

PUGSBY'S MANUFACTURE OF DIAMONDS.

By A. W. BUSBRIDGE.



It is impossible to remain long in the presence of my friend Pugsby without being to some extent infected by the enthusiasm which pervades him, and the atmosphere all around him, for

discovery, invention, and improvement. Personally I am the last man in the world to attempt to find out anything new in Nature, or to invent anything whatsoever. It will take me all my time to learn what other people have done in that line, and I am quite satisfied to leave all the new ground—as long as there is any—to more ingenious folks, and to take what benefits they give me, when they come along, without asking questions or attempting to “go one better” on my own account.

Not so Pugsby. I made a casual remark in his presence the other day as to the weather being very close and sultry. He seemed struck, as if I had said something brilliant or clever—which I am quite sure I never intended—and observing: “That’s worth looking into,” turned abruptly homewards. Knowing his moods pretty well, I let him go. A few days afterwards he came to me in great spirits, saying: “I have solved that problem.”

“Which?” I queried doubtfully, for I had forgotten the circumstance.

“Why, what the difference is between the atmosphere on a close and sultry day, and one when it is equally hot and yet quite bearable.”

“Oh!” I responded with a laugh; “but you needn’t explain it to me. The experience is enough for me.”

“Perhaps it is,” he replied a little curtly. “But all the same, it is intensely interesting to note the minute differences in the amount of electricity with which the air is said (for want of a better term) to be charged at different times, and the effect of a cap or extinguisher of clouds in keeping down

certain gases that should rise to the upper layers and form new combinations there.” He was well on the way now, and could not be stopped, but I have forgotten the main points of his explanation, and I would not weary you by repeating them.

But it was of the diamond discovery, or invention, that I started to speak. Pugsby had been hard at work for a long time in secret, and I had seen very little of him; but one day towards the end of the winter of 19—he sent for me, and I knew he had something of importance to tell me. I obeyed his summons promptly, and found him in the laboratory, where he spends most of his time.

“Jackson,” he said, as I advanced gingerly towards him, threading my way through what I regarded as the pitfalls of the place, “I have made a great hit.”

“I am very glad to hear that,” I replied. “I imagined it was something of the kind when I got your urgent message. What is it? Wireless telephony, or a cure for seasickness?”

“Ah! you are disposed to be both frivolous and incredulous, my friend,” he placidly responded. “You should cultivate a little faith. But, joking aside, what do you think of these?”

To say that I was astounded would be the very exaggeration of rhetorical restraint, for “these” were such a collection of diamonds as surely few men ever had the privilege of looking upon at one time. They varied in size from minute specks to stones as large as a filbert, and there were in all, I should imagine, something like a hundred of them.

“Good Heavens, Pugsby!” I gasped, “where did you get such a magnificent collection? They must be worth a fortune.” I had not the faintest idea what they were really likely to be valued at, as my experience of precious stones had been limited up to that time to the ordinary purchases that a man makes of articles of jewellery for his own wear, or as presents on auspicious occasions in the lives of his friends and relations.

Pugsby answered my last remark, and ignored for the time the question with which I had prefaced it. “They are,” he said quietly; “or, rather, I have reason to hope that they will be presently.

"Let me explain," he went on, after a pause of bewilderment on my part, and amused observation on his. "I have often told you that my method of investigation is mainly based on analysis. I discover what a certain object is composed of by taking it to pieces, as it were. Applied to substances, there is nothing strikingly novel and original about that; but I apply the principle also to processes. When I have discovered the concomitants, and the force that brings them together, I am at the secret of Nature's method of manufacture so far as it applies to inorganic things. What is there then remaining that can prevent me from producing the same results as Nature does? Nothing but my inability to combine my materials in Nature's own way. If I am unable to reconstruct after analysis, I fail. And though it seems easy enough in theory to build up what has been taken down, it is not so by any means. We have not arrived as yet at a sufficient knowledge of the forces that are in action all around us to enable us to do what we feel we ought. I have failed hundreds of times, as you know well enough, but I think I have succeeded this time. Almost succeeded, I ought to say, for I have managed to turn pieces of charcoal into these stones which resemble diamonds."

"You don't mean to tell me that you have made these beautiful jewels?" I interjected, ignoring his reservation.

"Yes, I do," he answered. "So far as they are made, they are of my own manufacture. But if you were to examine each one carefully, and with an experienced eye, you would see that there is a flaw in every one of them. Not one, I am sorry to say, is absolutely perfect. Even as they are, they would doubtless have a certain value in the market, but I should decidedly object to putting forth a number of imperfections. It would be altogether against my principles, and I have no doubt that in the end it would be bad policy also. Now I feel confident that my method, as far as it goes, is correct, but to conduct the final operation, specially constructed machinery is required. That machinery will be extremely costly, and I am almost at the end of my resources. So I want your advice."

I may explain that my friend was a strange mixture of thoughtless enthusiasm and caution. Without some restraint he would have spent all his patrimony on his researches and experiments; but knowing the temptation to which he was likely to give way, he had purchased an annuity of several

hundreds a year with part of the fortune that an uncle had bequeathed to him. "The good dog Pugsby is well chained," he used to remark when he mentioned the subject; "for if he were not, he would certainly break loose and, being unmuzzled, become dangerous." He had never intended trying to make money for himself out of his inventions, which as a rule he had made public as soon as he had perfected them. Now I saw that unless he was to give up his most cherished occupation in life, it was necessary that he should for once take a commercial standpoint. And now I understood how it was that he had worked for so long in absolute secrecy. I did not hesitate. "You should become 'The Great Diamond Manufacturing Company, Limited,'" I replied. "Capital, so much, in so many shares of £100 each. How much do you want to go on laying down your plant with?"

"Oh, I dare say £100,000," he answered.

"A mere bagatelle," I replied. "Capital, £250,000; £100,000 to be spent in developing the business; £150,000 to be paid to the inventor. Of that you will take £50,000 in cash and £100,000 in shares. And there you are, ready to go on your way inventing and rejoicing. But what is your final process?"

"Jackson," he replied, "I am not sure that I am able to tell you, or that you will understand me fully if I do. But the agglomeration of molecules which constitutes a diamond is made up by the atoms being placed together in a particular way, and by a certain defined pressure. I have discovered the general principles of the way in which they should go together, but I cannot yet apply the requisite amount of force in the right way. Specially constructed machinery will be needed for that, and it will have to be so nicely adjusted that it must be very costly. I shall require also to provide for a closer assimilation to the action of the inert forces of the earth in the earlier stages of the work than I have yet been able to accomplish."

I pretended to understand, but I am bound to admit that his remarks had little meaning to me. If I had not seen the first-fruits of his experiments, I should have been very doubtful of his ultimate success. But if a man could do so much, how could I question his ability to do more? Yet more than once in the conversation that ensued I urged him to rest satisfied with his achievement, and realise a handsome sum for himself by selling the stones as they were. On



"In the laboratory, where he spends most of his time."

this, however, he was adamant. Faulty stones were already plentiful enough, he declared, and a few perfect ones would be better than many with flaws in them. So we finally decided that the firm of Dawkins and Edelstein, well-known as financiers and promoters of companies, should be invited to take the matter in hand and start the new diamond company with such a title as should seem good to them. As I had some knowledge of the law (having been designed

for the Woolsock by a pair of sanguine parents, and kept in the backwaters of the profession by a calm and contented disposition, a comfortable income, and no great liking for hard drudgery, to say nothing of a lack of the necessary intellectual qualifications), I undertook to conduct the introductory correspondence and arrange an interview.

It need hardly be said that Messrs. Dawkins and Edelstein were quite prepared to take

all the necessary steps, and only required to be convinced that my friend's claims were genuine. After a few letters had passed, an interview was arranged, and the agents wrote to say that their manager, a Mr. Green, would call at Pugsby's house on the following Thursday afternoon. Thursday consequently found me in my friend's little den, a room on the second floor adjoining his laboratory on one side, and containing one window looking out southward over the road to Sellington Station, about a mile and a half away, and one eastward commanding a view of the great highway and the land sloping away to Sandybeach, the well-known seaside resort, distant about six miles. Mr. Green had arranged to be at Smethbourne (perhaps I have omitted to say that this is the name of our rural retreat) at about 4.30, and he proposed to catch a fast train at Sandybeach at 7.0. He did not disappoint us in one respect at least, for it was scarcely half-past four when his cab came into sight on the main road, and a few minutes later he was ushered into the room.

"Ah, shentlemen," he remarked, "I am delighted that I find you bot' here and ready for business. It haf gifen me some fear that one of you could perhaps by such brief notice be discomposed."

We both concealed as well as we could our surprise at hearing a foreign accent from a gentleman with so English a name as Green, but our visitor remarked our embarrassment and seemed highly amused. He was good enough to explain that he was a German who had lived many years in London, and that when he became naturalised he had changed his name from Grünstein to Green. "I did tink," he added, "I could not vell become Mr. Greenstone." There was a *buntonie* and charm about the old fellow's manner (he seemed to be about sixty) that rendered reserve impossible, and we were soon chatting on the subject of his visit as if we had known each other for years.

Pugsby gave him information as to the process of the manufacture up to the point at present reached, in fuller detail than I can attempt to reproduce, and at length he drew out the drawer containing the precious product of his research and skill.

"Ach! Gott im Himmel!" burst from Mr. Green's lips as he saw the sparkling heap. "Pardon, my friends, that I tumble into the *Deutsch*. Your poor tongue is all not enough. You have really all these stones made? For true?"

"Yes, certainly," said Pugsby, with a quiet

smile; "I could not otherwise have hoped to possess so many."

"No, truly," said Mr. Green, who, as his wits returned, seemed more capable of taking the commercial view once again. "But it will be needful that someone prove that. None will believe on the mere word even of a so honourable man. I doubt not—but the shareholder! He is by his nature suspicious, and must see either with his own eyes or with someone else's. Can you in one hour make me shoost von leetle stone? Zen I shall tell all the people vith money, and all vill be vell." Mr. Green's German accent and use of German construction in his sentences seemed to ebb and flow with the pressure of his feelings. I noted it as a peculiarity at the time, and determined to study the point as opportunity should offer in the days to come.

"I cannot produce a diamond at all in that brief time," said Pugsby, "or I should swamp the market in a week. But I can show you the various stages of manufacture in the laboratory. I have already arranged all the details possible so that you may see for yourself, as the showmen say, that there is absolutely no deception. But if you should require to examine all the steps and actually see me make them, I am afraid that I should be compelled to ask you to remain here for a very considerable time. The fact is, that I began on all the stones you have seen, and took them to what I may call the fourth stage, before I had found out how to go further. Then, when I had made the next step secure, I was able to go on with all of them, and they are now awaiting the final process."

"Ach! Zo," said our visitor, "vill you then be so good and take me to see the so interesting factory that you have here?"

Pugsby rose and led the way to the laboratory. Mr. Green and I followed, talking somewhat excitedly of the prospects of the venture. My friend was soon hard at work doing something to the machinery, and quite oblivious to everything else that might be going on around him. He used to say that the habit of concentration and withdrawal from the ordinary surroundings of life was one of the most valuable assets of an inventor; but what he called concentration, some irreverent folk would be inclined to describe as absent-mindedness. Still, as he had no wife, that mattered very little, I used to tell him.

Just what conversation passed between Mr. Green and myself while we were waiting



“Ach! Gott im Himmel!”

for the curtain to be drawn up, I do not well remember, and I doubt not that it was of little importance. But I particularly noticed the keenness of our guest in looking out in what I thought trifling matters for evidence of the inventive skill of Mr. Pugsby.

He excused himself with what I told him was quite unnecessary vigour for his curiosity, and at the same time remarked that it seemed very strange in such a place to see only the ordinary locks on the doors. It gave me great pleasure to be able to assure him that this was by no means the case, and as Pugsby seemed likely still to keep us waiting for some little time, I took him back to the door by which we had entered the

laboratory—the only one, by the way—and pointed out his error. Between the den and the laboratory there were two doors, one of the ordinary kind, and the other a baize-covered screen to keep out the draught. I explained to him that the lock on the first-named, innocent as it looked, was of a peculiar construction. The key was on the side of the den, and I showed him that one turn locked it in the ordinary way, while a second shot two bolts, something like those in the doors of fireproof safes, into niches at the top and bottom of the framework surrounding the door. Sliding the knob to the left, I pointed out, would lock these bolts in their places, and pushing the little button on the

underside of the lock to the right would put the hinges of the door out of gear. The haize-covered screen which was on the laboratory side had no fastenings at all.

By this time I observed that Pugsby seemed to have finished his preparations and to be ready for us to examine his processes. When we came up to him, he had a small piece of charcoal in his hand.

"This is the raw material," he said. "The diamond consists of pure carbon crystals, and my process is to disintegrate this charcoal, drive out that which is not carbon, crystallise the remainder, and then build up the diamond with those crystals. You are no doubt aware, Mr. Green, that science declares that there are interstices between the molecules which make up even the hardest and most solid substances in Nature. The diamond is no exception to that rule, but its particles are placed nearer to each other than those of any other known object. I have produced the crystals, but at present, though I am quite confident that I know how it should be done, I have not the means to apply the proper amount of force to the particles to make them cohere. The stones I have made are faulty, not because I have put the atoms together incorrectly, but because I have not the means to force them quite close enough to each other without crushing them."

Mr. Green showed a deep interest in the subject. "But," he said, "can you not show us some of these performances?"

"Oh, yes," replied my friend: "that is exactly what I have brought you here for." He proceeded to set some machinery in motion by moving several levers. "This piece of charcoal," he said, "is now to be disintegrated." He placed it in a kind of mortar, and there was a sound of grinding, mingled with a simultaneous outbreak of sneezing on the part of Mr. Green. "Ack!" he exclaimed, "it is ze d-d-diamond dust. It is snuff of precious stones. . . . It vill soon pass. . . . No, it stop not. . . . I vill mine *Taschentuch bringen*. . . . I haf him . . . in mine overcoat left . . . in the anteroom."

He walked quickly away, and just then Pugsby asked me to hand him something that he wanted. I ought perhaps to have accompanied Mr. Green; but, after all, he was not a guest, and was only present on business, where the ordinary rules of politeness need not be punctiliously observed, and so I let him go alone. Pugsby seemed to be rather dissatisfied with the performance of the machine he was working, and, after his usual custom,

was entirely engrossed in his occupation. I doubt whether he had noticed the absence of the third party at all, till at length he looked up and declared that the first portion of the entertainment was over, and he was prepared to go on to the next step and show a very small portion of the second process.

"Wait a moment," I said. "Mr. Green has gone out to get his handkerchief, as the dust set him sneezing. He ought to have been back before this, though," I added. "I will go and see what has become of him."

I started off, pulled open the haize door, and tried to do the same with the other, but it was fast locked! "Pugsby," I shouted, "we are locked in!"

My friend would not believe it at first, but it was even so. The intelligent foreigner had apparently made off, no doubt taking the diamonds with him from the other room. I never was the calm philosopher that Pugsby could be on occasion, and I raged and raved for a time, and relieved my feelings a little by calling myself all the fools in Christendom for letting it be done. The inventor sat down and laughed.

"What!" I shouted, "can you take a loss like that as if it were but a few pieces of glass that he had taken?"

"Why," he replied, "surely I can make another batch?"

"Don't be too sure of that," I retorted. "You may depend, he is only one of a powerful gang, who will take precious good care, one way or another, that you do not, unless they can be certain of getting hold of what you produce."

"Well," he said thoughtfully, "the first thing to do is to get out. That is perhaps not so difficult as our friend calculated on its being."

He went to the other end of the room, and immediately returned with a winchlike instrument, which he applied to an iron nut or screw by the side of the door. "If you will give me a hand with this," he went on, "we shall soon be on the other side."

We turned away in good earnest, and the framework of the door parted at the top, and the whole thing gradually slid down through a kind of enlarged slot. "This is better than going out of the window and down a rope," he added, "for the landing-place at the bottom is not quite so pleasant as it might be." (It was the netty bank of a moat, in fact.) "It is quicker, too," he went on cheerfully, "than my fire-escape arrangement, which has got a little rusty, so that the iron ladder does not unfold easily in



“What does it mean?”

answer to the pulls of the levers. And it is more certain in its operation than the use of my improved parachute would be, for that is only constructed to carry my weight, and in a wind like the present is apt to take you a little farther than you wish to go. Some day I shall succeed in guiding it.”

By this time the doorway was open, and we lost no time in ascertaining that our visitor was in fact a thief. The diamonds had vanished, and although we knew Mr. Green could not be far away, we recognised that a start of ten minutes in a rural district in the dusk of a February evening was no mean advantage. He had probably had a swift motor-car in waiting not far off, and by this time was several miles away on his road to safety.

Of course, we took immediate steps to inform the police and set the sleuth-hounds

of the law on the track of our genial friend; and we had a coadjutor which I, at any rate, had for the time overlooked. By means of various mechanical devices of my friend's, cinematographic pictures had been taken of the interview, and a phonographic record was also registered of the conversation, without either Mr. Green or myself being aware of anything unusual going on. Best of all, the final secret photographic record showed our middle-aged gentleman hurriedly taking off his grey beard and moustaches, and his wig, and revealing the features of Robert Grindleton, a man well known to the police, suspected among other things of that famous theft of the Earl of Arktown's jewels on board a Channel steamer, but never proved to have done anything against the law. We were unable to trace him on that night, for he made his way (by means of a motor-cycle, we

afterwards learned), not to some little country station, but straight to London, a distance of some sixty miles. He had not counted on Pugsby's automatic recording angel, and he was arrested the next day at Cannon Street Station, where he was booking for Paris—no doubt with the idea of getting rid of some of his booty.

Grindleton was brought before the magistrates at Ashton and committed for trial at the Assizes in March. The jewels had not been found, but the evidence was too clear to be disputed, and the accused man did not, indeed, attempt any defence at the time. Much interest was exhibited in the case, as it was the first time that records of phonographs and moving pictures had been accepted as evidence in a court of law. When confronted with these, the prisoner was utterly confounded, and he admitted his guilt. But he declined to say how he had succeeded in personating the real Mr. Green, and we could only surmise that some confederate must have been introduced into Messrs. Dawkins and Edelstein's office, who arranged it so that our "Mr. Green" should come to Smethbourne a day earlier than the real one intended doing. The letter I received was a typewritten document, and the signature was forged. The office copy in the firm's letter-book gave Friday as the day of the visit, and the confederate must have seen to it that another was posted instead of the original.

When the Assizes came, Grindleton was sentenced to three years' imprisonment, and we were extremely glad to find that it was not necessary to go into details as to the origin of the jewels. Our acquaintance was then taken to London, where he received a further sentence of seven years for the other affair of the Earl of Arktown.

It was not till then that he gave information where the stones were. He had left them at the parcels' office at the railway station in the name of Barton, and in giving this news he said: "I don't see handing those little things to a railway company; and as they won't keep them for me till I come out, Mr. Pugsby may as well have them. He is a decent sort of a chap, and next to keeping them myself, I would rather he got them back."

Naturally we were jubilant at the pro-

spective recovery of the treasure, and it was not long before we were at the office asking for Mr. Barton's luggage. There were many formalities, but eventually we walked away bearing with us a small leather case. On the way down Pugsby carefully opened the case in the railway carriage to see that the stones were all right.

"Good Heavens!" he ejaculated, shaken out of his usual serenity by the sight that met his gaze. "What on earth has happened?" There, laid out on a plush-lined case, were a number of lumps of charcoal.

"What does it mean?" I whispered.

"Mean?" he repeated. "Why, this is what it means. My invention is useless. I can make charcoal look like faulty diamonds for a few days or a few weeks, but there is some flaw in my methods, and exposure to the action of certain gases that exist in the atmosphere, or in some place where these stones have been, dissolves the crystals and reduces them once more to the material from which they were made."

Our journey was not a very lively one. Pugsby was not open to receive consolation from me, and what, indeed, could I offer? But as we neared our destination, I asked him whether he thought the action of the gases he had spoken of was applied to the carbon itself or to any mixture which I understood him to say he added to the disintegrated charcoal before the actual crystals were produced. That set him on the path of inquiry, and he was less downcast for the rest of the time we were together.

About a week afterwards he was quite himself. He had worked it all out, and the joy of having a problem to solve had taken away the depression induced by his failure. He had made up his mind, he said, on the facts he had discovered, that the production of artificially made diamonds was impossible. There was one factor he had overlooked—I could never quite comprehend what it was—but as he declared it made it futile to pursue the matter further, he gave up the attempt, and "The Great Diamond Manufacturing Company, Limited," was never formed. Nor did the facts ever leak out, for Dawkins and Edelstein kept their own counsel, as behaved confidential agents. And as for Grindleton, he died in gaol before the year was out.