

«Administrando medicamentos á los cuales se hace fluorescentes por medio de la radioactividad, inundamos las arterias del cuerpo con la luz solar líquida.

«El radio y los rayos X producen excelentes efectos cuando el cáncer está en la piel, más no afectan á los tejidos ni al sistema. Pero cuando se inunda el sistema entero con un líquido fluorescente, nada más fácil que provocar la fluorescencia en el interior del cuerpo, y precisamente en el sitio en donde se necesita.

En algunos casos una lámpara eléctrica de dimensiones tan reducidas que es posible tragarla, se introduce en el estómago y allí excita la fluorescencia, ó se pueden dar al enfermo medicamentos en disolución y administrarle luego agua fluorescente; pero hay que manejar con mucho cuidado ese agua porque es peligrosa.

Es útil, por ahora, hacer cálculos acerca de como opera la descarga fluorescente en los tejidos vivos ó como afecta al cáncer. La teoría más razonable es que establezca una leucocitosis moderada que permita al tejido vivo resistir y vencer al crecimiento canceroso.

Para el tratamiento del cáncer y de otras enfermedades, sature primero el sistema con quinina ó con alguna otra disolución capaz de florecer bajo la influencia de los rayos X, y luego someto al enfermo al tratamiento del radio ó de los rayos X. Durante todo el año pasado he seguido este plan, y casi todos mis casos de cáncer han probado que era bueno.

También he conseguido resultados muy satisfactorios en casos de paludismo crónico, de lupus, de tuberculosis y de otras enfermedades en que es necesario provocar la formación de tejidos recuperativos para resistir á la invasión bacterial y parasítica.

Introduciendo las partes químicas de la luz solar en la sangre y empleando después el tratamiento del radio, creo firmemente que se puede curar la tisis,

Tanto el radio como los rayos X se asemeja en su acción al *puntapié* que debe darse al hombre peroso. Obrán como estímulo. Por la reacción que producen despiertan de su letargo á la naturaleza y la hacen formar nuevos tejidos normales; pero es necesario dar con mucho cuidado el *puntapié* radium, porque si es demasiado fuerte puede matar en vez de curar.»

## LA PRUEBA DE LOS RELOJES.

CÓMO SE LES EXAMINA Y CÓMO SE LES CALIFICA.

De los millones de relojes que cada año se fabrican en todo el mundo, apenas el 1 por 100 podrían resistir las pruebas á que se les somete en el Observatorio de Kew, á donde se envían gran número de ellos, tratando de alcanzar la «marca de perfección» de la Royal Society.

Esta marca solo se concede á aquellos relojes cuyo mecanismo no deja nada que desear en cuanto á la perfección y exactitud; es algo así como un título que autoriza al relojero para pedir por su obra 1,000, 5,000, y hasta 10,000 pesetas. Uno de los relojeros que con más frecuencia la han alcanzado, fué un español, Losada, que se estableció en Londres y llegó á adquirir gran fama, siendo él quien hacía los mejores cronómetros, y el proveedor, durante muchos años, de la marina. Un reloj de bolsillo hecho por Losada costaba 10,000 reales y tenía tapas modestas de plata.

Las pruebas por que pasa un reloj en Kew, duran cuarenta y cinco días, durante los cuales se coloca en cinco posiciones distintas, y no siempre bajo las mismas circunstancias. La temperatura, por ejemplo,

varía de 5° á 32° centígrados. Durante los cinco primeros y cinco últimos días, el reloj se tiene en su posición natural, ó sea colgado, y bajo una temperatura de 15° próximamente. En el segundo período de cinco días, está vuelto sobre el lado derecho, y durante los cinco días siguiente sobre el izquierdo, siempre á la misma temperatura. Vienen luego quince días en que el reloj se pone acostado sobre la tapa, con una temperatura que varía cada cinco días, desde 5° á 15° y á 30°, y por último por cinco días más se le tiene acostado sobre la esfera, á unos 15° de temperatura. Entre cada dos períodos de cinco días, se deja un día de descanso á la máquina.

Todo reloj examinado en Kew recibe su calificación correspondiente, que es otorgada por puntos. Para ser considerado como absolutamente perfecto, tiene que merecer 100 puntos: 40 por la ausencia completa de variación en la marcha diaria, 40 por la resistencia absoluta á los cambios de temperatura y 20 por perfección en la compensación. Son muy raros, sin embargo, los relojes que llegan á los 100 puntos, obteniendo cuando más 91.6 ó 91.9.

Hay relojes llamados antimagnéticos, y para éstos también da el Observatorio de Kew un certificado después de someterlos á una prueba especial. Consiste ésta en exponer al reloj á la atracción de un gigantesco electroimán de metro y medio de largo, capaz de sostener un peso de 28 kilogramos. Aproximando el reloj á este electroimán, si se para, es señal de que no es realmente antimagnético. Esta prueba no dura nunca más de medio minuto; sin embargo, son muy pocos los relojes que salen de ella con éxito.

## Sección Inglesa.

PACHUCA THE RICHEST MINING DISTRICT IN MEXICO.

The city and district of Pachuca is preeminently a mining community, in fact the whole of its prosperity has depended and still depends almost entirely upon its production of the precious metals.

Its mining industry runs away back into the mists of tradition; some authors claiming that previous to the conquest the Aztecs had worked some of the mines by the means of fire, whether this is true or not concerning the Pachuca district we have no means of knowing, as nearly all the records that had been preserved in the churches and convents were destroyed during the wars for independence, the very small number escaping were again and again reduced during the various revolutions of the first half century of Mexico's existence as an independent nation, but we do know that this method had been adopted by the Aztecs in a great many instances; the mode of procedure being to kindle a fire over the place they desired to dig out when by the force of expansion the rock became loosened, and thus they were able to pry it away with the very crude implements they had at their command.

It is an historical fact that the Pachuca mines were worked soon after the conquest, some writers placing the date as far back as one year after, while others claim it must have been eight or ten years later. Enough is definitely known however to place the working of these mines a very few years after the conquest or probably between the dates of 1521 and 1530.

The first mine to be worked was the Xacal mine, from which the present Real del Monte Company is

extracting ore at the present time; so that this mine has been a producer with more or less regularity for over three hundred and seventy years.

At the visit of Humboldt it had been abandoned for some time on account of a great conflagration that had taken place.

In 1557 the discovery that has meant so much to Mexican silver mining was made by a Spaniard Bartolomé de Medina which was; that the sulphides in which form most of the silver was found in this district could be decomposed by the addition of sulphate of copper and common salt and thus the silver be converted into a state readily amalgamable with quicksilver from which it was an easy matter to separate it. This discovery has always been and still is a great mystery to mining students; considering the limited knowledge of chemical science in those times and that even today the process is not thoroughly understood; as many students equally worthy of confidence hold opposite and contrary views concerning the reactions that take place by this system, but while scientists cannot agree as to the why of the process yet is an absolute fact that with practically no modification of it as discovered by Bartolomé de Medina; the haciendas of this district alone are producing annually over four million dollars worth of silver by this same process.

This discovery naturally, produced a great revival in the industry, and much ore that had previously been considered as worthless was treated by this method, and many millions of dollars were sent to enrich the coffers of the mother country.

Tradition has it that this remarkable discovery was made in what is now the Purísima Grande Hacienda, whether this is true or not the Purísima is the oldest metallurgical works of the district.

The very extensive operations of the Conde de Regla commenced about the year 1749: who by his operations became fabulously rich, the production of the mines under his manipulation being almost beyond the dreams of avarice.

In 1824 the Taylor Company, an English Mining Corporation took over the mines from the Conde de Regla heirs. This Mexican venture of the Taylor Co. was not an unqualified success and the reasons are not far to seek, when we remember the truly regal fashion in which the directors and higher employees lived, and the munificent salaries paid them; many traces of their princely luxuriousness still remains at San Antonio, Regla, Velasco, and other points, so much so that after a loss of something like five million dollars in about twenty years they were forced to go into liquidation.

The mines were then taken over by a Mexican corporation and have been worked since with great success, having had several bonanzas, and returned millions of dollars in dividends.

In 1895 the industry underwent a severe crisis, from the effects of which it has barely yet recovered; in December of that year a large body of water was encountered which inundated the principal mines of the northern district suspending all operations in the lower levels until new pumping apparatus could be procured and set up; which was done with all the speed possible, until today all the mines are unwarpered and work is being done in further sinking the shafts and exploring the lower levels.

The most important Companies at present in active operation are: Compañía Real del Monte y Pachuca, Santa Gertrudis y Guadalupe, La Blanca y Anexas,

San Rafael y Anexas, El Bordo and El Cristo, Guadalupe Fresnillo y La Purísima Grande, Maravillas y Anexas, and Several other smaller concerns.

#### METALLURGICAL WORKS.

In the district there are eight metallurgical works in operation

Guadalupe mill: this mill is owned by the Santa Gertrudis y Guadalupe Company, and treats the ores from the famous Santa Gertrudis mine, handling at the present time about one hundred and twenty tons per day; the grinding plant consists of a pair of large Cornish rolls and fourteen Chili mills, the system of treatment employed is that of the patio.

Loreto mill the Compañía Real del Monte y Pachuca are the owners of this mill where they treat the ores produced by their own mines it has a capacity of one hundred and fifty tons per day.

The crushing plant consists of Dodge and Blake Breckes for the coarse crushing, from these the ore is run into Chill mills of which there are fourteen, from the mills it is run over an installation of Johnston Concentrators, the tailings from the concentrators being treated by the patio system. The whole of the machinery of this as well as that of the Guadalupe mill is run by electric power.

La Luz mill: this mill was originally organized as an independent concern, but a little over a year ago it was amalgamated with the La Blanca Mining Co. and is now a part of the Blanca y Anexas Co. The grinding plant of this mill consists of a pair of large Cornish rolls, and fourteen Chili mills, its total capacity being about eighty tons in twenty-four hours; the system of direct concentration is also employed at this mill. The motive power is made up of a large marine type triple expansion engine several smaller ones, and electric power.

The Patio system of treatment is employed, the ores treated being those produced by the Blanca mine.

Hacienda de La Purísima Grande is owned by the same people as the Fresnillo mine, and has a capacity of forty tons per day, the Patio process is employed and electricity is the motive power.

The San Julio mill, in which the Patio process is employed, and with a capacity of thirty tons in twenty four hours is owned by the Maravillas Company.

Apart from the above mills there are three others in which the Boss pan system, and a combination of the pan and barrel systems are employed.

The San Francisco is a Boss mill, electricity is the motive power; it is at present handling about one hundred tons ore per day.

The Union and Bartolomé de Medina mills employ a combination of the Boss pan, and the barred systems, their capacities being ninety and fifty tons respectively.

The Santa Gertrudis Hacienda has been shut down for some years, but is soon to be started up again, a strong company having been formed for that purpose; their capacity will be about five hundred tons per week.

The Combined output of all these mills will be over two hundred and fifty thousand tons annually; producing in silver from mine to ten million dollars, this will of course include the concentrates sold to the smelters or exporter to Europe, although no account is here taken of the higher grade ore that is sold directly or exported, will in all probability be the same or a greater amount

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