## THRILLING

# WONDER



## **STORIES**

The Magazine of Prophetic Fiction

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#### TENTH ANNIVERSARY **NUMBER NEXT ISSUE!**

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-and others!

#### EVERY STORY BRAND-NEW

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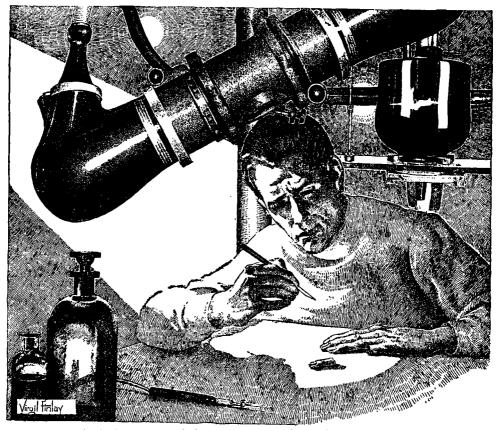
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# EXPERIMENT



The knife-point found the joint space neatly—and the finger was off

Strange Research Brings About a Medical Miracle—the Man Whom No Knife Could Destroy!

# By ROSCOE CLARK, F. R. C. S.

finger yesterday. Irritating, but not serious. That fool Adams jogged my hand while operating. He's too careless to have around a cancer research outfit. Good with the animals, though.

Working all week on the Webster-Lelong cancer transplants. I like the new rats. Better than the albinos; tougher, easier to handle, and better looking. Not that looks count, but our operative mortality has dropped since

\* Extracts from the Journal of Dr. Henry J. Larrimore.

the change-over. Maybe the others were too inbred.

The new growth seems to be just what we want. Webster himself is convinced it is a sarcoma, but it shows no evidence of infective element.

The cells are primitive. Unlike ordinary carcinoma or sarcoma cells. The thing is a cancer, though. A suitable starting point for our work with the new 5,000,000 volt X-ray machine.

Strange now to look back a few years. We thought then that a million volts would give us the answer to the cancer problem. 1,000,000 volts across

a vacuum tube — gamma rays — adequate screening — tissue damage restricted — even distribution. Cancer was soon to be one of the curable diseases like tuberculosis or pernicious anaemia. Now we are working with ten times that voltage.

Will the wave-length turn out to be the most important variable? Filtration must be more accurately defined. Detail—detail—relentless detail! Creeping work. A score of minds in half a dozen laboratories creep up on a problem simultaneously and infiltrate, like cancer itself. Then the whole picture becomes clear, and any child can take the credit.

Tomorrow we begin determining the effect of mixed radiations on normal rats. We must find out their tolerance. Then specific harmful effects. Narrow the range—like using a spectroscope, to secure a pure wave-length. Will it prove to be one particular wave-length or a combination? And they talk of the dullness of science.

\* \* \* \* \*

July Seventeenth: Work has begun. Irradiating whole animals. Narrow it later to affect cell-division only.

Hudson back today. Showed him the new set-up. He liked the Webster-Lelong growth. Glad to find him so interested. We need his steadying influence. Yet, from the start, I have had a hunch that this plant was going to get results.

Parsons looked at my finger today. It had been throbbing a bit, but no sign of sepsis. These surgeons can be strangely disinterested in important things. I've known Parsons since we were in school together. In the ordinary way he is supposed to be painstaking. A brilliant clinician. Apparently, cut fingers are beneath his dignity. One of his internes would have known more about it.

It is my finger, though. I could hardly expect the same interest from an outsider. Wish he had treated me as a case instead of a friend.

Suppose the pathologist sees things from a different viewpoint. I always liked Moyniham's phrase, "the pathology of the living." My own finger an excellent chance for me to study tissue repair. I can never get the boys to appreciate the importance of those elementary processes.

When the knife slipped there was no pain. In the first moment before blood obscured the wound I could see the full extent of the damage. The whole thickness of the skin had been traversed, leaving tiny capillary points of vivid red in the smooth and satiny surface. I had sliced off a section. In that instant I had rapidly reviewed all possibilities. Should I preserve the slice? Obviously useless. Would I have to have one of those small half-thickness grafts? The thing was trivial. Better leave it alone. I applied the usual dressing after cleaning it under running water. Subsequently I could see no reason to have acted differently.

Perhaps I am maligning Parsons. All that I had thought may have passed through his mind even more rapidly. His lack of interest may have been his way of indicating that he thought any monkeying around unnecessary. Was my annoyance merely that of the pathologist deprived of a chance to show off his surgical judgment? Anyway, the wound will heal soon. Granulation will not be excessive. It is the middle finger of my left hand. Sensitivity will not be interferred with. The thing is unimportant.

shaken. Reading the above, I get the idea that even then I suspected something strange. Subsconscious advance knowledge. A sort of mental preview. The last sentence seems now to have almost a frightening import: "The thing is unimportant."

Last night the throbbing ceased, and I removed the bandage. The dressing should have been stuck, but the gauze fell away and, instead of a raw, granulating wound, I saw only a smooth surface of perfect epidermis.

All of which could only be significant to one who had seen the original wound. What had happened was, by all my former standards, simply impossible.

I do not believe in miracles. Immediately I began to think that healing must have been accelerated by the new

rays. A small dose might have reached me in spite of the heavy lead- and platinum-lined glove.

Here accidentally, after all my cynicism, I had stumbled on something of importance. The more I thought of it, the more I became convinced that it should have been anticipated. True, I had not found the positive cure for cancer, but this seemed to offer a method of stimulating wound healing that would revolutionize the whole of surgery. Regeneration at last! My dreams faded into a wildness of speculation the end of which I cannot remember.

This morning I am calmer. Less obsessed with the accident. I must investigate fully. I shall see Parsons first. He alone had seen the wound. Professor Hudson will be interested, though. He has done a lot of work on regeneration in animals. One of his pet theories is that there is no reason why mammals should not be able to regenerate lost parts as the tadpole does a tail or the lobster a claw.

And if all of this is true, how did it happen? Radium and X-ray cancer treatment is based on properties of gamma-rays. With radium, the more solid alpha and beta rays have to be screened off to avoid general tissue destruction. The gamma-rays remain. Essentially similar to the harder X-rays. When the million-volt tube was constructed, radium acquired a rival in ray treatment.

Short electro-magnetic waves "paralyze" dividing cells. The term is descriptive, Hudson's own. Varying tissue sensitivity at least partly explained on the basis of selectivity for dividing cells.

In cancer, cells divide rapidly—also in embryonic tissue. Tumor characteristics depend upon this. Gamma-rays can be employed to prevent the completion of division without necrosis or tissue destruction. Short exposures, the correct intervals, adequate checkup, and so forth.

But suppose the rays overlook individual cell elements? Is there immunity. Do they become more resistant? Second treatments after previous irradiation are often less satisfactory. At times growth seems to be more rapid.

Why not this as the answer to my

problem? Stimulation by minimal dosage on normal healing tissues! Worth investigating. I must see Parsons first. Try to overcome his lethargy!

July Twentieth: Am I mad? Or just carried away by this idea of mine? Thought I could be critical, but here are facts I can swear to. All of Parsons' pooh-poohing can't make me unsee what my own eyes have seen. I expected more respect for my powers of observation.

The devil of it is that he's my only witness. Perhaps I am making the issue too personal. But it's my finger. And it healed up just about three times as fast as it had any right to.

Only possible explanation is the rays. Why not? It wouldn't be the most fantastic discovery of the past fifty years.

Meanwhile, I have other work. Must puil myself together. Parsons' attitude gets me down more than the actual occurrence.

July Twenty-second: Got Hudson in on my story after all. Concealed my anxiety and told him the tale without any theorizing. He marveled at my finger and, after a little reflection, reached the same conclusions I had. We continued the discussion abstractly and planned experimental work on monkeys. We already have the detail of their rates of healing. A crucial test should not be difficult. That is, if the effect is a general one.

If there is a limited wave-length range, it will take longer. We can but try. I am less disturbed since the chat. Must try to forget the personal slant. Have to check up on possible leakage through the gloves. May get a clue to dosage.

July Twenty-fourth: Must be getting neurotic. Tingling sensations up my arm from the finger. No pain, but distracting.

The sarcoma grafts are taking well. The rats are remarkably resistant to the new rays. Stand much larger dose than with the old 1,000,000 volt tube. We don't know why.

A UGUST THIRTIETH: Experiments progressing. Rays even more harmless to life than we thought

at first. Now irradiating the rats with the new tumor. No results yet.

Nor from the monkeys. As yet only the mixed rays used. Healing, if anything, delayed by the larger doses. Only to be expected. Meanwhile, I grow more conscious of the finger I injured.

Difficult to describe accurately. Increased consciousness. Not ordinary hyperaesthesia of the nerve injury type. Superficial sensation unchanged. But all the time I know that something is there.

Pure imagination? A subjective obsession neurosis? My desire for fame making itself apparent through the idea that started from the injury? I can talk myself out of it, but am convinced there is an organic change. The rays have done something. I must find out what.

September Fourteenth: Still nothing from the monkeys. Yet, more than ever, I am sure something has happened. No external changes. Not even the old radium cancers which usually followed burns. I feel we are on the verge of something big. I am not mad.

September Fifteenth: Perhaps I am mad.

Today I plucked up courage to repeat my accident. Wanted to for weeks. Now it is done. I should not have believed it so difficult to cut one's own finger deliberately. Gave myself a local. Infiltration of skin with novocaine. Removed an adequate slice. Tomorrow I shall repeat the exposure to the rays, wearing the same gloves.

All this I am keeping to myself. I do not relish any more of the Parsonian brand of sarcasm.

September Seventeenth: Success. This time I watched it. It healed from the depths! The epithelium did not grow in from the periphery. Am I using my imagination too much? Photographs next time. I must have my data complete before announcing the discovery. Let them play with their rats and monkeys. I shall work on myself.

September Nineteenth: The strange sensations have increased. The "awareness" has spread to my hand and up the arm. X-rays on the nerves? Cut nerves do produce poor circulation and

trophic ulcers. Could the rays exaggerate the trophic effect and so accelerate healing?

Direct action on cells, more likely. Which cells? Repairing fibroblasts from the wandering cells of the blood? No other evidence of effect of X-rays on these. Why did the monkey experiments fail? Have they failed? I must worry this out.

EPTEMBER TWENTY-FIRST:
Hudson saw me today. Told me
I looked ill. Suggested I'd been working too hard. Didn't mention the finger episode. Has he forgotten? Does
he know what is getting me down? I
ought to lay off, but the thing is obsessing me. I must pursue my experiments. Not a small wound this time.
An amputation? That would be worth
while.

September Twenty-fourth: When I first got the idea I did not think I could carry it out. But I have. Unpleasant, crude surgery. Ring infiltration with local at the base of the finger. Working in the lab difficult. Aseptic technique very sketchy. We sometimes laugh at the squeamishness of the "real surgeons." One day we'll destroy all the germs. That'll make them mad.

Now I don't feel very happy about it, but at the time all went well. I got Adams to put the tourniquet on. Then he left me without suspecting the truth.

The skin cut was bold. Painless, but strangely satisfying. No bleeding. The knife point found the joint space neatly, and the finger was off—the terminal phalanx rather. I almost enjoyed the foolhardiness of it. Tying off the lateral arteries more difficult. Somehow my fingers got the catgut tight. The skin sutures were a little easier. Did not want them too tight.

I got a large pad over the stump. Then called for Adams to bandage it. He is used to my oddities but I did not want him to see the finger tip. Had to get rid of it quickly, so threw it into the incinerator. I wish now I had kept it

When I got home I collapsed. After a few drinks, staggered to bed. This morning I went to the lab. Surreptitiously I got the necessary exposure to the rays. Here I am waiting. Waiting

for this fantastic idea to be disproved. God, what a fool I am!

September Twenty-sixth: Two days ago I thought that either the miracle would happen or I would go mad. Now it is happening, and I think I am going mad as well.

The finger is growing. After the operation, the wound began to throb. That subsided. Yesterday I looked at the wound. There had been little bleeding but the whole stump was bulging. Stitches tight and beginning to cut. Painful getting them out.

The space between the partly approximated edges was filled with clot; did not then look remarkable.

This morning I looked again. The clot has dried and separated. The stump had grown. The original skin edges had begun to turn gray, but in the gap appeared the beginning of the new pulp, pushing up like a budding plant.

Fascinatingly strange was this new pathological process I was witnessing. Stranger still that it should be observed for the first time in the history of the human race by someone who, as well as seeing the outward changes, could understand what was taking place beneath the surface.

Only when I begin to look for fuller explanation does the real novelty, almost the horror of its very unreality, begin to make itself felt. Can the change be repeated at will? Is the thing destined to become a commonplace? If a finger, why not a leg? An arm? Even the internal organs? The whole body? Potential immortality!

As yet nothing clear. It is all a torment. All I know is that if I am going mad it is not for nothing. It did happen to me. They cannot deny me that.

September Twenty-eighth: The miracle is completed. This morning for the first time I am calm about it. I fear now that I shall wake. Sometimes wish that I could, yet know I shall not. This is no dream.

The completeness of the regeneration is not, I suppose, so remarkable unless one tries to picture the controlling mechanism: the regrowth of a whole bone; the formation of a joint with its capsule, cartilages, and synovial membrane; the reconstruction of a nail matrix and a nail—all that in only a tiny fraction of the time required for nail regeneration alone after removal under ordinary circumstances. Further, the skin has developed from the depths of the wound; the epithelium is not from old epithelium, but from some other tissue! What can it mean?

Yet, this is no more complex than the development of the embryo. Same unsolved mysteries involved. I must plan experiments to discover how the process works. I am still convinced that the new rays are the sole extraneous factor.

In moments of distraction I have pictured myself cut off at the neck and growing a new body. This afternoon I must get out of the house. Yet still I have no proof. I think I shall go away as Hudson suggested. I must think. The future is crowding on me.

October Third: So far I have told no one, done nothing. I am calmer, less excited, less obsessed with the strangeness. I have begun to take an interest in the old work. Perhaps, after all, it was only a dream. Wish I had kept that finger. Might have told something of the inner story.

crober fourth: Sensations are spreading. Have reached the elbow and are still moving upward. This morning there was a pain along the radial nerve. I must do something to prove this thing to the rest of them. Bold and final. If only I could cut the whole arm off. The idea does not frighten me, but I can't see how to do it myself. Dare not try to persuade anyone else. Men have removed their own appendices, but an amputation is different—and without assistance, impossible.

October Eleventh: Awoke today in the Rodney private hospital under the care of Dr. Parsons. All trussed up and minus my left arm.

Memory pretty hazy. Seem to recall it was raining, and that I shipped in crossing the street. Tried to roll away from the trolley car. Nothing more.

So my subconscious has succeeded in trapping me. I'd been trying to devise a way to get the arm smashed up sufficiently. In full possession of my faculties I don't see how I could have carried it through.

It was not deliberate, but certainly successful. Now I must wait for things to happen. Keep a grip on myself. After all, this is what I wanted. No use running away from reality.

They have taken it off above the elbow. So much the better. I am confident my arm will grow again. Dare not contemplate the other alternative.

Tomorrow I shall know. Even now it begins to feel tight. I wonder how Parsons will take it. And when it has grown again, what then?

October Twelfth: So the great man isn't coming in today! Sent his junior. That I regard as the final insult. Fortunately young Rawlins didn't want to look at the stump.

I must get Parsons down. Tonight perhaps I shall complain of a lot of pain. When they see the amount of swelling, Parsons will have to come to remove the stitches. Then we shall see.

Wish I had the arm. Next time the severed member shall be preserved, embalmed if necessary. That surely is only fair. It was my arm. No reason not to let me have it just because I'm going to grow another.

When will I dare try it on a leg? Somehow I feel that the spread of the sensory disturbances is related to the

capacity for repair.

My God, though, why should the thing heal itself? No exposure to the rays since the accident. What an intolerable fool I am! How can I get out of this? I guess I'm strong enough to walk. Parsons wouldn't come down. I cannot stay here. I must get to the rays! To hell with them all.

ATER: after a fight with the whole administration I got away. They all think me mad, but what of it? Parsons couldn't come and Rawlins would not take the responsibility so I quit. Must get to the plant tomorrow. Even that may be too late. Tonight would be better. But how can I get the machine working? Perhaps the technicians are working late. I'll get right over.

October Thirteenth: Back in hospital. Wish I could remember what happened. Think they are keeping me by force now. I got into the building

last night, but not into the lab. Must have gone haywire after that. I dimly remember fighting.

How I hate it all. Strange, this sudden hostility. Until now I have been fascinated by the importance of the discovery. Now I can only think of it as something horrible. I'm too introspective, perhaps. Wish someone would come to see me. Suppose they think I'm mad, and have barred visitors. Not that I deserve any after avoiding everyone like the plague for the last three months.

\* \* \* \* \*

October Fourteenth: Trouble has started. Parsons came in this morning. Still treating me like a small child. Ignored all requests for information. There had been very little pain, but I knew the stump was much swollen. Most of the stitches had already parted. He took out the rest and began for the first time to show signs of interest. As he gently turned back the edges of the skin-flaps his expression changed. Obviously he was bewildered. I could hardly restrain myself from a cry of triumph.

He gazed more intently at the wound then turned to me as though wondering if I was old enough to discuss the thing at all. Finally he replaced the dressings and left the room without a word.

Meanwhile the strange sensations have spread. Across my chest and down towards the abdomen. Also up the back of my neck. I suppose lying in bed makes one more aware of any slight disturbances of cutaneous sensibility.

So the rays weren't necessary this time! That alters everything. Have the rays already done their work on me? Produced some change that is spreading, and with it this amazing capacity for regeneration. Spreading from the arm to the rest of the body!

Later: The whole gang came back—Parsons, Professor Hudson, Rawlins, and Weatherby, the interne. They all looked at the arm and took no notice of me. When I said anything they tried to soothe me with utter nonsense about it "doing well."

Finally they suggested a bioscopy. Reasonable, I suppose. What do they expect to discover from a segment of the stump? Why aren't they more amazed at what was occurring under their eyes? Why the hell can't they tell me? I'm pretty feeble, but this waiting will drive me crazy.

CTOBER FIFTEENTH: I must think this whole thing out again. What has happened to me to give the power of regeneration? What did we know before? Skin, epithelium rather, regenerates from epithelium; bone from the osteoblasts; muscle from muscle, but only to form fibrous tissue; and blood from the bone-marrow, constantly. Glands hypertrophy when necessary. Same process, different response. No. The adenomatous thyroid, toxic type, regrows and the regenerated part functions. Arteries regrow from connective tissue cells, as does fibrous tissue itself. These we know about. What is different here?

Epithelium reborn from the depths of a wound. Bones reconstructed in their entirety. Two of the three germ layers regenerated from the same region. Toti-potential cells. Like those of the dermoid cysts, that grow bone and teeth and hair and skin and pancreas and spleen all jumbled up together in one useless mass. Tissue gone wild!

Can the rays make the cells of the body revert to a more primitive, less specialized type? Or could they act on cell-rests?

The dermoids, those strange half-separated monsters, the gruesome two-headed embryos in the museums, children with extra legs, adult tumors that take the form of an arm, a leg, or an ear—all these supposed to originate in cell-rests. Cells bud off early in embryonic development before the germ layers separate, then lie dormant. What we do not know is why they start to grow. If you like, why they stop growing.

Is this the explanation? Something in the new rays that individuals with such rests can become exposed to accidentally under ordinary circumstances? Have I received in unusual intensity the unknown factor that has given, in addition, this power of restraint, of being able to build up only what had been lost? I must elaborate. At least there is a plausible theory here.

October Sixteenth: Turned the tables on them today. Now they think they're mad. Today it looked less like a tumor and more like what it is going to be—an arm. As soon as they saw the uncovered stump they began asking questions. I gave them this journal. A strange dramatic tension in the room while they read it. Then they apologized whole-heartedly, even Parsons.

Tomorrow the microscopic sections will be finished. That may help. Hudson refused to express an opinion. Agreed it was most unusual. Parsons favored my idea of the cell-rest theory, a sort of restrained teratoma. He obviously does not believe that it will grow a hand. I expect him to advise amputation and an intense course of the older radiations. They have all promised to keep the whole affair secret. Tonight I feel almost human again.

October Eighteenth: I now have a wrist. Occasional tinglings, but otherwise I have been cheerful. My depression has gone. Hudson was in. Had not seen the sections, but asked a lot of questions the others overlooked. I think he has an idea of his own that he is not yet ready to share.

October Nineteenth: They are keeping something from me. I think they are lying about the sections not being ready. These damned nurses have obviously been told to be politely uninformative. They took another specimen this morning. To hell with research! I hope I shall still be able to fish when my hand has regrown.

November Fifteenth: What can have happened? They tell me I jumped from the window and fell four stories. A post ripped my abdomen. Both ankles were fractured, three ribs cracked, and later they had to remove my spleen and left kidney. I had begun to bleed internally.

A hell of a mess, none of which I can remember at all. Yet here I am feeling, under the circumstances, remarkably fit. The abdominal wound can hardly be seen, and the fractures are healing rapidly. Three weeks of amnesia, and they tell me I have said nothing. I don't believe them. They are watching me. Waiting to read these notes I ex-

pect. What of it? What do I care?

So I tried to kill myself. Why? And failed dismally. Am I immortal? A serious thought. If repair is perfect, life will be prolonged indefinitely. Is that the fate of this twentieth-century pathologist? To discover through cold science the answer to the prayers of all the romantics of the ages?

Yet when one thinks of it, there is something distasteful about the idea. Better to have no time to finish all the things one would have liked to have done, than to have so much time that one would never bother to begin them.

I am still weak. Even these notes have tired me out. I feel drowsy. They are probably keeping me doped.

OVEMBER SIXTEENTH: A series of X-ray pictures today. My kidney has regenerated and is functioning. Well, why not? It's only epithelium. Not really more specialized than the skin. Are there functional kidney tumors?

One thing I had forgotten. Nervous tissue, the brain cells as opposed to the fibres, does not regenerate under any known conditions—does not even form true tumors. Will that save me from immortality?

Something happened to blot out my memory. Yet they say I was not concussed. Did I discover something before I jumped? Why did I jump?

November Seventeenth: I have found it. Explanation at last. And of my own madness too. This will be the last entry. This time I shall not fail.

I must die!

Toti-potential, primitive, cancerlike cells! How did I miss out on that? How did the others? Or is that what they have been keeping from me? Now I know why I tried to destroy myself. The thing is too horrible. Subconsciously I must have been aware of the horror all along.

Obsessed by the rays and by them alone, even when I thought of the cell-rest theory, I ignored the obvious lead. Even then my subconscious must have been taking control; must have established an inhibition lest I discover the

true nature of my affliction.

I cut myself, transplating the new culture from that rat to me, and the thing spread. Primitive cells with the power of differentiation under certain conditions of the new 5,000,000-volt ray. That strange new product of the Webster-Lelong laboratory! All along I had overlooked the possibility of a transplant to myself from that fateful knife. Where now would it end? Already the nerves of my arm have regenerated; why not my brain? Was it not already being infiltrated by the foreign cells left behind in the wound when I first cut myself?

They have barred the windows, but that shall not stop me. It will soon be over now. I am too much a sentimentalist to be the cold-blooded scientist to carry this through, too tascinated to draw back. I am too human to go on living, knowing that I am gradually becoming a living cancer—the cancer of

a rat.