THE “LION” MATERNITY OF NICE

for children born before term or feeble

by Doctor CIAUDO

Medical Inspector for the protection of infants of the city of Nice — Director of the departmental vaccination service

Nice, special press of the “Petit Niçois,” 43 boulevard Dubouchage and 15–17 rue Saint-Michel — 1895

[Joseph Ciaudo (1843–1917). Source: gallica.bnf.fr / Bibliothèque nationale de France, shelfmark T. 126 / 295. Machine English translation.]

Translator's note

This document is a mechanical translation with human review and editing, based on the the BnF/Gallica facsimile. The continuous prose (dedicatory letter, chapters I, II and V, and Conclusions) is rendered in full. The tables of chapters III, IV and VI reproduce the numerical data as printed; clinical shorthand has been rendered term-for-term through a fixed glossary, and “R.T.” stands for the source's “T.R.” (rectal temperature). Cell values (weights, temperatures, ditto dates) were manually reviewed and the occasional OCR errors were corrected. In the table of chapter III the Outcome column reads A = discharged alive, D = died, S = still under care (present) as of 6 December 1894; “—” marks a carried-over month or an unrecorded value; “»” reproduces the source's ditto mark.

LA

MATERNITÉ LION

DE NICE

POUR

ENFANTS NÉS AVANT TERME OU DÉBILES

PAR

LE DOCTEUR CIAUDO

MÉDECIN-INSPECTEUR POUR LA PROTECTION DES ENFANTS EN BAS AGE
DE LA VILLE DE NICE
DIRECTEUR DU SERVICE DÉPARTEMENTAL DE LA VACCINE

« ....

« Je me félicite vivement d'avoir pu, en provoquant cette décision (subvention de 500 francs accordée par M. le Ministre de l'Intérieur à la *Maternité Lion*) seconder l'Œuvre éminemment utile et humanitaire que vous avez entreprise. »

H. MONOD
Directeur de l'Assistance et de l'Hygiène publiques.

NICE
IMPRIMERIE ET STÉRÉOTYPIE SPÉCIALES DU " PETIT NIÇOIS "
43, boulevard Dubouchage et 15-17, rue Saint-Michel

1895

"... I warmly congratulate myself on having been able, by prompting this decision (the 500-franc subsidy granted by the Minister of the Interior to the Lion Maternity), to support the eminently useful and humanitarian Work you have undertaken."

H. MONOD, Director of Public Assistance and Hygiene.

To Dr Dujardin-Beaumetz, Member of the Academy of Medicine (Paris)

Dear Master,

Toward the end of October 1891 an artificial Maternity was set up in Nice. It consisted of barely a few incubators, and at first little attention was paid to this establishment of a new kind. But the Oeuvre Maternelle des Couveuses d'Enfants (Maternal Work of the Infant Incubators, for so its founder and director, M. A. Lion, called it), sponsored by a committee headed by Mme E. Aubaret, a woman of great and noble generosity, soon became the object of the benevolent solicitude of several physicians of our town, of the governmental Authority, and of the elected bodies of the town and the department. For my part, I took an interest in this establishment, all the more so because my official duties made it my duty to keep it under constant supervision.

The A. Lion Maternity had, moreover, already proved itself at Marseille, where it had been successively subsidized by the Ministry of the Interior — thanks to the intelligent initiative of M. H. Monod, Director of Public Assistance and Hygiene — by the General Council of the Bouches-du-Rhône, and by the City of Marseille.

This establishment was therefore not slow to be noticed and to receive precious encouragement, together with substantial subsidies, from the Municipality of Nice and the General Council of the Alpes-Maritimes.

Here are the principal passages of the report I had the honour of presenting to the departmental Assembly at its session of 12 April 1893:

"Your Finance Commission rightly told itself that, if the Work in question was on a very good footing and rendered real services, it was the Assembly's duty to take into consideration the financial situation of this establishment, which is in considerable deficit, and to assist it as far as its means allow.

"I have said that the artificial Maternity had given itself the mission of snatching from implacable death the children who see the light before their hour, by restoring to them the warmth they need and progressively rebuilding their strength. It is known that premature children make up, on average, 15 to 30 per cent of all births; and, moreover, that many children weigh at birth only 2 kg 500 to 3 kg, and consequently require the same care as the premature themselves. All these children have a temperature below 37°, and it falls further and further unless one takes care to maintain it artificially at a sufficient degree. The Work therefore receives these frail creatures as soon as possible and places them at the temperature that suits them and that will secure their survival.

"In my capacity as physician, and still more particularly as medical inspector for the protection of infants of the city of Nice, having so to speak followed step by step, for several months, the progress made by the children entrusted to the artificial Maternity, I am happy to affirm here that the results obtained are altogether remarkable and well suited to draw the benevolent attention of the public authorities.

"Thus, of 73 children admitted to the Maternity in lamentable conditions, 45 have been preserved alive, barely 16 have died (of whom 9 did not even weigh 1 kilogram), and 12 are still under treatment to this day and doing excellently.

“On one of these recent Sundays, 26 March, the director having invited the parents to bring to the establishment the children discharged from the incubator, I had the honour of inspecting all these interesting babies, some twenty in number, and I had the satisfaction of finding them all in perfect health.

“It would be easy for me to cite numerous cases of cyanosis, edema and scleroderma cured in a few days. But allow me, Gentlemen, to cite among others the baby of Baron Berthaud, of Menton, who, admitted on 17 January after 8 months' gestation, weighing only 2 kg 580 g, not taking the breast, in a state of extreme weakness, with a temperature of 35°, left the incubator on 18 February weighing 3 kg 200 g; and the Baron writes to M. Lion, dated 25 March last: ‘The baby is doing as well as possible. He is becoming enormous and continues to gain his 60 grams a day. He now weighs 4 kg 960 g.’

“The child Imberti Ernestine was entrusted to the Oeuvre Maternelle on 11 March by Dr Guillabert: she was in a state of great congenital weakness, would not take the breast, had a temperature of 35.2° and weighed 2 kg 060 g; she left on 5 April in perfect health, weighing nearly 3 kg.

“I could also cite many children born at 6 and 6½ months, weighing on admission from 1 kg to 1 kg 500 g, and discharged in perfect health.

“At a time when we are rightly preoccupied with the depopulation that is sapping us, is there not here a consoling lesson, and must we not encourage, as far as it lies in our power, those who strive to preserve for the fatherland children destined to become men, soldiers and mothers?

“These results, Gentlemen, are due solely to the perfection of the apparatus employed and to the unremitting care lavished by the wet-nurses, of whom, under my supervision, a special selection is made. With his incubators, in which the temperature regulates itself automatically and invariably, M. Lion can treat a great number of children at once and thus rear, free of charge and for as long as necessary, the children of our department born before term, who come for the most part from poor and hard-working families — precisely those most stricken by infant mortality or by the premature arrival of the product of gestation. It is materially impossible to obtain the same results with the old incubator systems, whose insufficiency has been observed in every hospital service.”

At the recent Lyon Exhibition, the Pavilion of the Infant Incubators enjoyed great success, and M. Lion, encouraged, did not hesitate to install a Maternity in the capital of the Rhône on the model of that of Nice. It is to be wished that, in these times of unceasing depopulation and with an aim at once humanitarian and patriotic, establishments of this kind be created in the shortest possible time in all the great cities of France.

However that may be, the Lion Maternity of Nice — sponsored as it is by a new Committee headed, alongside Mme Aubaret, by the Comte de Cessole — occupies today an important place among the charitable works of our town, by reason of the real and numerous services it has rendered and continues to render.

These services I have been able to observe through a serious and uninterrupted study. I have therefore made it my task to set down my observations in a special work which I beg you to accept, dear Master, as a modest token of my gratitude, and to submit to the benevolent attention of the Academy of Medicine — happy if I thereby succeed in making known all the benefit to be drawn from the new incubators, and in contributing to the preservation of a greater number of children born before term or feeble.

Please accept, dear Master, the renewed assurance of my affectionate and grateful sentiments.

Nice, 13 December 1894. — Dr CIAUDO.

P.S. — When, barely a few weeks ago, after writing him the letter just read, I went to see my lamented Master, who was arriving from Paris at his villa in Beaulieu, where he received me with his usual cordiality, I was struck by the ravages the disease had wrought upon him. Yet there was still, in that feeble body, so much intelligence, so much animation and so much heart, that I could not believe death would come to take him so quickly.

Alas! the implacable malady he had resisted with such energy struck him down unexpectedly, despite the relative rest he had allowed himself, despite the mildness of our climate and the devoted care surrounding him.

The death of Dr Dujardin-Beaumetz is a great loss to the Medical Profession, to his patients, and to his pupils, to whom he was not only a venerated Master but also a Protector and a faithful Friend.

Nice, 15 March 1895. — Dr CIAUDO.

Chapter I — Children born before term

Premature births are frequent, and nothing is at once more delicate and more important than to rear a child born before term.

The poor woman is exposed to all sorts of privations and to often very painful labour, whether in the fields or in the factories. The well-to-do woman never ceases to attend evening parties, theatres and balls: she will not shrink from lacing her waist beyond measure — an unfortunate habit if ever there was one, well fitted to provoke premature delivery by hampering the development of the child.

On the other hand, one sees only too often a fall, a shock, a great joy as much as a great sorrow bring on the interruption of pregnancy. But, quite apart from the unfavourable milieux and conditions of life, alcoholism and organic affections — cardiac and pulmonary above all — are the most frequent causes of premature deliveries; let us place first, however, syphilis, which, as Professor Fournier has so well shown, exerts so baneful an influence on pregnancy and delivery and kills so great a number of children. Let us also cite artificial premature delivery, which is, in the words of Professor Tarnier, the finest of all obstetric operations, saving both mother and child at once. Add, finally, faulty insertion of the placenta, and we shall readily understand why statistics give us 25 per cent of children born before term in hospitals and 15 per cent in the town. Did not Professor Tarnier find, in his Paris clinic, from 1 November 1890 to 1 November 1891, 511 children born before term out of 1,363 births — that is, a proportion of 37 per cent?

With most authors — Osterlin, Miller, Hugenberger of Moscow, Auvard, Tarnier — one must regard as having come before term any child who at birth weighs no more than 2,500 grams.

External characters of the child born before term

There are a certain number of external characters by which one can tell whether a child was born before term. The head presents the following dimensions: at 7 months, 6½ to 7 cm; at 7½ months, 7½ cm; at 8 months, 8 cm; at 8½ months, 8½ cm; at 9 months (at term), 9 to 9½ cm.

Let us add that the skull is always more rounded than in the child at term, that the sutures and fontanelles are very wide, and that the frontal suture is perceptible beneath the skin.

The length of the child at term is about 49 to 51 cm. When born before term, it is always less than 47 cm long. It is generally accepted that in each of the last 3 months the child gains about 5 cm.

Weight is the most important character for appreciating the age and the degree of weakness of the child. At the beginning of the 6th month, about 635 g; of the 7th month, 1,220 to 1,250 g; of the 8th month, 1,600 to 1,700 g. At term the newborn should weigh from 3,000 to 3,500 g.

The voice of the premature is very weak, with a peculiar timbre. Their lungs are sometimes in an atelectatic state and are occasionally invaded in their entirety. Pulmonary atelectasis in the premature predisposes them to pneumonia through the stagnation and decomposition of the tracheo-bronchial mucus. Likewise, thrush in the premature may take on the development one knows, owing to the low vitality of the tissues, the great dryness of the buccal mucosa and the absolute lack of saliva.

In children of less than 8 months one notes leanness and slenderness of form, the adipose tissue being insufficiently developed. The skin is wrinkled, of a pale pink, the down abundant on the limbs, the back and the face. The nails are little developed and never reach the tips of the fingers. The navel sits low, closer to the pubic symphysis. Often only a single testicle is present in the scrotum, the left

one; in every case they are almost always drawn up high and retract into the inguinal orifice at the slightest pressure.

In premature children the weakness of vitality is great, their organism having only a very small resistance. The cutaneous cooling surface being larger in the premature, it will necessarily undergo a greater loss of heat — all the more so because the subcutaneous fatty layer, which conducts heat poorly, being little developed, cannot in the small child prevent the dissipation of heat.

Nor must one forget, on the other hand, that in the premature there is insufficiency of respiration and of the oxidation of its tissues; no wonder, then, to see its temperature fall to 30 degrees and even below, and the less advanced the child's term, the lower the temperature is below 37° — the normal temperature it can reach only with difficulty and over time, by keeping its ambient temperature artificial and continuous at a sufficient degree.

Let us now see the conditions of the child's life within the mother's womb. The child's warmth there is fairly high, since it reaches about 38°, and moreover it is constant. On the other hand, the child takes and digests its nourishment without any effort. But when expelled before term, it finds itself abruptly carried into a room whose temperature is 15 to 20° lower than that it had in its mother's womb. Then it must feed itself, it must suck and digest its milk. Very often one will be obliged to pour the milk into its mouth by spoon or bottle, and digestion will be all the more difficult. We must therefore concern ourselves more particularly with the temperature of the premature child, and seek to place it in the same conditions in which it was before birth, if we do not wish it to grow colder and colder and — the circulation of the blood being incompletely carried out — the feet, legs, hands and arms to swell.

Let us therefore examine the means at our disposal to combat in the premature this progressive tendency to cooling — in other words, to combat that hypothermia which so rapidly overtakes this frail creature.

For a long time, and in every country, the child has been swaddled in cotton wool, wrapping the limbs, the trunk and even the head beneath the bonnet; jugs of hot water, frequently renewed, are placed in the cradle. Hot baths, massages and frictions with stimulating liquids — brandy, aromatic wine, lavender spirit — have also been used. But all these means were plainly insufficient, because they did not reveal the exact temperature at which the child was kept, and because, on the other hand, the air the child breathed was not warm enough, since it kept the temperature of the room.

Cotton wool, moreover, was a peculiarly treacherous means, and Eros, who used it most particularly, ended by declaring that it was a means in which one lost confidence the more one used it.

Hot-water bottles do not give equal warmth to all parts of the body; and frictions, and even subcutaneous injections, have only a fleeting action.

That is why, as early as 1857, Professor Denucé of Bordeaux had made a cradle which was merely a double-walled bath, the space between filled with hot water. Crédé of Leipzig devised in 1864 his incubator cradle, likewise merely a double-walled bath modelled on Denucé's, in which the child took a bath of air kept warm by the boiling water successively renewed in the space between the double wall; Winkel of Munich plunged the premature into hot baths held in a bath so constructed that their heads emerged constantly.

It was in 1880 that the incubator was used for the first time at the Paris Maternity. It was a box in which the child was placed and which enclosed warm air. Dr Auvard happily modified, in 1883, the incubator of Professor Tarnier and made its use easier. Of this apparatus he said: “During the first

weeks of life the incubator is the best of cradles, for, while ensuring a constant temperature around the newborn, it brings to its respiratory passages a constantly renewed air, thanks to the very ventilation produced by the working of the apparatus."

This incubator consists of a wooden case whose interior dimensions are: height 0.48 [m], width 0.44 [m], length 0.62 [m]. An incomplete horizontal partition, about 15 cm from the lower wall, divides the interior of the case into 2 parts. Two lateral openings are made in the lower storey intended to receive the "monks" — that is, the stoneware hot-water bottles. One of these openings, running the whole length of the wall and formed by a solid sliding shutter, serves for introducing the jugs; the other, closed by an incomplete door, allows the passage of a certain quantity of air, almost always insufficient.

The upper storey, lined with cushions, is arranged to receive the child; a glazed lid covers it completely and is removed by means of two knobs. At the top is the air-outlet orifice (0.10 cm high and 0.036 mm internal diameter); a glass tube fitted with a helix surmounts it. In the opening connecting the two compartments a sponge soaked in water is placed to humidify the air, as well as a thermometer to mark the temperature of the apparatus.

To maintain the desired temperature, one must, about every two hours — in summer as in winter — change the water of the least warm bottle and refill it with boiling water. One must therefore have hot water constantly at hand; it follows that supervision becomes difficult, and that if the attendant forgets, the temperature will fall. Even supposing the jugs are renewed constantly and most regularly, a more or less appreciable variation in the degree of temperature will always be possible, whatever one does — and this to the great detriment of the child, the aeration of the apparatus then becoming quite insufficient in the event of a drop.

Auvard later replaced the jugs by a fixed ten-litre reservoir, into which one first poured 5 litres of boiling water, then 3 litres every four hours, thus maintaining a temperature of about 30°. Dr Diffre of Montpellier introduced in 1890 two modifications to the Tarnier incubator, one relating to heating and the other to the antiseptic cleaning of the apparatus, made simpler. The stoneware jugs are here replaced by four metal cases filled with hot water, resembling railway foot-warmers. The foot-warmers are placed in two superimposed compartments, themselves closed on all sides except at their front walls, through which the warmers are introduced like a drawer. This arrangement gives three superimposed channels in which the air, entering through an opening at the base of the incubator, is warmed by licking the walls of the compartments that the warmers themselves heat by contact. The introduction of cold air into the chamber where the child lies was thus prevented — an unavoidable drawback with the Tarnier-Auvard apparatus.

Glass incubators, working on the same principles, present the same drawbacks. These modifications, whatever they may be, are far from ensuring the absolute fixity of the incubator's temperature — and hence of its aeration — from making supervision of the apparatus easy, or from allowing its complete disinfection when a child has succumbed, or when it has contracted an infectious disease during its stay in the incubator.

These desiderata the metal Lion Incubator today does away with, by regulating its temperature and its aeration automatically of itself; by setting off an electric bell whenever the temperature rises or falls by 1°, or even ½° (which is exceptional); by dispensing, so to speak, with all supervision; and by permitting complete disinfection in the steam oven under pressure at 120°.

This incubator, adopted and sponsored first by the physicians and elected bodies of the city of Marseille, is today likewise sponsored by the physicians and constituted bodies of the city of Nice, by

the Faculties of Medicine of Montpellier and Lyon; and, barely a year ago, the eminent professor of obstetric clinic of the Paris Faculty of Medicine, M. Pinard, after numerous experiments in his service at the Maternity and the Baudelocque Clinic, gave it his sanction by presenting it to the Academy.

Chapter II — The Lion Incubator (metal, with automatic temperature regulator)

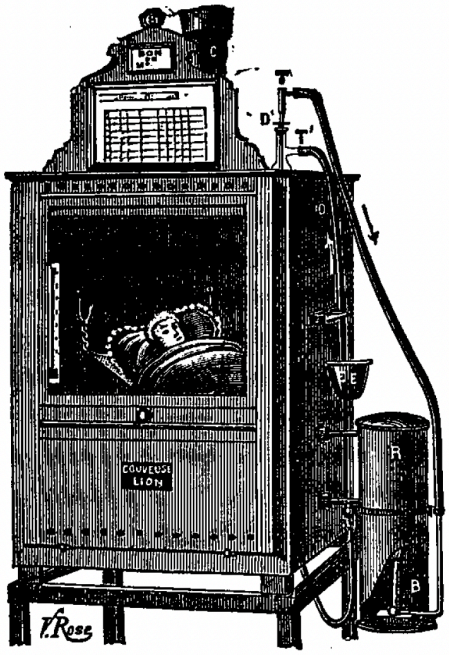

Fig. 1

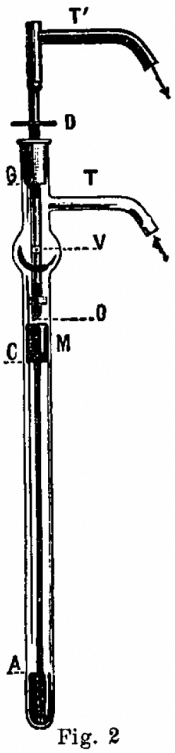

Fig. 2

§ 1. — Description of the apparatus

The Lion Incubator consists of a metal parallelepiped (galvanized, tinned or nickel-plated sheet), mounted on four iron feet (fig. 1). Its height is 0.70 m, its square base 0.55 m on a side. It withstands disinfection in the steam oven under pressure at 120° and even at higher temperatures.

The front is fitted with a double door or a glazed frame that slides in grooves, held at the desired height by opposing springs. Forty holes, 0.15 m in diameter, bored in the base of the apparatus, ensure ventilation; the top is likewise fitted with a draught chimney 0.30 m high and 0.10 m in diameter. These arrangements allow outside air to be brought directly to the base of the incubator, a great advantage for installations in rooms where the air is confined. The bottom of the incubator, sliding, lifts out like the floor of a birdcage.

Heating is by a circulation of hot water. A tinned copper coil 0.10 m in diameter winds round the lower part of the apparatus. It starts from a reservoir R fixed to the right of the apparatus. The reservoir is heated by illuminating gas, with a “Bunsen” burner. It is filled through the funnel E, which serves as the upper level. The reservoir holds 12 litres; evaporation amounts to a few centilitres a week when the apparatus is running normally. The child is placed in the middle of the incubator on a hammock of galvanized wire cloth; it is insulated at every point. An ordinary thermometer placed near the head allows the working of the apparatus to be checked.

So much for the heating; but it remained to unify and render constant the temperature of the incubator. The inventor achieved this by the use of a mercury regulator. The regulator (fig. 2) is

founded on the principle of the air thermometer. Variations of temperature modify the outflow section of the gas, which serves as fuel.

The regulator starts from an orifice bored in the upper part of the incubator. It comprises an upper gas chamber G M and a lower air chamber A C. These two chambers are separated by a horizontal partition, prolonged vertically at its centre by a tube 0.002 m in diameter descending into the lower chamber to within 0.002 m of the bottom. The upper chamber receives a nozzle T for the gas supply. This chamber is closed at its upper part by a stopper through which passes the gas-outlet tube. This tube, fitted with a disc, is threaded where it passes through the stopper. Its lower end O is open by an oblique bevelled section; its upper end connects to a tube T' running to the burner.

The air contained in the lower chamber of the regulator is trapped between two masses of mercury, at C and at A. This air, contracting or expanding according to variations of temperature, raises or lowers the upper mass of mercury. When the latter rises, it more or less closes the oblique opening, the bevel O of the gas-supply tube. One also acts on this tube by means of the disc D: turning from left to right raises the tube and enlarges the orifice O; consequently more gas passes and the heat of the source increases. The reverse manoeuvre produces the opposite effect.

A very small orifice, set on the gas-outlet tube a few centimetres above the mercury level, allows a very small quantity of gas to pass directly from the supply to the burner. The burner, whatever happens, is thus kept as a pilot flame. This precaution guards against the extinctions that might occur if a violent jolt given to the apparatus, or too abrupt a rise in the temperature of the surrounding air, brought about the complete obstruction of the bevelled orifice.

We have here, then, a perfect apparatus which will certainly render great services. It has the immense advantage of doing away with the hot-water bottles, with which one never managed to obtain in an incubator an absolutely constant temperature, despite all the supervision it might be given.

§ 2. — Electric alarm

In large installations, and on request, the incubators are fitted with an electric alarm. Experience has shown that this addition is not indispensable to the good working of the apparatus and constitutes only an added precaution. The temperature is always invariable and safety is absolute, with or without the alarm.

Description: The system consists of (1) a metal thermometer placed inside the incubator; (2) a bell and a dry cell fixed together on a small board and connected directly to the thermometer by two knobs passing through the wall of the incubator. On the apparatus's arrival, one has only to hook the thermometer and the board bearing the cell and the bell to the two knobs passing through the left wall of the incubator, and it is at once in working order.

Variations of temperature are transmitted by a metal plate to a movable needle. This indicator needle moves between two commutators that can be set as close together as one wishes; so that the slightest variation of temperature, up or down, makes the contact, closes the electric circuit and sets off the alarm bell. A switch allows the bell to be stopped as soon as it is heard, without touching the thermometer, so as to spare the cells.

§ 3. — Setting the apparatus

The incubator should be placed on its stand, preferably in a spot sheltered from draughts. On arrival, the mercury regulator is empty. One pours through its upper nozzle 10 to 15 cubic centimetres of

mercury (found in a small flask accompanying the incubator). The lower part of the regulator holds about 0.02 m of it, the upper part as much, and the connecting tube is full. Should air bubbles become trapped in the apparatus, jolts given vertically would drive them out. It is the air trapped by the mercury in the lower reservoir which, expanding or contracting under the influence of temperature, closes or uncovers to a greater or lesser degree the gas-inlet orifice and regulates the flow entirely automatically.

One fills the thermo-siphon with water (hot water if in a hurry) and lights the gas at the burner. (Care must be taken to bring the flame above the burner before the gas arrives.) In a few minutes the incubator's initial temperature will have risen 10 to 15 degrees. One then lowers or raises the flame by acting on the disc to reach the desired degree, leaving the regulator at that level. From that moment it works automatically.

For a given temperature the mercury level is invariable, as is the uncovered portion of the elliptical opening of the metal tube plunging into that mercury. Consequently the same quantity of gas will reach the burner in the same time; the constantly equal flame will keep the thermo-siphon water at a nearly fixed temperature; this in turn will yield by radiation a heat always equal to that required — whence a regular and constant temperature inside the incubator.

If now, for any cause, the interior temperature should rise or fall, the mercury level would rise or fall in the regulator, narrowing or enlarging the gas-inlet orifice; and a smaller or larger quantity of gas would reach the burner. Thus a lesser or stronger flame, and a tendency to bring the interior temperature promptly back to the degree originally set.

N.B. — The regulator must always be kept in a vertical position. A tilt of 30° would displace the mercury column, sending it down into the lower chamber. Should this occur, it would suffice to withdraw all the mercury by suction and reintroduce it through the upper nozzle. This operation is extremely simple. Take care to reduce the gas pressure to a minimum by nearly closing the supply tap.

Setting the alarm apparatus

Under the influence of rising heat, the needle of the metal thermometer moves and marks on the dial roughly the same degree as the mercury thermometer. (By the eccentric placed beneath the dial, one can shift the 0 of the thermometer to 10° and even 20°, above or below, for extreme temperatures; one then need only allow for the difference established.)

With the screw of their pivot one brings the commutator needles, one to the left and one to the right, as close as one wishes to the middle needle, which alone moves under the influence of thermal variations. One degree more or one degree less are suitable limits. If the regulator is properly set, the alarm bell will never be heard.

§ 4. — Lion Incubator: automatic regulator for all modes of heating (petroleum, gas, various spirits, electric hearth, etc.)

Since gas heating cannot be used everywhere, whether in town or country, M. Lion has put into service an incubator system in which the temperature is regulated perfectly by very simple apparatus. This incubator can be heated indifferently by petroleum, by gas, or by any other fuel. The form of the apparatus is always the same. A regulating thermometer transmits the movements of temperature to a lever and increases or decreases, as needed, the strength of the heat current. The regulation of temperature is therefore here again ensured automatically and perfectly.

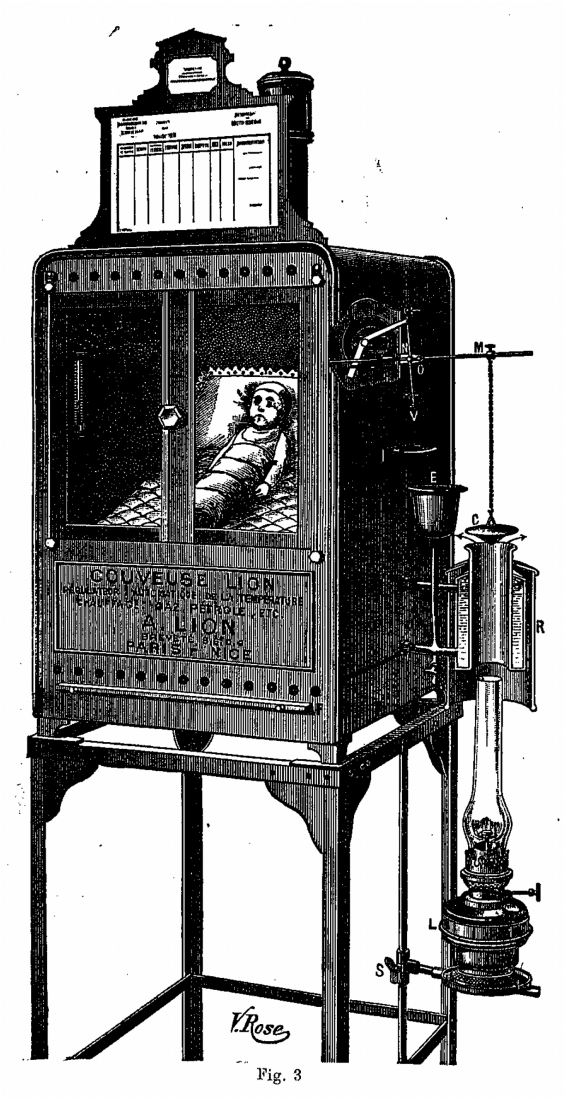

Fig. 3

1° Description of the apparatus (fig. 3). — The water container R is traversed through its whole height by a channel about 0.08 m in diameter. The heat source L is placed a few centimetres below the water container and in line with the channel, so as to give a direct outlet to the heat current when the shutter cone rises. T. — Metal thermometer. S. — Sliding support allowing the lamp or heat source every movement, vertical and horizontal. C. — Shutter cone suspended by a chainlet or a wire from the end of the lever P N O M. This cone closes or opens the channel and increases or decreases the action of the heat current on the inner and outer walls of the water container. O. — Axis of the lever P N O M. N O. — Short arm of the lever. O M. — Long arm of the lever. N. — Point of the short arm on which the thermometer acts through the setting screw V. P. — Counterweight. V. — Temperature-setting screw, also allowing the lever to be kept horizontal at any temperature. M. — Small hook supporting the cone. L. — Lamp for petroleum, gas, alcohol or various spirits, electric hearth, etc., of every model and shape.

2° Working. — 1° The cone C being lowered and completely closing the upper opening of the inner channel, the source L heats all the inner and outer walls of the water container: hence a rise in temperature. 2° As the temperature rises in the incubator, the disc rises and gives passage to the quantity of heat that would be in excess of the fixed degree: hence a fall in temperature. By the setting screw V, one raises the temperature by lowering the cone; one lowers it by the reverse movement.

Chapter III — Statistical table of premature infants reared at the A. Lion Maternity of Nice, 20 October 1891 to 6 December 1894

[Names appear as initials in the original. Outcome column: A = discharged alive, D = died, S = still under care on 6 December 1894.]

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1891							
1	B…	29 Oct.	8 mo.	2 375	Congenital weakness	29 Nov.	3 250	A	Perfect health.
2	B… M…	5 Nov.	6 ½ mo.	1 953	» »	20 Jan.	3 350	A	» »
3	V…	11 Dec.	6 ½ mo.	1 850	» » scleroderma	2 —	1 700	D	Died.
4	B…	15 Dec.	6 ½ mo.	1 650	» » cyanosis	25 Dec.		D	» »
5	L…	29 —	9 mo.	2 460	Athrepsia	20 Jan.	2 725	A	Good health.
6	L…	30 —	7 mo.	2 340	Congenital weakness	23 Feb.	3 683	A	Perfect health.
7	G… M…	29 —	6 mo.	1 350	» cyanosis	10 Mar.	1 829	A	Good health.
8	G…	31 —	7 ½ mo.	2 360	» congenital. Cyanosis	20 Feb.	3 527	A	Perfect health.
		1892							
9	R… J…	29 Jan.	7 ½ mo.	1 873	Generalized edema, R.T. 33°4/10	22 Mar.	2 833	A	» »
10	G…	30 —	7 mo.	1 956	Scleroderma, R.T. 31°3/10	3 —.	2 155	A	Progressing well.
11	C…	8 Feb.	8 mo.	2 125	Apparent death, R.T. 33°4/10	15 —	2 685	A	Perfect health.
12	R… C…	25 —	8 mo.	2 125	Generalized scleroderma, R.T. 33°2/10	9 Apr.	3 070	A	» »
13	C…	25 —	7 mo.	1 635	Congenital edema, R.T. 34°1/10	26 —	3 125	A	» »
14	C…	14 Mar.	8 mo.	2 415	» extremities, R.T. 35°2/10	12 —	3 055	A	» »
15	D…	17 —	6 mo.	0 960	Cyanosis	17 Mar.		D	Died (cyanosis).
16	T…	18 —	6 ½ mo.	1 127	Hydrocephaly	18 —		D	» (Hydrocephaly).
17	M…	20 —	6 mo.	0 925	» R.T. 32°3/10	23 —		S	Returned to parents.
18	T…	27 —	8 mo.	2 157	Erythema, R.T. 35°6/10	1 Apr.	2 198	A	Admitted to La Charité.
19	M…	30 —	6 mo.	0 954	Cyanosis, R.T. 31°7/10	10 —		D	Died (cyanosis).
20	M…	6 Apr.	6 ½ mo.	1 050	Extreme weakness, R.T. 34°1/10	12 May	1 550	A	Satisfactory health.
21	C…	25 —	7 mo.	1 450	Cyanosis	24 —	2 070	A	Perfect health.
22	B…	5 May	8 mo.	1 950	Generalized edema, R.T. 34°2/10	30 —	2 527	A	» »
23	R…	6 —	8 mo.	1 850	Scleroderma, R.T. 32°2/10	10 —		D	Died (generalized scleroderma).
24	Q…	14 —	7 ½ mo.	1 870	Fairly good condition	5 Jun.	2 376	A	Perfect health.
25	M…	16 —	6 mo.	0 870	Cyanosis	16 May		D	Died (cyanosis).
26	G…	24 —	7 mo.	1 650	Generalized edema, R.T. 34°7/10	29 Jun.	2 008	A	Perfect health.
27	R…	16 Jun.	8 mo.	1 855	» extremities	16 Jul.	2 575	A	» »
28	T…	29 —	6 ½ mo.	1 635	Severe weakness	12 Sep.	3 040	A	» »

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1892							
29	G…	4 Jul.	6 mo.	0 800	Cyanosis	6 Jul.		D	Died (convulsions).
30	D…	14 —	7 ½ mo.	1 725	Edema des pieds, ictère	25 Aug.	2 985	A	Perfect health.
31	S… V…	16 —	8 mo.	2 225	Congenital weakness (twins)	7 —	2 705	A	» »
32	S… R…	16 —	8 mo.	1 935	» » (twins)	7 —	2 556	A	» »
33	D…	27 —	6 mo.	0 870	Cyanosis	29 Jul.		D	Died (cyanosis).
34	F…	31 —	6 mo.	0 955	»	1 Aug.		D	» »
35	F…	23 Aug.	7 ½ mo.	1 669	Congenital weakness	15 Oct.	3 365	A	Perfect health.
36	G…	30 —	7 mo.	1 685	Cyanosis	30 Aug.		D	Died (cyanosis).
37	C…	20 Sep.	8 mo.	1 875	Jaundice Athrepsia (1er degré)	4 Nov.	2 4?9	D	» (Hydrocephaly).
38	G…	20 Oct.	7 ½ mo.	2 240	General. edema, Erythema, R.T. 33°7/10	1 Dec.	2 975	A	Perfect health.
39	A…	7 Nov.	8 mo.	2 295	» », R.T. 34°6/10	9 —	3 195	A	» »
40	B…	9 —	7 ½ mo.	1 950	Athrepsia (1er degré), R.T. 34°9/10	19 Jan.	3 150	A	» »
41	B…	14 —	6 ½ mo.	1 425	Extreme weakness, R.T. 33°2/10	27 —	2 870	A	» »
42	S…	14 —	6 ½ mo.	1 720	Edema, Jaundice, R.T. 34°3/10	4 Feb.	3 210	A	» »
43	G…	25 —	6 ½ mo.	1 547	Cyanosis, black meconium, R.T. 32°3/10	16 —	3 090	A	» »
44	R…	4 Dec.	6 mo.	1 395	Congenital edema, hydrocéphalie	9 Dec.	1 370	D	Died (hydrocephaly).
45	R…	9 —	8 mo.	2 710	» generalized	30 —	3 053	A	Perfect health.
46	M…	30 —	8 mo.	2 125	» », R.T. 33°5/10	25 Jan.	2 508	A	» »
		1893							
47	V…	3 Jan.	7 ½ mo.	1 780	Congenital edema, 34°4/10	9 Feb.	2 595	A	» »
48	M…	15 —	7 mo.	1 960	Extreme weakness, R.T. 34°3/10	21 Mar.	3 375	A	» »
49	M… B…	17 —	8 mo.	2 580	Severe weakness, not taking the breast, R.T. 35°1/10	18 Feb.	3 200	A	» »
50	G… J…	17 —	7 ½ mo.	1 895	Scleroderma, intertrigo, R.T. 32°1/10	29 Mar.	3 720	A	» »
51	G… L…	17 —	7 ½ mo.	2 127	» », R.T. 38°3/10	29 Mar.	3 620	A	» »
52	O…	20 —	7 ½ mo.	2 296	Athrepsia (1er degré)	3 Mar.	3 015	A	Perfect health.
53	P… J…	24 —	6 ½ mo.	1 095	Ext. faib., R.T. 31°6/10	3 Mar.	1 640	A	Progressing well.
54	D…	25 —	7 ½ mo.	1 903	Cyanosis, edema of the extremities	5 Mar.	2 610	A	Perfect health.
55	P…	6 Feb.	7 mo.	1 800	Extreme weakness, R.T. 34°3/10	23 Feb.	1 705	D	Died — congenital debility, convulsions.
56	S…	7 —	6 ½ mo.	1 275	General. edema, apparent death, R.T. 35°2/10	7 Feb.	1 275	D	» »
57	M…	9 —	7 mo.	2 670	Congenital edema, R.T. 35°2/10	23 Feb.	2 790	A	Perfect health.
58	Z…	9 Mar.	7 mo.	1 670	General. edema	25 Apr.	2 430	A	» »
59	P… R…	10 —	7 mo.	2 360	Generalized scleroderma, apparent death, R.T. 29°6/10	10 Mar.		D	Died (scleroderma, convulsions).

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1893							
60	I…	11 Mar.	8 ½ mo.	2 060	Severe congenital weakness	4 Apr.	2 820	A	Perfect health.
61	S…	16 —	8 mo.	2 630	Generalized edema. Intertrigo	6 —	2 989	A	» »
62	C…	18 Mar.	8 mo.	2 765	Slight edema on the hands. Scleroderma on the legs	24 Mar.	2 780	A	Returned to parents. Ophthalmia.
63	M…	20 —	7 mo.	1 620	Congenital weakness, R.T. 33°7/10	6 May	2 865	A	Perfect health.
64	P…	24 —	7 mo.	1 715	Severe congenital weakness, R.T. 34°2/10	23 —	3 115	A	» »
65	E…	29 —	7 mo.	1 530	Edema, R.T. 33°8/10	15 Apr.	1 467	D	Died. Convulsive jaundice.
66	E…	30 —	7 mo.	1 410	Severe weakness, R.T. 34°3/10	12 May	2 130	A	Perfect health.
67	A…	30 —	8 mo.	1 940	Slight edema, R.T. 34°4/10	2 —	2 475	A	» »
68	B…	3 Apr.	7 mo.	1 680	Cyanosis, R.T. 32°1/10	11 Apr.	1 640	A	Returned to parents.
69	A…	3 —	8 mo.	2 120	Congenital weakness, R.T. 35°2/10	25 —	2 515	A	Perfect health.
70	B…	7 —	8 mo.	2 270	Cyanosis, œdème congénit. 33°3/10	10 May	2 885	A	» »
71	R…	10 —	7 mo.	2 050	Grande faibl. congénit. 34°4/10	28 —	2 920	D	Died — diarrhea.
72	E…	11 —	6 mo.	1 230	Extreme congenital weakness, 32°	12 Jul.	1 650	D	» Diarrhée.
73	B…	11 —	6 ½ mo.	1 160	Extreme weakness, 33°2/10	24 Jun.	2 705	A	Perfect health.
74	P…	14 —	7 mo.	2 050	Athrepsia (1st degree), R.T. 34°7/10	10 May	2 450	A	Perfect health.
75	P…	19 —	6 ½ mo.	1 320	Severe weakness, R.T. 34°5/10	9 Jul.	3 165	A	» »
76	J…	22 —	7 ½ mo.	1 860	Edema of the extremities, R.T. 33°2/10	30 Apr.	1 930	A	Good health.
77	M…	27 —	6 ¾ mo.	2 245	« », R.T. 31°6/10	29 May	2 590	A	Good health.
78	B…	29 —	8 mo.	1 740	Cyanosis, pulmonary atelectasis, R.T. 32°8/10	30 Apr.		D	Died.
79	L…	1 May	8 mo.	1 725	Severe weakness, R.T. 34°5/10	14 May	1 400	D	Died (convulsions).
80	B…	6 —	8 mo.	2 335	Faib. cong., œd. lég. des extrém.	7 Jun.	3 550	A	In excellent condition.
81	C…	8 —	7 ½ mo.	1 930	Umbilical hernia, not taking the breast, R.T. 34°3/10	3 Jul.	3 210	A	Perfect health.
82	R…	15 —	7 ½ mo.	2 080	Edema aux extremities	20 Jun.	3 415	A	» »
83	A…	1 Jun.	8 mo.	1 925	R.T. 34°4/10	27 Jul.	2 525	D	Died (convulsions).
84	B…	10 —	8 mo.	2 700	Slight jaundice, R.T. 35°3/10	24 Jun.	2 980	A	Perfect health.
85	G…	19 —	8 mo.	1 800	Generalized congenital edema, R.T. 33°2/10	27 Jul.	2 380	A	» »
86	G…	19 —	8 mo.	2 280	» « R.T. 34°3/10	16 —	2 880	A	» »
87	P…	21 Jul.	7 ½ mo.	1 505	Extreme weakness, R.T. 35°2/10	25 Sep.	2 910	A	Perfect health.
88	P…	24 —	7 mo.	1 440	Cyanosis, R.T. 34°3/10	10 Oct.	2 230	A	» »
89	D…	24 —	6 mo.	1 220	Severe weakness, R.T. 35°1/10	24 Sep.	1 940	A	Very good condition.
90	S…	26 —	7 ½ mo.	1 750	Cyanosis, R.T. 35°7/10	8 —	2 545	A	» »
91	L…	29 —	8 mo.	2 000	Severe weakness, R.T. 35°2/10	3 —	2 325	A	Perfect health.
92	B…	1 Aug.	8 mo.	2 250	» », R.T. 35°4/10	27 Aug.	3 025	A	» »
93	R…	9 —	7 mo.	1 210	Apparent death, R.T. 33°3/10	15 —	1 105	D	Died (extreme congenital weakness).

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1893							
94	B…	9 Aug.	7 mo.	1 605	Severe weakness, R.T. 34°7/10	29 Aug.	1 515	D	« »
95	A…	14 —	7 mo.	1 530	Pemphigus, R.T. 34°4/10	7 Oct.	2 350	A	Perfect health.
96	F…	20 Aug.	7 ½ mo.	1 430	R.T. 33°8/10	3 Nov.	2 800	A	Perfect health.
97	F…	20 —	7 ½ mo.	1 890	R.T. 34°6/10	3 —	2 750	A	» »
98	C…	31 —	6 mo.	1 100	R.T. 36°	16 —	1 865	A	» »
99	D…	21 Sep.	7 mo.	1 810	Cyanosis, R.T. 35°	26 Sep.	1 955	D	Died (cyanosis).
100	T…	21 —	7 mo.	1 650	T. 36°	29 Nov.	2 790	A	Perfect health.
101	V…	7 Oct.	6 mo.	1 150	R.T. 34°1/10, extrême faiblesse	11 Dec.	2 070	A	» »
102	O…	13 —	6 ½ mo.	1 100	R.T. 35°	4 —	2 575	A	» »
103	O…	14 —	7 mo.	1 500	R.T. 34°7/10	14 Jan.	2 510	A	» »
104	F…	18 —	6 mo.	1 200	R.T. 34° Cyanosis, Œd. des malléol.	22 Oct.	1 200	D	Died (edema of the newborn).
105	B…	22 —	6 mo.	1 100	R.T. 34° Edema, Cyanosis	8 Feb.	2 219	A	Perfect health.
106	De F…	26 —	7 ½ mo.	1 505	R.T. 36°	25 Dec.	2 750	A	» »
107	C… M…	4 Nov.	6 mo.	0 920	R.T. 31°, Apparent death	4 Nov.	0 920	D	Died (extreme congenital weakness).
108	M… C…	4 —	7 mo.	1 300	R.T. 35°, Athrepsia	17 —	1 475	D	Died (athrepsia).
109	M… E…	4 —	7 mo.	1 595	R.T. 34°5, Hypothermia, œdème	11 —	1 650	D	Died (eclampsia).
110	M… A…	5 —	7 ½ mo.	1 940	R.T. 35° Cyanosis	20 —	2 230	A	Good health.
111	M… D…	5 —	7 ½ mo.	2 000	R.T. 35°4, Good condition	20 —	2 340	A	» »
112	D…	16 —	7 ½ mo.	2 340	R.T. 35°1/10	20 Jan.	3 475	A	Perfect health.
113	A… C…	20 —	7 mo.	2 400	R.T. 35°2/10	17 Dec.	3 080	A	» »
114	L…	25 —	8 mo.	2 055	R.T. 34°4/10 Edema	31 —	2 380	A	» »
115	G…	27 —	8 ½ mo.	2 120	R.T. 34°3/10, Generalized edema	18 —	3 285	A	» »
116	A…	26 —	8 mo.	2 220	R.T. 35°1/10 »	19 —	2 570	A	» »
117	E…	2 Dec.	7 ½ mo.	2 125	R.T. 34°8/10 »	19 Jan.	3 040	A	» »
118	B…	9 —	7 mo.	1 635	R.T. 34°2/10, Cyanosis	7 Feb.	2 095	A	» »
119	D…	11 —	8 mo.	1 980	R.T. 34°4/10, General edema	11 Jan.	2 450	A	» »
120	M…	11 —	7 mo.	2 180	R.T. 33°3/10, Scleroderma	27 Dec.	2 195	D	Died (convulsions).
121	C…	12 —	8 mo.	2 350	R.T. 36°1/10, Edema	13 Jan.	2 880	A	Perfect health.
122	A…	19 —	7 mo.	1 670	R.T. 34°2/10, Cyanosis, intertrigo	28 —	2 410	A	» »
123	G…	21 —	7 mo.	1 790	R.T. 36°2/10, General edema	27 —	2 410	A	» »
		1894							
124	B…	8 Jan.	7 ½ mo.	1 722	R.T. 33°, Cyanosis, Edema gén.	23 Jan.	1 915	D	Died (cardiac cyanosis).
125	M…	9 —	7 mo.	1 540	R.T. 35°3/10, Edema	22 Feb.	2 810	A	Perfect health.
126	A…	10 —	at term	1 840	R.T. 34°2/10, Athrepsia	10 —	2 740	A	» »
127	R…	14 —	7 ½ mo.	1 680	R.T. 35°2/10, Jaundice	25 Jan.	1 800	D	Died (jaundice).
128	C…	20 —	8 mo.	2 480	R.T. 33°3/10, Pulmonary cyanosis	28 —	2 590	A	Perfect health.

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1894							
129	F…	22 Jan.	8 mo.	2 098	R.T. 32°1/10, General edema	10 Feb.	2 535	A	Perfect health.
130	R…	27 —	7 ½ mo.	1 790	R.T. 36°2/10, Extreme weakness	7 Mar.	2 210	A	» »
131	P…	30 —	7 ½ mo.	2 094	R.T. 36°4/10, Edema	8 —	3 080	A	» »
132	M…	5 Feb.	7 mo.	1 600	R.T. 28°6/10, Cyanosis. Scleroderma	2 Apr.	2 210	A	» »
133	R…	8 —	at term	2 562	R.T. 35°6/10	13 Feb.	2 635	A	» »
134	L…	10 —	6 mo.	1 560	R.T. 29°, Extreme weakness	4 May	2 390	D	Died.
135	S…	13 —	8 mo.	2 009	R.T. 34°7/10	14 Mar.	2 660	A	Perfect health.
136	D…	14 —	7 mo.	1 892	R.T. 32°1/10, Scleroderma	5 —	1 920	A	» »
137	B…	14 —	8 mo.	1 453	R.T. 29°, Mort appar. (Cyanosis)	16 Feb.	1 450	D	Died.
138	P…	14 —	8 mo.	2 578	R.T. 33°3/10	14 Mar.	3 005	A	Perfect health.
139	B…	20 —	7 mo.	1 620	R.T. 33°6/0, Cyanosis	6 —	1 770	A	» »
140	D…	28 —	7 ½ mo.	1 820	R.T. 35°2/10, Edema	23 Apr.	3 030	A	» »
141	A…	2 Mar.	6 mo.	1 260	R.T. 30°, Cyanosis	14 Mar.	1 230	D	Died (cyanosis).
142	W…	8 —	6 mo.	1 260	R.T. 33°2/10, Cyanosis	31 May	2 945	A	Perfect health.
143	B…	10 —	8 mo.	2 205	R.T. 32°, Cyanosis	7 Apr.	2 370	A	Perfect health.
144	G…	19 —	8 mo.	2 485	R.T. 34°2/10, Cyanosis, edema	31 Mar.	2 630	A	» »
145	C…	21 —	8 mo.	2 000	R.T. 34°3/10, Cyanosis	17 Apr.	2 755	A	» »
146	C…	24 —	7 ½ mo.	2 585	R.T. 34°4/10	6 May	3 535	A	» »
147	C…	25 —	7 mo.	1 670	R.T. 29°, Extreme weakness	25 May	2 600	A	» »
148	C…	28 —	6 ½ mo.	1 110	R.T. 26°3/10, Apparent death	28 Mar.	1 100	D	Died.
149	C…	30 —	7 ½ mo.	2 370	R.T. 29°, Jaundice	21 May	3 030	A	Perfect health.
150	A…	4 Apr.	7 ½ mo.	1 740	R.T. 34°8/10, Fairly good condition	22 —	2 200	D	Died (acute enteritis).
151	V…	11 —	6 ½ mo.	1 170	R.T. 26°6/10, Apparent death	18 Apr.	1 100	D	Died (extreme weakness).
152	G…	20 —	7 ½ mo.	1 425	R.T. 28°7/10, Edema	5 May	1 525	D	Died (extreme congenital weakness).
153	B…	1 May	7 mo.	2 050	R.T. 34°2/10, Severe weakness	2 Jul.	2 640	A	Perfect health.
154	P…	9 —	8 mo.	1 760	R.T. 31°3/10, Cyanosis	10 May		D	Extreme weakness.
155	S…	27 —	9 mo.	2 115	R.T. 34°2/0, Athrepsia (1st degree)	2 Jun.	2 210	A	Good health.
156	C…	27 —	8 mo.	2 500	R.T. 35°1/10	27 —	3 040	A	» parfaite.
157	M…	5 Jun.	7 mo.	1 670	R.T. 31°	6 Aug.	2 345	A	» »
158	J…	24 —	8 mo.	1 980	R.T. 34°5/10	28 Jul.	2 520	A	» »
159	C…	1 Jul.	6 ½ mo.	1 400	R.T. 34°, Cyanosis	1 —		D	Décédé, faiblesse congénit.
160	Z…	1 —	8 mo.	2 300	R.T. 35°1/10, Jaundice	6 —		D	Décédé, Jaundice.
161	R…	14 —	8 mo.	2 567	R.T. 35°9/10	30 —	2 853	A	Perfect health.
162	B…	8 —	7 mo.	1 780	R.T. 33°6/10, Edema	23 —	1 562	D	Extreme congenital weakness.
163	B…	17 Jul.	7 mo.	1 680	R.T. 34°6/10	16 Sep.	2 589	A	Perfect health.

No.	Name	Admitted	Gestation	Adm. wt.	Condition on admission	Discharged	Disch. wt.	Outcome	Condition on discharge
		1894							
164	B…	29 Jul.	7 mo.	2 565	R.T. 35°5/10	5 Sept.	3 475	A	Perfect health
165	R…	29 —	7 mo.	1 530	R.T. 34°3/10	24 —	2 730	A	» »
166	G…	6 Aug.	8 mo.	1 645	R.T. 34°3/10	6 Oct.	3 070	A	» »
167	B…	26 —	7 mo.	2 160	R.T. 35°	23 —	2 755	A	» »
168	B…	26 —	7 mo.	2 020	R.T. 34°3/10	23 —	3 410	A	» »
169	E…	28 —	7 mo.	2 100	R.T. 35°, Edema	10 Nov.	4 100	A	» »
170	M…	5 Sep.	7 mo.	2 020	R.T. 34°3/10	6 Oct.	2 515	A	» »
171	B…	9 —	7 mo.	2 135	R.T. 35°	1 Nov.	2 920	A	» »
172	B…	9 —	7 mo.	2 220	R.T. 33°8/10	1 —	3 255	A	» »
173	M…	15 —	7 mo.	3 810	R.T. 35°, Good condition	30 Sep.	4 065	A	» »
174	C…	27 —	7 ½ mo.	1 623	R.T. 33°, Extreme weakness	—		S	» »
175	C…	27 —	7 ½ mo.	1 243	R.T. 33°1/10, Edema	2 Dec.	2 690	A	» »
176	P…	6 —	7 mo.	3 750	R.T. 35°, Good condition	7 Oct.	4 315	A	» »
177	S…	16 —	7 mo.	1 677	R.T. 33°, Cyanosis	—		S	» »
178	B…	10 Oct.	8 ½ mo.	2 350	R.T. 34°, Slight edema	30 Oct.	2 475	A	» »
179	B…	10 —	8 ½ mo.	2 355	R.T. 35°, Generalized edema	25 —	2 400	D	died — extreme weakness.
180	B…	11 —	7 mo.	1 460	R.T. 33°2/10	2 Nov.		D	died — congenital weakness.
181	P…	21 —	7 ½ mo.	1 310	R.T. 29°, Extreme weakness	30 Oct.		D	died (non-viability).
182	P…	23 —	7 mo.	1 453	R.T. 30°, Cyanosis	27 —		D	died (constitutional weakness).
183	M…	24 —	8 mo.	1 560	R.T. 32°, Extreme weakness	10 Nov.		D	décédé »
184	R…	17 Nov.	8 mo.	2 365	R.T. 34°, Edema	—		S	
185	S…	6 Dec.	8 mo.	1 870	R.T. 34°, Athrepsia (1st degree)	—		S	

Chapter IV — Analytical table of premature infants reared at the Lion Maternity of Nice, 29 October 1891 to 6 December 1894

Weight on admission	Number	Discharged alive	Died	Still under care	Remarks
800–900 g	3	»	3	»	
901–1 000 g	5	»	5	»	Of which 2 died the same day
1 001–1 100 g	4	3	1	»	Died the same day
1 101–1 200 g	7	2	4	1	Of which 2 died the same day
1 201–1 300 g	9	4	5	»	Of which 4 died the same day
1 301–1 400 g	5	3	2	»	Of which 1 died the same day
1 401–1 500 g	11	6	5	»	Of which 2 died the same day
1 501–1 600 g	10	6	4	»	
1 601–1 700 g	22	16	4	2	Of which 1 died the same day
1 701–1 800 g	14	8	6	»	
1 801–1 900 g	15	11	4	»	
1 901–2 000 g	12	11	1	»	
2 001–2 100 g	13	13	»	»	
2 101–2 200 g	12	11	1	»	
2 201–2 300 g	12	12	»	»	
2 301–2 400 g	13	9	3	1	
2 401–2 500 g	4	4	»	»	
2 501–2 600 g	7	7	»	»	
2 601–2 700 g	3	3	»	»	
2 701–2 800 g	2	2	»	»	
2 801–2 900 g	2	2	»	»	
TOTALS	**185**	**133**	**48**	**4**	

Chapter V — Analysis: general considerations

The data furnished by this table are most instructive as to the results the incubator can give. It allows us to establish both the limits beyond which a child cannot be saved and to determine some principles to serve as a basis for admitting children to the Maternity.

Two notions dominate the whole physiology of the premature infant: its weight and its temperature. The chances of life for a healthy premature infant, free of any congenital defect, are in direct proportion to its weight and to the degree of its temperature on admission to the incubator.

Referring to the table, one sees that from a weight of 1,000 grams upward most children are saved. Thus, of the four children weighing 1,000 to 1,100 grams on admission to the Maternity, three were returned to their parents in excellent health. On the contrary, children weighing less than 1,000 grams have little chance of living. Of eight placed in the incubator, we count eight deaths. It is true that these children had, on admission, a rectal temperature below 33° — a capital circumstance in the matter. We grant, indeed, that some might have lived had they been placed in the incubator immediately after delivery, before too great a cooling had occurred.

Children weighing from 1,100 to 2,500 grams almost all showed a very great power of resistance. Very few succumbed. Here again, in analysing the causes of death, one sees that it is the delay in placing them in the incubator, and the ensuing hypothermia, that almost always brought about death.

Of the forty other deaths, twenty-eight died either of hypothermia or of one of the affections caused by cooling (edema of the newborn, scleroderma); and the twelve remaining deaths break down as follows: hydrocephaly, 2; jaundice, 5; infantile diarrhea, 2; eclampsia, 3. These always serious affections were influenced by incubation neither for good nor for ill, and bear no cause-and-effect relation to the child's stay in the incubator.

Taking the whole of the results into account, and setting aside the eight children weighing less than 1,000 g who were admitted in hypothermia and therefore not viable, as well as the eleven who died only a few hours after their arrival, a success rate of 82 per cent was obtained. Lasting successes, for nearly all the children discharged from the incubators whom we had occasion to see again at a later date showed no difference from children born at term.

We have established that three-quarters of the deaths (36 out of 48) were due to hypothermia or to the affections connected with it. It follows that these children could have lived had they been brought in sooner. Hence this rule, which cannot be too strongly insisted upon: premature infants must be placed in the incubator immediately after birth; any delay diminishes their chances of life.

We add that this fact allows us to hope, for the future, for results still finer than those obtained hitherto. When the Oeuvre Maternelle des Couveuses d’Enfants becomes better known, and when suitable means of transport allow the time between the premature child's birth and its placing in the incubator to be reduced to a minimum, then it will be possible to say: “Thanks to the incubator, it is rare to see a premature infant die — even one born at 6 months' gestation — provided that, free of hereditary defect, it has a weight not below 1,000 g and is placed in the incubator soon enough after birth to escape cooling.”

Until now, the means employed to preserve the life of the premature had given deplorable results. In vain did one try, by wrapping them in insulating materials and cotton wool in particular, to prevent cooling. The cotton box, become proverbial, delayed the fatal outcome by barely a few hours. Cold took the little one and killed it!

How many grieving mothers have watched this slow agony, and felt growing cold beneath their powerless kisses the dear little one come too soon, who was slipping away, carrying with it into the grave the sweet joys of motherhood, the hopes and the plans for the future! What would they not have done to keep their child, however weak, however ill-formed it might be; and how they would have blessed anyone who had come to say to them in their distress: “Your child is going to die; I bring you the means to save it.” That means, which seemed an unattainable chimera but a few years ago, which was still only a notion of the mind without experimental confirmation — that means is found; it has proved itself. Today the problem is solved: the life of the premature is secured, as the statistics just read demonstrate irrefutably.

Chapter VI — Observations

I. — No. Mle 43. G..., female, November 25, 1892.

Gestation: 6½ months. Rectal temperature: 32.3°. Generalized cyanosis.

Dates	Weight	Incub. temp.	Body temp.
1892 — 25 Nov.	1 547	32°	35°7/10
26 Nov.	1 506	»	36°8/10
30 —	1 512	»	37°
6 Dec.	1 520	»	»
10 —	1 548	»	»
15 —	1 603	»	»
20 —	1 658	31°	»
25 —	1 743	»	»
31 —	1 869	»	»
1893 — 5 Jan.	1 980	30°	»
10 —	2 105	»	»
15 —	2 240	»	»
20 —	2 395	29°	»
16 Feb.	3 090	27°	»

Discharged 16 February 1893. Perfect health.

II. — No. Mle 49. M..., male, January 16, 1893.

Gestation: 8 months. Rectal temperature: 35.1°. Not taking the breast. Severe weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 17 Jan.	2 580	31°	35°4/10
21 —	2 360	»	37°
27 —	2 450	30°	»
1 Feb.	2 570	»	»
7 —	2 730	29°	»
14 —	2 955	28°	»
18 —	3 200	27°	»

Discharged 18 February 1893. Excellent health.

III. — No. Mle 60. I..., female, March 8, 1893.

Gestation: 8½ months. Rectal temperature: 35.3°. Severe congenital weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 11 Mar.	2 060	31°	35°9/10
17 —	2 180	29°	37°
22 —	2 283	»	»
25 —	2 352	28°	»
30 —	2 512	»	»
5 Apr.	2 820	26°	»

Discharged 5 April 1893. Perfect health.

IV. — No. Mle 73. B..., female, April 11, 1893.

Gestation: 6½ months. Rectal temperature: 33.1°. Extreme weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 11 Apr.	1 160	34°	33°3/10
15 —	1 153	33°	36°6/10
21 —	1 195	»	37°
26 —	1 235	32°	»
1 May	1 295	»	»
10 —	1 450	30°	»
15 —	1 540	»	»
20 —	1 640	»	»
25 —	1 750	»	»
31 —	1 920	»	»
5 Jun.	2 070	29°	»
10 —	2 220	»	»
15 —	2 375	28°	»
20 —	2 425	»	»
25 —	2 580	27°	»
29 —	2 705	»	»

Discharged 29 June 1893. Excellent health.

V. — No. Mle 75. P..., male, April 14, 1893.

Gestation: 6½ months. Rectal temperature: 34.5°. Onset of ophthalmia. Severe weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 19 Apr.	1 330	32°	34°5/10
21 —	1 320	31°	37°
26 —	1 335	»	»
1 May	1 390	30°	»
5 —	1 430	»	»
10 —	1 515	29°	»
15 —	1 610	»	»
20 —	1 720	»	»
25 —	1 830	»	»
31 —	1 975	28°	»
5 Jun.	2 100	»	»
10 —	2 240	»	»
15 —	2 390	»	»
20 —	2 440	27°	»
25 —	2 575	»	»
30 —	2 750	26°	»
9 Jul.	3 065	»	»

Discharged 9 July 1893. Perfect health.

VI. — No. Mle 87. P..., female, July 21, 1893.

Gestation: 7½ months. Rectal temperature: 35.2° [source prints “35°2/30”]. Extreme weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 21 Jul.	1 555	32°	35°2/10
23 —	1 505	»	37°
27 —	1 500	31°	»
31 —	1 530	»	»
3 Aug.	1 570	»	»
18 —	1 710	»	»
22 —	1 820	30°	»
28 —	2 000	»	»
5 Sep.	2 250	29°	»
11 —	2 415	»	»
17 —	2 615	28°	»
25 —	2 910	»	»
30 —	3 085	27°	»
5 Oct.	3 260	26°	»
10 —	3 450	25°	»
14 —	3 630	»	»

Discharged 14 October 1893. Excellent health.

VII. — No. Mle 96. F..., female, August 17, 1893.

Gestation: 7½ months. Rectal temperature: 33.8°. Slight edema. Twin sister of No. Mle 97.

Dates	Weight	Incub. temp.	Body temp.
1893 — 20 Aug.	—	32°	33°8/10
21 —	1 430	»	37°
31 —	1 400	31°	»
5 Sep.	1 480	»	»
11 —	1 555	»	»
21 —	1 770	»	»
26 —	1 930	»	»
6 Oct.	2 190	30°	»
3 Nov.	2 800	27°	»

Discharged 6 November 1893. Good health.

VIII. — No. Mle 97. F..., female, August 17, 1893.

Gestation: 7½ months. Rectal temperature: 34.6°. Twin sister of No. Mle 96.

Dates	Weight	Incub. temp.	Body temp.
1893 — 20 Aug.	—	31°	34°6/10
21 —	1 890	»	37°
31 —	1 675	»	»
5 Sep.	1 800	30°	»
11 —	1 960	»	»
21 —	2 205	»	»
26 —	2 470	29°	»
5 Oct.	2 655	28°	»
3 Nov.	2 750	25°	»

Discharged 6 November 1893. Perfect health.

IX. — No. Mle 102. O..., female, October 13, 1893.

Gestation: 6½ months. Rectal temperature: 35°. Severe weakness.

Dates	Weight	Incub. temp.	Body temp.
1893 — 14 Oct.	1 300	31°	35°
20 —	1 320	30°	37°
25 —	1 375	29°	»
30 —	1 395	»	»
3 Nov.	1 395	28°	»
7 —	1 730	28°	»
20 —	2 170	27°	»
26 —	2 280	»	»
2 Dec.	2 503	26°	»
4 —	2 575	25°	»

Discharged 4 December 1893. Excellent health.

X. — No. Mle 105. B..., male, October 22, 1893.

Gestation: 6 months. Rectal temperature: 34.4°. Generalized edema.

Dates	Weight	Incub. temp.	Body temp.
1893 — 22 Oct.	1 100	32°	34°6/10
29 —	1 050	31°	37°
7 Nov.	1 015	»	»
17 —	1 123	30°	»
20 —	1 140	29°	»
26 —	1 300	»	»
9 Dec.	1 310	»	»
17 —	1 390	»	»
20 —	1 425	28°	»
24 —	1 505	»	»
31 —	1 590	27°	»
1894 — 7 Jan.	1 720	»	»
28 —	1 980	»	»
6 Feb.	2 165	25°	»
8 —	2 219	»	»

Discharged 8 February 1894. Perfect health.

XI. — No. Mle 106. F..., male, October 26, 1893.

Gestation: 7½ months. Rectal temperature: 36°. [The table lists a first entry date of 24 October, earlier than the stated birth date — an inconsistency in the source.]

Dates	Weight	Incub. temp.	Body temp.
1893 — 24 Oct.	1 505	31°	36°
4 Nov.	1 580	»	37°
7 —	1 600	»	»
15 —	1 650	»	»
20 —	1 805	»	»
26 —	1 915	»	»
3 Dec.	2 138	»	»
7 —	2 330	»	»
13 —	2 420	29°	»
19 —	2 510	28°	»
25 —	2 650	25°	»

Discharged 25 December 1893. Perfect health.

XII. — No. Mle 123. G..., female, December 21, 1893.

Gestation: 7 months. Rectal temperature: 36.2°. Generalized edema. Asphyxia. Cardiac and respiratory arrest. Artificial respiration. Tongue traction for 15 minutes.

Dates	Weight	Incub. temp.	Body temp.
1893 — 26 Dec.	1 790	32°	36°2/10
1894 — 7 Jan.	1 840	»	37°
17 —	2 090	30°	»
27 —	2 410	28°	»

Discharged 27 January 1894. Perfect health.

XIII. — No. Mle 131. P..., female, January 30, 1894.

Gestation: 7 months and 3 weeks. Rectal temperature: 36.3°. Edema.

Dates	Weight	Incub. temp.	Body temp.
1894 — 30 Jan.	2 094	30°	36°4/10
6 Feb.	2 130	»	37°
11 —	2 245	»	»
22 —	2 610	29°	»
25 —	2 740	»	»
4 Mar.	2 920	27°	»
8 —	3 080	»	»

Discharged 8 March 1894. Perfect health.

XIV. — No. Mle 140. D..., female, February 28, 1894.

Gestation: 7½ months. Rectal temperature: 35.1°. Edema.

Dates	Weight	Incub. temp.	Body temp.
1894 — 28 Feb.	1 820	32°	35°2/10
4 Mar.	1 850	31°	37°
11 —	1 850	»	»
18 —	1 935	»	»
24 —	2 005	30°	»
1 Apr.	2 290	29°	»
7 —	2 470	»	»
14 —	2 840	»	»
23 —	3 030	26°	»

Discharged 23 April 1894. Excellent health.

XV. — No. Mle 142. W..., female, March 8, 1894.

Gestation: 6½ months. Rectal temperature: 33.2°. Extreme weakness. Cyanosis.

Dates	Weight	Incub. temp.	Body temp.
1894 — 8 Mar.	1 260	34°	33°2/10
11 —	1 290	»	37°
18 —	1 340	32°	»
24 —	1 350	»	»
1 Apr.	1 565	»	»
7 —	1 720	»	»
14 —	1 785	31°	»
21 —	1 905	30°	»
30 —	2 180	29°	»
5 May	2 205	»	»
10 —	2 325	»	»
15 —	2 450	28°	»
20 —	2 600	27°	»
25 —	2 765	26°	»
31 —	2 945	25°	»

Discharged 31 May 1894. Perfect health.

XVI. — No. Mle 163. B..., female, July 15, 1894.

Gestation: 7 months. Rectal temperature: 34.6°. Edema. First-born twin; the second was stillborn.

Dates	Weight	Incub. temp.	Body temp.
1894 — 17 Jul.	1 680	33°	34°6/10
26 —	1 665	32°	37°
6 Aug.	1 615	»	»
12 —	1 775	31°	»
18 —	1 980	30°	»
26 —	1 995	29°	»
2 Sep.	2 335	28°	»
9 —	2 515	27°	»
15 —	2 589	25°	»

Discharged 16 September 1894. Perfect health.

XVII. — No. Mle 166. G..., male, August 6, 1894.

Gestation: 7 months. Rectal temperature: 34.3°. Edema.

Dates	Weight	Incub. temp.	Body temp.
1894 — 6 Aug.	1 645	31°	34°3/10
12 —	1 765	»	37°
18 —	1 870	30°	»
26 —	1 910	»	»
2 Sep.	2 175	»	»
9 —	2 355	»	»
15 —	2 510	29°	»
22 —	2 695	»	»
29 —	2 872	27°	»
6 Oct.	3 070	26°	»

Discharged 6 October 1894. Excellent health.

XVIII. — No. Mle 168. B..., male, August 25, 1894.

Gestation: 7 months. Rectal temperature: 34.3°. Edema. Second twin. [The table carries no explicit discharge line.]

Dates	Weight	Incub. temp.	Body temp.
1894 — 26 Aug.	2 020	32°	34°3/10
2 Sep.	2 100	»	35°
9 —	2 245	»	37°
15 —	2 375	30°	»
22 —	2 575	»	»
29 —	2 780	»	»
6 Oct.	2 960	»	»
13 —	3 220	29°	»
20 —	3 410	27°	»
23 —	3 510	25°	»

[No discharge date recorded in the table.]

XIX. — No. Mle 169. E..., male, August 25, 1894.

Gestation: 7 months. Rectal temperature: 35°. Edema.

Dates	Weight	Incub. temp.	Body temp.
1894 — 28 Aug.	2 100	32°	35°
9 Sep.	2 125	31°	37°
15 —	2 240	»	»
22 —	2 385	»	»
29 —	2 580	»	»
6 Oct.	2 885	»	»
13 —	3 190	»	»
20 —	3 480	30°	»
27 —	3 830	29°	»
3 Nov.	4 180	28°	»
10 —	4 500	26°	»

Discharged 10 November 1894. Excellent health.

Conclusions

The incubator is indispensable and renders the greatest services in the following pathological states: birth before term and congenital weakness, cyanosis, edema, sclerosis, respiratory distress, athrepsia, when the child has been recalled to life after a state of apparent death, after obstetric intervention has been required, and when there are malformations.

The Lion Incubator — metal, with automatic temperature regulator — is incontestably superior to all those employed hitherto. Its advantages are: (1) a broad and constantly assured aeration; (2) a constant temperature, most easily brought to the desired degree and maintaining itself at that level; (3) this result, once achieved, being kept without the least supervision, so that the child then gives no more trouble than if reared in ordinary conditions. It is therefore indeed this incubator that is, for the premature infant, the best of cradles.

The results of the incubator are only the more satisfactory and complete if care is taken to use it as early as possible, immediately after the child's birth. Feed the child either by breast, with a special selection of wet-nurses, or with the breast-pump if direct nursing is not possible. Gavage, in cases of extreme weakness, also gives the best results. Follow the child's development, at least in the early period, and note its progressive weight by daily weighing.

Special press of the Petit Niçois.