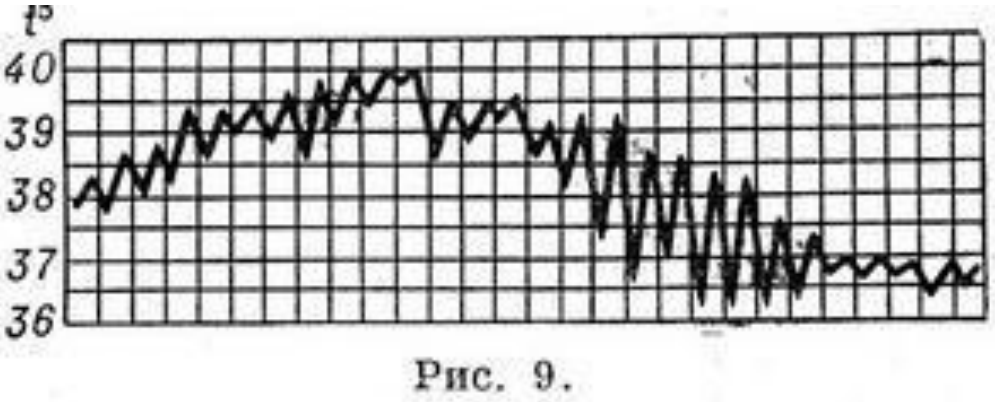
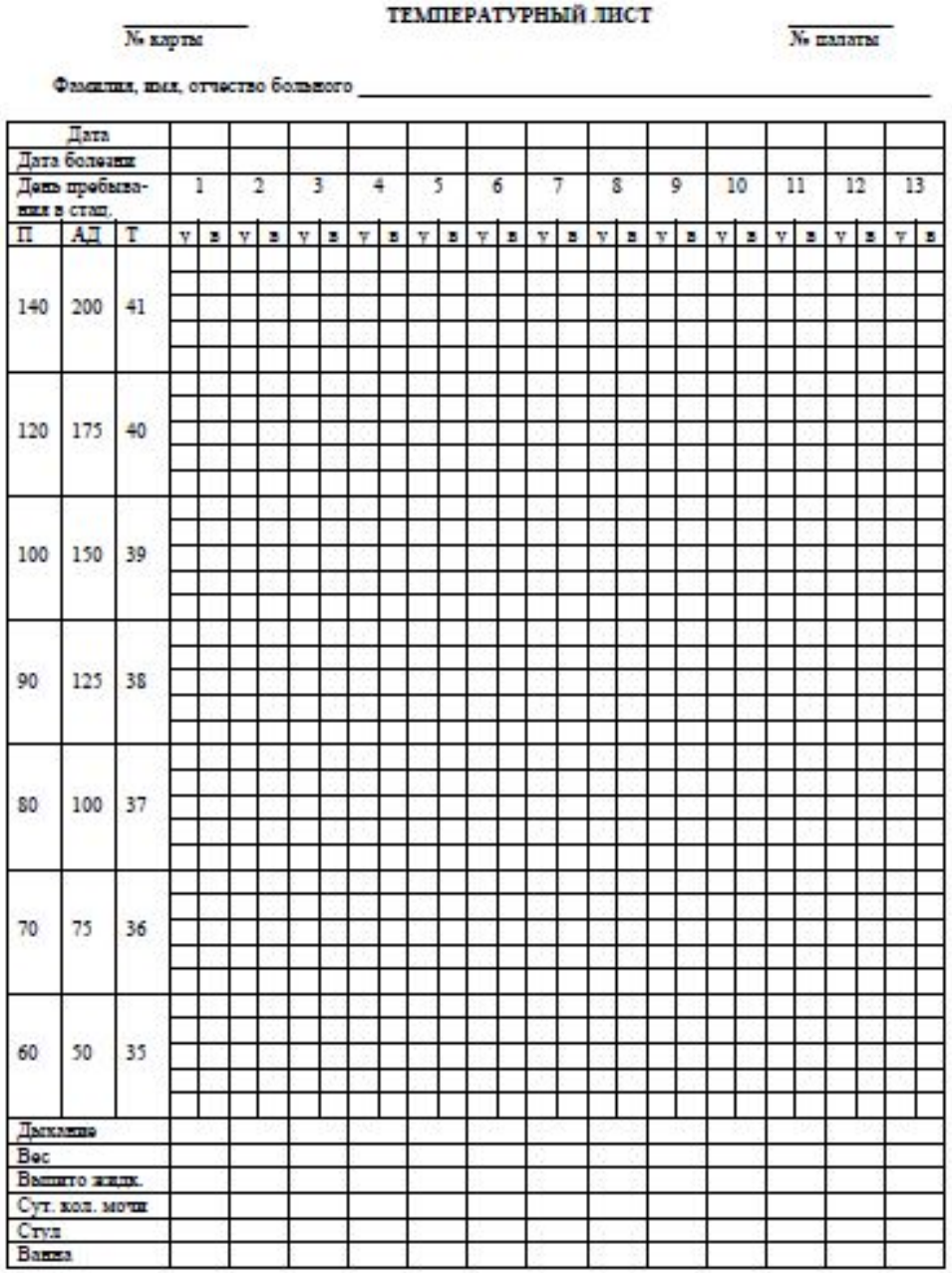


Рис. 9.



ТЕМПЕРАТУРНЫЙ ЛИСТ

№ карты _____ № палаты _____

Фамилия, имя, отчество больного _____

Дата																									
Дата болезни																									
День пребывания в стац.	1		2		3		4		5		6		7		8		9		10		11		12		13	
П	АД	Т	у	в	у	в	у	в	у	в	у	в	у	в	у	в	у	в	у	в	у	в	у	в	у	в
140	200	41																								
120	175	40																								
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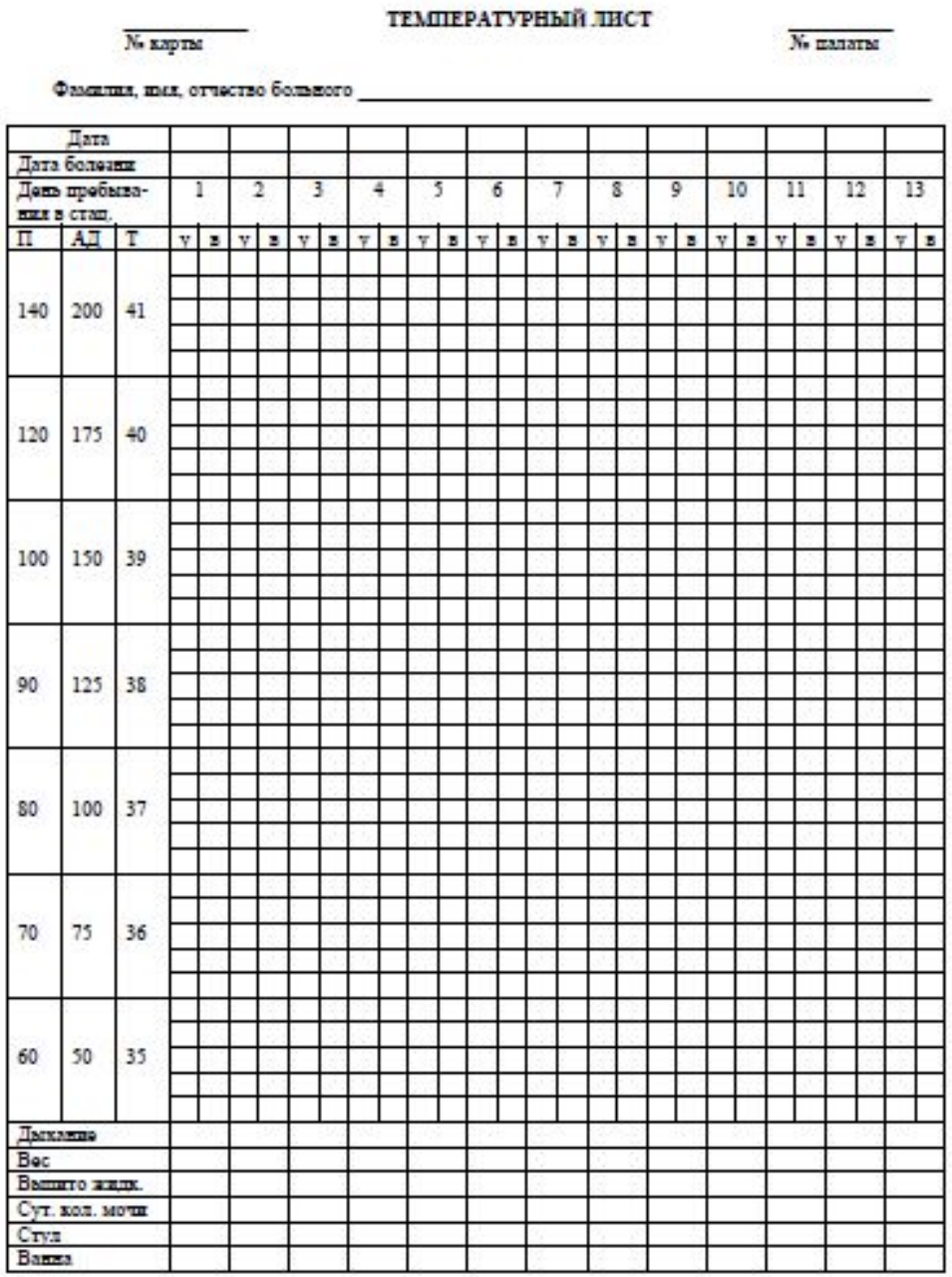
Вес																										
Выпито жидк.																										
Сут. кол. мочи																										
Стул																										
Ванна																										

Temperature sheet is a medical document, intended for graphics Desk daily fluctuations of temperature of the body sick.

On the vertical scale temperature curves indicated figures body temperature from 35 to 41 degrees; on horizontal - date and time of measurement.

Putting points daily thermometer against relevant designations and connecting them, get a polygonal line, called the temperature curve .

Filling temperature curve is the number of paramedical workers daily after measuring sick temperature in the morning and evening.



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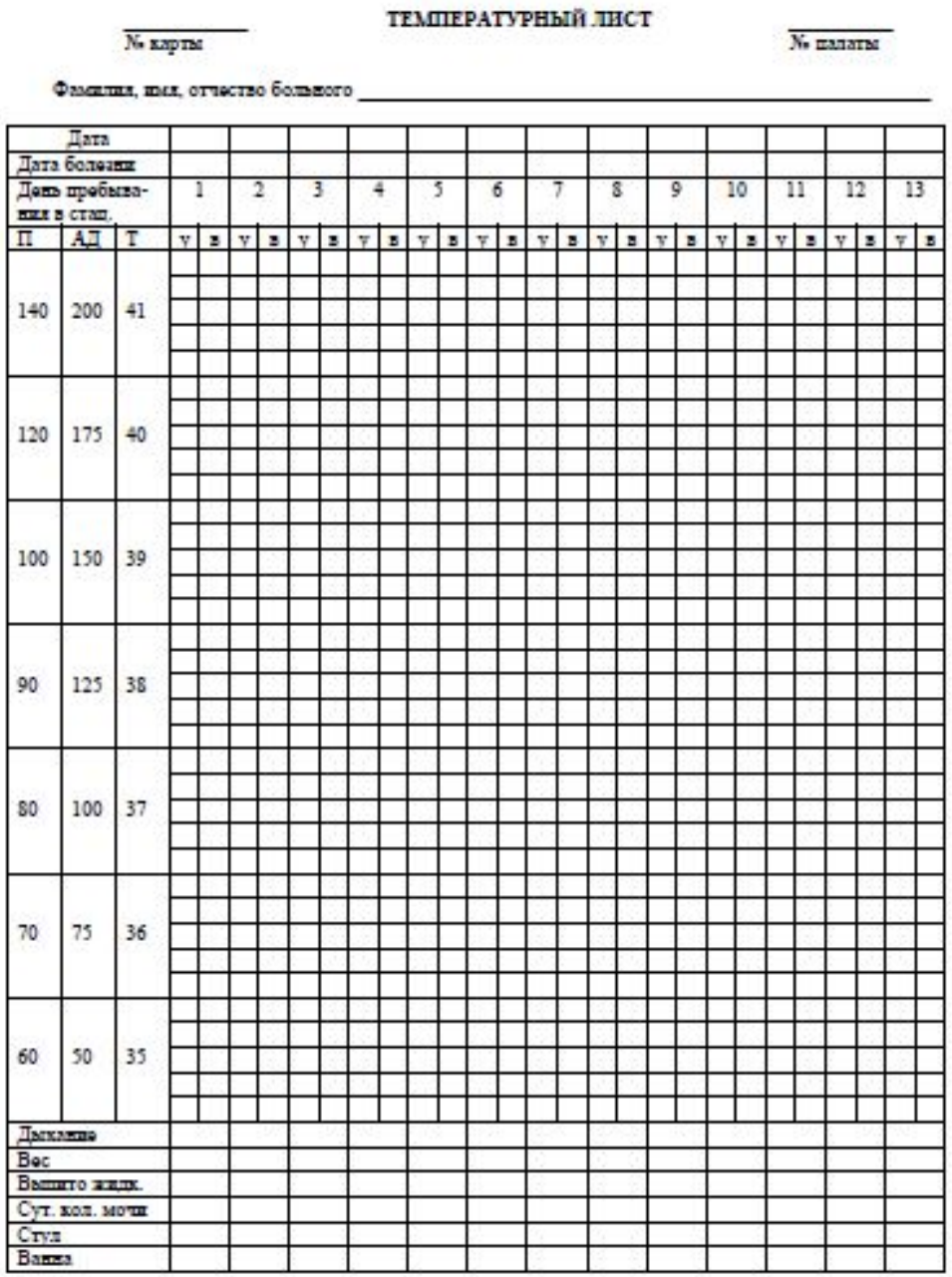
In addition to body temperature, the temperature curves includes the results of some other observations over the course of the disease: the respiratory rate and pulse rate, blood pressure, and the amount consumed and the selected fluid and so on, as well as information on measures taken for the care and treatment of patients (hygienic bath, change of linen, special procedures)



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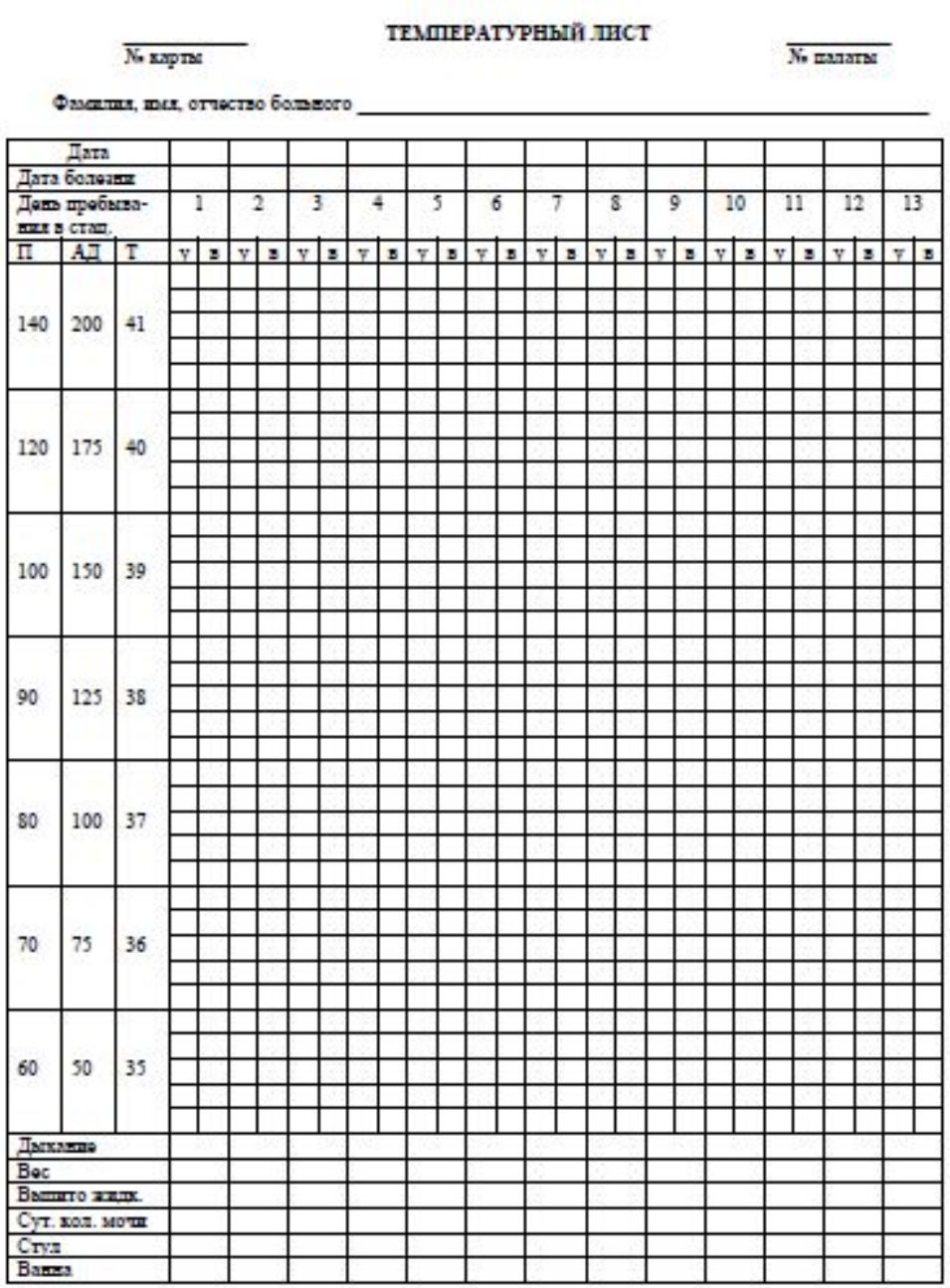
On a standard temperature of the page (Fig) indicators pulse, respiration, and blood pressure is celebrated against the corresponding symbols on the left of the vertical scale, other indicators - in the lower part of the temperature of a sheet under the temperature curve



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In some specialized medical institutions use forms temperature sheet that differ from those in the General somatic hospitals;
in such temperature sheets to reflect more of the indicators.

Temperature worksheet is stored in the history of the disease.